ORDINANCE NO. 1354-13

AN ORDINANCE RELATING TO THE TRANSPORTATION SYSTEM PLAN; ADOPTING THE 2012 TUALATIN TRANSPORTATION SYSTEM PLAN UPDATES; AND AMENDING TUALATIN DEVELOPMENT CODE CHAPTERS 1, 3, 11, 31, 34, 38, 71, 73, 74, AND 75 (PTA-12-02)

WHEREAS upon the application of the City of Tualatin, a public hearing was held before the City Council of the City of Tualatin on February 11, 2013, and continued on February 25, 2013, related to a Plan Text Amendment (PTA) of the Tualatin Development Code (TDC); and amending TDC Chapters 1, 3, 11, 31, 34, 38, 71, 73, 74, and 75 (PTA-12-02); and

WHEREAS the City provided notice of PTA-12-02 to the Oregon Department of Land Conservation and Development as provided under ORS 197.610; and

WHEREAS notice of public hearing was given as required by Tualatin Development Code 1.031; and

WHEREAS the Council conducted a public hearing on February 11, 2013, and was continued on February 25, 2013, and heard and considered the testimony and evidence presented by the City staff and those appearing at the public hearing; and

WHEREAS based upon the evidence and testimony heard and considered by the Council, especially the City staff report dated February 11, 2013, makes and adopts as its Findings of Fact the findings and analysis in the staff report dated February 11, 2013, which are incorporated by this reference; and

WHEREAS the City Council finds that granting the amendment is in the public Interest, the public interest is best protected by granting the amendment at this time, the amendment conforms with the Tualatin Community Plan, and the amendment complies with the applicable provisions of TDC 1.032.

THE CITY OF TUALATIN ORDAINS AS FOLLOWS:

Section 1. TDC 1.032 is amended to read as follows:

Before granting an amendment to the Plan Text or Plan Map of the Tualatin Development Code (TDC), including the Tualatin Community Plan, the Council shall find that:

(1) Granting the amendment is in the public interest.

(2) The public interest is best protected by granting the amendment at this time.

(3) The proposed amendment is in conformity with the applicable objectives of the Tualatin Community Plan.

(4) The following factors were consciously considered: the various characteristics of the areas in the City; the suitability of the areas for particular land uses and improvements in the areas; trends in land improvement and development; property values; the needs of economic enterprises and the future development of the area; needed right-of-way and access for and to particular sites in the area; natural resources of the City and the protection and conservation of said resources; prospective requirements for the development of natural resources in the City; and the public need for healthful, safe, aesthetic surroundings and conditions. Proof of change in a neighborhood or area, or a mistake in the Plan Text or Plan Map for the property under consideration are additional relevant factors to consider.

(5) The criteria in the Tigard-Tualatin School District Facility Plan for school facility capacity have been considered when evaluating applications for a comprehensive plan amendment or for a residential land use regulation amendment. The Tigard-Tualatin School District's School Facility Plan criteria (formula) for new school capacity are:

(TCR - SMR) * CSR = NC
(NC * CFF) / CSP = MNP
(MNP or MPS) * CSP = AC

Where:

CR		Total number of classrooms.
MR		Special mandated classrooms.
SR		Average class size policy for regular rooms.
C		Normal capacity.
FF		Core facility factor (kitchen, cafeteria, restrooms, offices, gym, music, mechanical: 0.12 for K-8 schools and 0.15 for 9-12 schools.
SP		Average class size policy for portables.
NP		Maximum number of portables, rounded up to the nearest whole number, or
PS		Maximum number of portables allowed on site, as determined by existing school capacity, above, or allowed by the City of Tualatin through land use decisions such as, but not limited to, conditional use

		permits.
C		Additional capacity.

(6) Granting the amendment is consistent with the applicable State of Oregon Planning Goals and applicable Oregon Administrative Rules, including compliance with the Transportation Planning Rule TPR (OAR 660-012-0060).

(7) Granting the amendment is consistent with the Metropolitan Service District's Urban Growth Management Functional Plan.

(8) Granting the amendment is consistent with Level of Service F for the p.m. peak hour and E for the one-half hour before and after the p.m. peak hour for the Town Center 2040 Design Type (TDC Map 9-4), and E/E for the rest of the 2040 Design Types in the City's planning area.

(9) Granting the amendment is consistent with the objectives and policies regarding potable water, sanitary sewer, and surface water management pursuant to TDC 12.020, water management issues are adequately addressed during development or redevelopment anticipated to follow the granting of a plan amendment.

(10) The applicant has entered into a development agreement.

(a) This criterion shall apply only to an amendment specific to property within the Urban Planning Area (UPA), also known as the Planning Area Boundary (PAB), as defined in both the Urban Growth Management Agreement (UGMA) with Clackamas County and the Urban Planning Area Agreement (UPAA) with Washington County. TDC Map 9-1 illustrates this area.

(b) This criterion is applicable to any issues about meeting the criterion within 1.032(9).

Section 2. TDC 3.010 is amended to read as follows:

(1) The development of the Plan for Tualatin was based as much as possible on objective data that measured conditions within the planning area. To obtain this data, the planning process was divided into 2 phases, with the first phase being data collection and the second phase being the preparation of a plan based on the collected data. The data was collected in a document entitled Phase I - Technical Memoranda. The Technical Memoranda described data concerning numerous topics. Those topics are described as follows:

(a) Citizen Involvement
Citizen Participation

(b) Land use

Natural Resource Inventory
Geological Resources
Flood Plains, Drainage and Wetlands
Fishery Resources
Wildlife Resources
Wetland Protection Regulations
Ecologically Significant Natural Areas
Vegetation
Soils Inventory, Urban/Rural Conflicts
Air Quality, Pollution Potentials
Noise Quality, Pollution Potentials
Groundwater Resources, High Groundwater and Weak Soils
Historical and Cultural Resource Inventory
Land Use Summary
Existing Land Use
Buildable Land Summary
Residential, Commercial and Industrial Demand
Population Forecast
Housing
Commercial/Industrial
Urbanization
Housing Inventory
Energy Conservation

(c) Public Facilities
Transportation
Public Services
Water Supply
Sewerage
Storm Drainage
Flooding and Natural Hazards
Recreation and Open Space
Schools
Electrical, Gas and Utilities

(2) To portray material lending itself to graphic description, a series of clear mylar overlays were produced. This series of overlays was useful in describing to the advisory committees and the public much of the information necessary to reach planning decisions. The graphic overlays cover the following topics and are available for review at the Tualatin City Hall.

(a) Slope Analysis (indicates areas that may be natural hazard areas).

(b) Soils Classifications (indicates areas that may be natural hazard areas).

(c) Water Areas and Wetlands (indicates areas that may be natural hazard areas).

(d) Vegetation and Wildlife.

(e) Recreation and Open Space Inventory.

(f) Street Classifications and Capacities.

(g) Major Street Inventory.

(h) Existing Land Use.

(i) Water Service Areas.

(j) Sewer Service Areas.

(3) To briefly acquaint the reader with some of the data that has been used in the Plan, the following summary has been written. The summary briefly describes the data and initial findings produced in the first planning phase. For a detailed review of data used in this Plan, please refer directly to Phase I - Technical Memoranda, City of Tualatin Historic Resource Technical Study and Inventory 1992/1993, City of Tualatin Natural Resource Inventory and Local Wetlands Inventory 1995, 2001 Transportation System Plan (TSP) and 2012 TSP Update (TSP Technical Memorandum, December 2012), and NW Tualatin Concept Plan 2005.

Section 3. TDC 3.080 is amended to read as follows:

(1) Transportation.

The following is a summary of the current condition of the transportation modes serving Tualatin from the 2012 Tualatin Transportation System Plan Update (TSP Technical Memorandum, December 2012):

(a) **Pedestrian:** Pedestrian facility needs include: fill sidewalk gaps on several arterials and collector streets; narrow or obstructed sidewalks; wide or angled crosswalks at intersections; and difficult crossing on major roadways (SW Boones Ferry Road, SW Tualatin-Sherwood Road, and roadways in the downtown core). Most of the pedestrian crashes reported in the 5-year crash study time frame occurred on SW Boones Ferry Road, generally when a vehicle failed to yield for pedestrians. Most crashes occurred when a vehicle was turning. ~~Central Tualatin, areas around schools (with the notable exception of Tualatin Elementary), and newer residential and industrial development generally have good pedestrian facilities. Older roadways in the industrial area, and roadways around the fringes of the city tend to have little or no pedestrian facilities. Sections of~~

~~Boones Ferry Road, Nyberg Street east of I-5, and I-5 overpasses lack sidewalks on one or both sides. Multiple-use pathways are provided within a number of City parks and greenways.~~

(b) **Bicycle**: Existing bicycle facilities in Tualatin have a few gaps and challenging connections such as: difficult left-turn maneuvers; constrained environment; difficult areas with low bike visibility; bike lanes outside of turn lanes; obstacles within the bike lanes; and gaps in the network. In addition to these needs, there are a number of high-crash locations. Most crashes result in an injury to the bicyclist, and most occur on a dry roadway surface in daylight conditions. High-crash locations include SW Boones Ferry Road and SW Tualatin-Sherwood Road, as well as the SW Nyberg Road interchange ramps at I-5.~~Bicycle attractors, such as schools, parks, retail centers, and public facilities, are generally not well served from the City's residential areas due to a lack of continuous bicycle facilities, and high traffic volumes on many of the City's collector streets. Central Tualatin, for example, lacks bicycle lanes on most internal streets, and on many approach routes. Although residential neighborhoods have a well-connected system of bicycle routes and the industrial area of western Tualatin are generally well-served internally by bicycle facilities, bicycle facilities from these areas to other bicycle attractors have not yet been established~~.

(c) **Multi-use Paths**: Additional bicycle and pedestrian connections over the Tualatin River are needed to connect with existing regional paths, as well as to provide alternate routes to the one existing Ki-a-Kuts bridge that is exclusively for bicycles and pedestrians (from Tualatin Community Park to Durham City Park in Durham). Additionally, many of the existing multi-use paths are fragmented and do not connect; signs and other wayfinding guides are needed to inform bicyclists or pedestrians how to move among the various pathways, and from the pathways to on-street facilities. The planned multi-use path network is only half constructed; once the system is complete, the multi-use path network will be more comprehensive.

~~(c)~~(d) **Transit:** TriMet does not provide transit service within all areas of Tualatin or on all major corridors. No transit service is provided on SW Tualatin-Sherwood Road or SW Tualatin Road, and many residents in the western portion of the City live more than a mile from the nearest transit line. Many residents who do live near a bus line are not served by transit at regular intervals during the day. Because of the limitations of service during off-peak hours, noncommuting trips may be more difficult to complete using transit in Tualatin. Community feedback indicated the following specific needs for transit: service connecting the west side of Tualatin to the downtown core; Park-and-rides in the west and south areas of Tualatin; extended service hours, including weekend service; and more direct connections to places other than downtown Portland.

(h)(e) **Roadways**: Some of the existing roadways do not meet City, County, or State design standards. Further, a number of major roadways intersect with other roadways at a skew. This creates sight distance limitations and, thus, safety concerns.

The two most highly-traveled roadways are SW Tualatin-Sherwood Road and SW Nyberg Road with over 20,000 vehicles per day. SW Tualatin Road and SW Boones Ferry Road corridors have 10,000 vehicles daily at multiple locations. Additionally, SW Tualatin-Sherwood Road carries a large amount of heavy vehicles, around 11.5 percent, with SW Boones Ferry Road carrying 8.4 percent heavy vehicles (compared with the average road in the Portland Metro area, which typically carries 2-4 percent heavy vehicles). Appendix B of the TSP Technical Memorandum (December 2012) provides a full description of existing (2011) roadway conditions, while Appendix C provides a description of future (2035) forecasted roadway conditions.

In the existing conditions analysis only two intersections - SW Martinazzi Avenue and SW Sagert Street, as well as SW Teton Avenue and SW Tualatin Road, were found to have greater congestion than mobility standards allow. In the future (2035) the number of intersections not meeting operations standards grew to twelve.

Key needs identified for the street system include: improved roadway connectivity; improved travel time along congested corridors; intersection improvements; and upgrading roadway geometries. Additionally, safety is a concern for the community, and safety issues were identified at the following intersections: SW Tualatin-Sherwood Road and SW Boones Ferry Road, and SW Nyberg Street and I-5 southbound off ramps.~~Intersections at I-5 interchanges, on Highway 99W, and in Central Tualatin operate at or close to capacity. Four unsignalized intersections currently meet traffic signal warrants (Teton/Avery; Sagert/65th; Nyberg/65th; Sagert/Martinazzi). The I-5 and I-205 freeways, Tualatin-Sherwood Road, Boones Ferry Road, Tualatin Road, Martinazzi Avenue, and Avery Street all have sections operating at or near capacity. Crash patterns requiring further investigation were identified at three intersections: Tualatin-Sherwood Road/Martinazzi; Nyberg/I-5 southbound ramp; Lower Boones Ferry/I-5 southbound ramp.~~

~~(i)~~(f) **Freight Routes**: The needs of the freight system are consistent with those identified in the Street System Plan. Projects that address needs related to truck routes, either directly or by providing alternate routes that improve traffic operations along truck routes, serve the needs of the freight system.~~Traffic congestion on Tualatin-Sherwood Road slows freight movements to and through Tualatin. Sharp corners and residential~~

~~neighborhoods along parallel routes constrain the use of those routes as alternates to Tualatin-Sherwood Road.~~

~~(e)~~(g) **Rail**: Portland and Western Railroad (PNWR) owns and operates two freight rail lines within the City. One track (running north-south) accommodates both freight and the WES commuter rail, and an east-west line runs along the south side of SW Herman Road. As of November 2012 the east-west line carries one train daily in each direction, and the north south has two freight trains daily in addition to the WES trains. PNWR has no current plans to increase freight service through Tualatin. Although the east-west track runs adjacent to manufacturing areas, no rail sidings or other access to businesses are planned.~~The Portland & Western Railroad and Willamette & Pacific operate two lines through the City of Tualatin for the movement of freight. Track conditions meet state guidelines. Industrial-zoned land abuts the rail lines, providing opportunities for potential customers to locate next to rail service. Planning is underway to develop a Wilsonville-Beaverton commuter rail line that would have a station in Tualatin. The closest AMTRAK passenger rail stations are located in Portland and Salem.~~

~~(d)~~(h) **Pipelines and Transmission Systems**: A natural gas transmission pipeline and a gasoline pipeline cross through the City. There is no anticipated need to increase pipeline capacity or construct new pipelines through the City, and therefore no such improvements are proposed in the TSP.~~Electric transmission lines, and natural gas distribution lines serve the City. No issues have been identified with these facilities.~~

~~(f)~~(i) **Air**: There are no airports within the City of Tualatin, although several airports are located within 30 miles of the City: the Aurora State Airport, Hillsboro Municipal Airport, and Portland International Airport. These airports meet the commercial, freight, and business aviation needs of Tualatin residents. No plans are proposed to construct airport facilities within the City of Tualatin; existing airports are anticipated to continue serving the citizens of Tualatin adequately.~~There are several public general-aviation airports that serve Tualatin. The closest airport is 12 miles south of Tualatin, in Aurora. The closest airport with scheduled passenger service is the Portland International Airport, 25 miles northeast of Tualatin.~~

~~(g)~~(j) **Water**~~Marine~~: The Tualatin River is the only large waterway within the City of Tualatin. ~~The river is not navigable from the Willamette River due to impassable areas and a diversion dam downstream.~~ The river is used primarily for recreation and is open for canoeing and kayaking. Therefore, the TSP does not include any specific policies, programs or projects for the Tualatin River as part of the transportation network. However, several projects are proposed in other sections of the TSP

Technical Memorandum (December 2012) to increase access to the river for recreation purposes.~~No navigable waterways are located in the vicinity of Tualatin. The closest marine facilities are located 12 miles to the north in Portland, Oregon.~~

(2) Sewer service areas. To assist in determining areas most suited to urban development, a sewer service area overlay was prepared to illustrate the feasibility of providing sewer service throughout the Tualatin Planning Area. The Study Area was divided into 4 categories of sewer service availability in order of increasing complexity and expense of service. In addition, properties that can be served by existing pumping stations are considered to have gravity-flow service available.

(3) Water service areas. As in the case of sewer service, the Tualatin Study Area was divided into 4 categories of water service availability. The 4 categories agreed closely with the 4 categories of sewer service. In addition to showing the degree of water service complexity and expense, the water service overlay depicts main transmission lines, reservoirs, water supply sources, and the approximate dividing line between the City's upper and lower water service levels.

(4) Storm drainage. The Tualatin Drainage Plan defines and describes areas of inadequate drainage throughout the Tualatin Study Area. The Plan, which was originally prepared in 1972, will need to be updated as part of the City's planning revision work, but the overall drainage patterns have not changed. The City's core area and the area along Boones Ferry Road, south of the core area, are the most critical from the standpoint of drainage. The former will be dealt with in conjunction with Urban Renewal Area improvements.

(5) Electrical service. The Study Area is well served with major Portland General Electric Co. (PGE) transmission lines. Line extensions to newly developing areas do not appear to be a problem.

(6) Gas service. The Tualatin area is well served by several large-capacity natural gas lines. The Northwest Natural Gas Co. has main trunk lines in the Bonneville Power Administration (BPA) right-of-way west of the Study Area. The City presently has a high percentage of natural gas use, which should be reviewed in light of probable future supply and cost.

(7) Telephone service. The Tigard-Tualatin area telephone system is presently overloading, causing delays in calling and some dissatisfaction among residents and businesses. The area is served by the General Telephone Co. A new central office is in operation in the Wilsonville area, reducing the overloading of the 638-exchanges. Because of recent and expected future growth in Tualatin, General Telephone Co. is proposing the development of a new central office in Tualatin, or the expansion of their Stafford office to handle the load.

(8) Schools. At this time, the existing Tualatin Elementary School is overcrowded. A new school in south Tualatin is planned to be completed for fall of 1979. This,

according to the School District, will relieve the overcrowding. There are no sites now for a third school, although the existing Comprehensive Plan indicates several potential locations. There are 3 general areas developing for residential use in the City. The southern part of the City will be served by the new school opening in 1979, as well as the existing school, which also serves the central area of the City. The 2 other areas are east of the freeway and west of the Tualatin Country Club. These should be the areas for future sites, depending upon projected population from future residential development. High school students in Tualatin are currently served by Tigard High School. According to the School District, a major high school in Tualatin is still many years away, but preliminary thinking for a site has begun. One small portion of the Study Area in the far southwest corner of the City is served by the Sherwood School District. A revision of boundaries may be necessary in this portion of the Study Area to conform the Tigard School District boundaries to those of the City.

(9) Parks.

(a) Developed. The only developed City park within the corporate City limits is the 23-acre Tualatin Community Park and a new 6.48-acre nature park. The Community Park provides for a broad range of activities for all ages and includes the Tualatin Community Center. Both parks are in the process of being improved.

(b) Undeveloped. There are 8 existing City park sites which are currently being developed.

(c) Future. Conceived as recreational possibilities for neighborhood and broader community use, 14 sites were inventoried. These sites are scattered throughout the urbanized areas of the City. Each site is unique in its own fashion, i.e., setting, topography, views, vegetation, access, or natural wildlife resources.

(10) Conservation management areas. These areas comprise some of the City's richest natural and scenic assets and should be maintained in their present rural character. Briefly, these areas are:

(a) The wetland marsh, bog and ponds.

(b) All the flood plain area generally below the 100-year flood line.

(c) All creek and drainageways.

(d) The Tualatin riverbank areas.

(11) Bikepaths and footpaths.

(a) An existing bike and footpath system has been implemented in some

sections of the City.

(b) Future extensions of the existing bike and footpath systems were proposed to provide the City with a complete network of trails. This system was mapped in overlay fashion as part of the Technical Memoranda.

(12) School recreational facilities.

(a) These are areas suitable for play areas for small children and some field activities for older children and adults. These sites would have to be developed via a joint use agreement between the City and the Tigard School District.

(b) Existing. Tualatin Elementary School.

(c) Future. New elementary school in south Tualatin and any additional elementary school sites.

(13) Other recreational facilities.

(a) Private. The Tualatin Country Club golf course provides a major private recreational facility in the City.

(b) Public. The City of Tigard maintains Cook Park across the Tualatin River, which is available to residents of Tualatin but has no direct access from Tualatin. The Tigard School District maintains a swim center at Tigard High School that is available for use by Tualatin residents.

(14) Views.

(a) Unlike the more distinctly contoured geographic sections of other parts of the urban area, Tualatin does not have spectacular views. Views of scenic areas in Tualatin are very subtle.

(b) Features. The most important views are of the drainages, bogs and wetlands; the Tualatin River; and outstanding groups of trees.

(c) Location. The most important view areas are the marsh and wetlands running in an east-westerly direction. In the southern portion of the City, there are occasional views through the vegetation to Mt. Hood, Mt. Scott, Kerr Mountain, Bull Mountain and Cooper Mountain. Particularly important views of Mt. Hood occur when looking easterly along Nyberg, Sagert and Avery Streets.

Section 4. The following definitions are amended alphabetically in TDC 31.060 to read as follows:

Barriers. Physical or topographic conditions that make a street or accessway connection impracticable. Such conditions include but are not limited to freeways; railroads; steep slopes; wetlands or other bodies of water where a connection could not reasonably be provided; where buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; and where streets or accessways would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of May 1, 1995, which preclude a required street or accessway connection, or the requirements of Titles 3 and 13 of the Metro Urban Growth Management Functional Plan (UGMFP).

Bike (Bicycle) Parking, Long-term. Facilities for parking bicycles for stays of more~~less~~ than four (4) hours and all-day/monthly.

Bike (Bicycle) Parking, Short-term. Facilities for parking bicycles for stays of less~~more~~ than four (4) hours ~~and all-day/monthly~~.

Major Driveway. Access is considered a major driveway when controlled by~~if a traffic impact analysis determines that~~ a traffic signal ~~is required~~.

Major Transit Stop. Existing and planned light rail stations, commuter rail stations and transit transfer stations, except for temporary facilities; other planned stops designated as major transit stops in TDC Chapter 11 (Figure 11-65); and existing stops which have or are planned for frequently scheduled fixed-route service.

Section 5. TDC 34.330 is amended to read as follows:

The following standards are minimum requirements for fences in a RL (Low Density Residential) or a RML (Medium Low Density Residential) Planning District, where an access-restricted lot line or property line abuts a public street classified as a major arterial, minor arterial, major collector, minor collector, or expressway by the Tualatin Functional Classification Plan, or abuts a state-owned interstate highway (I-5 or I-205).

(1) Subdivision or Partition of Property in a RL or RML Planning District.

Where property is the subject of a subdivision or partition application, and has an access-restricted property line(s) or lot line(s) that abuts a major arterial, minor arterial, major collector, minor collector, or expressway right-of-way or an interstate highway property line for a distance greater than 60 feet, a masonry fence shall be installed along the arterial/ collector/expressway/interstate highway frontage, in conformance with design standards set forth in TDC 34.340 and the fence standards set forth below:

(a) Required fencing shall be installed along the entire length of the access-restricted property line(s) or lot line(s) abutting the arterial/collector/expressway right-of-way or interstate highway property

line, except as provided in TDC 34.330(3), prior to issuance of any building permit on any parcel or lot created by the partition or subdivision.

(b) Except as provided in TDC 34.330(3), required fencing shall be located entirely outside of the public right-of-way or state-owned interstate highway property, and as close as physically possible to, approximately parallel with, either the property line or lot line abutting the arterial/collector/expressway right-of-way or interstate highway property line, or in the case of an arterial/collector/expressway street the ultimate right-of-way line, whichever is located furthest from the centerline of the street right-of-way.

(i) For public streets classified as an arterial/collector/expressway, as approved by the ~~City Engineer~~Community Development Director or their designee, the location of the ultimate right-of-way line shall be one-half of the right-of-way width specified in TDC Chapters 11 and ~~Chapter~~ 754 ~~of the Tualatin Development Code~~ for the appropriate classification of street, measured at right angles from the centerline of the actual street improvement, or measured at right angles from the centerline of the right-of-way, whichever method is determined most appropriate by the ~~City Engineer~~Community Development Director or their designee.

(ii) For public streets classified as an arterial/collector/expressway, if an owner is granted a variance from TDC 34.330(1)(b) standards, which results in a fence being located within the ultimate right-of-way area, the property owner shall execute a removal agreement, subject to City Council approval. The removal agreement shall provide that, after notice by the City, the property owner shall remove any structure, or portion thereof, that extends into the ultimate right-of-way, at no expense to the City. In case of default in that obligation, the City may cause such removal at the expense of the owner with all costs incurred to become a lien against such land or premises. The agreement shall also provide that the owner of the affected premises shall not be entitled to any damages or compensation in consequence of the City's exercise of its rights under the agreement. This provision shall not be construed as denying the owner of such property the right to just compensation for the unimproved value of any land taken for the widening of any street.

(c) Required fencing shall be installed such that stormwater drainage patterns and flow rates are not altered in a manner detrimental to property or persons.

(2) Replacement of Existing Fence, or Construction of New Fence in a RL or RML Planning District.

Where property is not the subject of a subdivision or partition application, and is developed with a single-family dwelling, and has an access-restricted property line or lot line that abuts a major arterial, minor arterial, major collector, minor collector, or expressway right-of-way, or interstate highway property line, the following fence standards apply:

(a) Replacement of an Existing Fence That Does Not Meet the Masonry Fence Standard.

Where an existing fence that does not meet the masonry fence standard set forth in TDC 34.340 is located approximately parallel with, and within ten feet of, an access-restricted property line or lot line that abuts an arterial/collector/ expressway right-of-way or interstate highway property line, AND more than 50 percent of fences that are constructed approximately parallel with, and within ten feet of, access-restricted property lines or lot lines that abut the same arterial/collector/expressway right-of-way line or interstate highway property line, in the interval between the nearest intersecting streets, or hypothetical extensions thereof in the case of interstate highways, located on both sides of the subject property (See Figure 34-1 for illustration), meet the masonry fence standard, then at the time that 60 percent or more of the length of the fence is removed, the entire length of the fence located along the arterial/collector/expressway/interstate highway frontage shall be removed and replaced with a fence that meets the masonry fence design standards set forth in TDC 34.340.

(i) Installation of required replacement fencing shall be complete within six months from the date that 60 percent or more of the length of the fence is removed;

(ii) Required fencing shall be located entirely outside of the public right-of-way or state-owned interstate highway property, and as close as physically possible to, approximately parallel with, the property line or lot line abutting the arterial/collector/expressway right-of-way or interstate highway property line, except as provided in TDC 34.330(3);

(iii) Required fencing shall be installed such that stormwater drainage patterns and flow rates are not altered in a manner detrimental to property or persons.

(b) Replacement or Repair of an Existing Fence that meets the Masonry Fence Standard.

Where an existing fence that meets the masonry fence standard set forth in TDC 34.340 is located approximately parallel with, and within ten feet of, an arterial/collector/expressway right-of-way or interstate highway property line, then at the time that any portion of the access-restricted property line or lot line that abuts a fence is removed, the fence shall be repaired or replaced in conformance with the masonry design standards set forth in TDC 34.340.

(i) Repair or replacement shall be complete within six months from the date that any portion of the fence is removed;

(ii) Required fencing shall be located entirely outside of the public right-of-way or state-owned interstate highway property, and as close as physically possible to, approximately parallel with, the property line or lot line abutting the arterial/collector/expressway right-of-way or interstate highway property line, except as provided in TDC 34.330(3);

(iii) Required fencing shall be installed such that stormwater drainage patterns and flow rates are not altered in a manner detrimental to property or persons.

(c) Construction of New Fence.

Where no existing fence is located approximately parallel with, and within ten feet of, an access-restricted property line or lot line that abuts an arterial/collector/expressway right-of-way or interstate highway property line, AND more than 50 percent of fences that are constructed approximately parallel with, and within ten feet of, access-restricted property lines or lot lines that abut the same arterial/collector/expressway right-of-way line or interstate highway property line, in the interval between the nearest intersecting streets, or hypothetical extensions thereof in the case of interstate highways, located on both sides of the subject property (See Figure 34-1 for illustration), meet the masonry fence standard, then any new fence that is constructed approximately parallel with, and within ten feet of, the access-restricted property line or lot line abutting the arterial/collector/expressway right-of-way or interstate highway property line, shall be in conformance with the required design standards set forth in TDC 34.340.

(i) Required fencing shall be located entirely outside of the public right-of-way or state-owned interstate highway property, and as close as physically possible to, approximately parallel with, the property line abutting the arterial/collector/expressway right-of-way

or interstate highway property line, except as provided in TDC 34.330(3);

(ii) Required fencing shall be installed such that stormwater drainage patterns and flow rates are not altered in a manner detrimental to property or persons.

(3) Exceptions to Fence Location or Configuration:

(a) For public streets classified as an arterial/collector/expressway, where the City Engineer determines that vehicular access is to be provided from the arterial/collector/expressway to a parcel or lot abutting the arterial/collector/expressway, the fence shall not be required along the arterial/collector/expressway frontage of that particular parcel or lot.

(b) For public streets classified as an arterial/collector/expressway, where the City Engineer determines that an opening or passage through the fence must be provided, the fence shall include such required opening. The same shall be provided in fences along state-owned interstate highways when required by the state or Tualatin Valley Fire & Rescue or the City Engineer.

(c) All vision clearance requirements set forth in TDC 73.400(16) shall be met.

(d) The City Engineer, in the case of public streets classified as an arterial/collector/expressway, or the state in the case of state-owned interstate highways, may require an alternate location or configuration of the fence alignment to accommodate stormwater facilities, easements, or other requirements, such as, but not limited to, bicycle paths, multi-use paths, or for maintenance purposes.

(e) For state-owned interstate highways, where an area of vegetation at least 200 linear feet in width runs parallel to the interstate highway and forms a visual, aesthetic or acoustic barrier, or land in a Natural Resource Protection Overlay (NRPO) district or other protected area as defined in TDC Chapter 72 runs parallel to the interstate highway, AND such land is located between the interstate highway property line and the developable area of a property being developed in the RL or RML Planning District, no fence shall be required. Where the area of vegetation is less than 200 linear feet in width, the required fence shall be located entirely outside the vegetated, NRPO or other protected area and as close as physically possible to, approximately parallel with, the edge of said vegetated, NRPO or other protected area on the developable portion of the property being developed.

Section 6. TDC 38.140 is amended to read as follows:

(1) No sign shall be permitted in the RL Planning District for permitted uses and conditional uses that allow single family dwellings except the following:

(a) Subdivision, home occupation and public transit shelter signs in accordance with TDC 38.110(15), (11) and (14).

(2) No sign shall be permitted in the RL Planning District for conditional uses other than single family dwellings except the following:

(a) Subdivision, home occupation and public transit shelter signs in accordance with TDC 38.110(15), (11) and (14).

(b) Monument signs are permitted. If used, the following standards apply.

(i) Number: One per frontage on a public street right-of-way, and no more than one on each frontage.

(ii) Number of Sides: No more than two.

(iii) Height Above Grade: No higher than five feet.

(iv) Area: No more than 18 square feet.

(v) Illumination: Indirect.

(vi) Location: No greater than 30 feet from the frontage property line along the public street right-of-way.

(vii) For churches the sign may be an internally illuminated mechanical readerboard provided it is on the frontage of an arterial or collector street designated in ~~the~~ TDC Chapter 11, ~~Table~~ Figure 11-~~2~~1, and the readerboard portion is no more than 75 percent of the allowed sign face area.

(c) Wall signs are permitted. If used, the following standards apply:

(i) Number: In addition to the monument signs permitted in TDC 38.140(2)(b) above, each building on the site is permitted one wall sign, provided that the building has no less than 2000 square feet of gross floor area.

(ii) Number of Sides: No more than one.

(iii) Height Above Grade: No higher than the height of the sign band.

(iv) Area: One wall sign on one of the buildings shall be no more than 16 square feet. Wall signs on all other buildings shall be no more than eight square feet.

(v) Illumination: Indirect.

(d) In place of one of the monument signs allowed in TDC 38.140(2)(b) above, public K-12 schools are permitted pole signs subject to the following standards:

(i) Number: One per school site. Not allowed on a public high school site where an electronic message display monument sign subject to TDC 38.140(2)(e) is present.

(ii) Number of Sides: No more than two.

(iii) Height Above Grade: No higher than 15 feet.

(iv) Height of Sign Face: No higher than five feet.

(v) Area: No more than 35 square feet.

(vi) Illumination: Internal or indirect.

(vii) Mechanical Readerboard: The sign may be a mechanical readerboard.

(viii) Location: Elementary school readerboards shall be on an arterial public street right-of-way frontage or a collector frontage if no arterial frontage exists.

(e) In addition to a monument sign allowed in TDC 38.140(2)(b) above, a public high school (Grades 9-12) on a property of 40 acres or larger in area is permitted one freestanding monument sign with an electronic message display subject to the following standards:

(i) Number: One per school site.

(ii) Number of Sides: No more than two.

(iii) Height Above Grade: No higher than 8 feet.

(iv) Height of Sign Face: No higher than 6 feet

(v) Area of Sign Face: No more than 32 square feet with the electric display occupying no more than 75% of the sign face area.

(vi) Illumination of non-electronic sign face: Internal including halo effect illumination.

(vii) Electronic Message display shall have a maximum transition time between messages of 2 seconds, have a minimum display time where the image remains static for a period of 20 seconds or more; have a maximum luminance of 500 candelas per square meter after sunset and before sunrise; and shall be equipped with an automatic dimming feature that adjusts for ambient light levels.

(viii) Time of Operation: Electronic message display is restricted from the hours of 10:00 pm. to 7:00 am.

(ix) Location: An electronic message display shall be located within 30 ft. of an arterial public street right-of-way frontage and no closer than 100 ft. to a residential property.

(f) In place of the wall signs allowed in TDC 38.140(2)(c) above, public schools are permitted wall signs subject to the following standards:

(i) Number: Each building on the school site is permitted wall signage on each elevation. One sign per elevation is allowed.

(ii) Number of Sides: No more than one.

(iii) Height Above Grade: No higher than the height of the sign band.

(iv) Height of Sign Face: No higher than five feet, except that one wall sign on the east elevation of the primary building at a public high school may be up to 10 feet in height.

(v) Area: No more than 75 square feet, except one wall sign on the east elevation of the primary building at a public high school shall not exceed 300 square feet.

(vi) Illumination: Internal or indirect.

(3) See TDC 38.110(5-15) for additional signage and if used, the standards of TDC 38.110(5-15) apply.

Section 7. TDC 38.240 is amended to read as follows:

(1) No sign shall be permitted in the ML, MG or MP Planning Districts for permitted and conditional uses except the following:

(a) Monument signs are permitted. If used, the following standards apply:

(i) Location on Site: No greater than 100 feet from the frontage property line along the public street right-of-way.

(ii) Number: One per frontage on a public street right-of-way with a maximum of two and no more than one on each frontage.

(iii) Number of Sides: No more than two.

(iv) Height Above Grade: No higher than 10 feet.

(v) Area: No more than 40 square feet.

(vi) Illumination: Indirect or internal.

(vii) For schools for kindergarten through 12 in a ML Planning District, one sign may be an internally illuminated mechanical readerboard provided it is on the frontage of an arterial or collector street designated in TDC Chapter 11, Figure 11-1~~Table 11-2~~ and the readerboard portion is no more than 75 percent of the allowed sign face area.

(b) Wall signs are permitted. If used, the following standards apply:

(i) Number: One on each owned or leased wall not to exceed two walls for each owned or leased space and not to exceed four elevations of each building.

(ii) Number of Sides: No more than one.

(iii) Height Above Grade: No higher than the height of the sign band.

(iv) Height of Each Letter, Number, Symbol or Logo: No higher than four feet.

(v)Area: No more than five percent of the wall's elevation provided that an area of at least 32 square feet is permitted and the maximum is 150 square feet.

(vi) Illumination: Indirect or internal.

(vii) In the MP District in place of one wall sign, one monument sign, in addition to the monument signs allowed in (a) above, is allowed, provided it is in the yard setback area abutting the wall where the wall sign would have been located, is within 100 feet of a primary public customer doorway in the wall where the wall sign would have been located and is at least 100 feet from any other monument sign.

(2) See TDC 38.110(5-17) for additional signage and if used, the standards of TDC 38.110(5-17) apply.

Section 8. TDC 38.250 is amended to read as follows:

(1) No sign shall be permitted in the IN Planning District for permitted and conditional uses except the following:

(a) Monument signs, as set forth in TDC 38.110(1), are permitted, subject to the following standards:

(i) Number: One per motor vehicle access to a public street right-of-way and no more than one at each motor vehicle access.

(ii) Location: Monument signs shall be located no further than 75 feet from motor vehicle access.

(iii) Number of Sides: No more than two.

(iv) Height Above Grade: No higher than eight feet.

(v) Area: Each permitted monument sign shall be no more than 32 square feet.

(vi) Illumination: Indirect or internal.

(vii) Electronic Message or Mechanical Readerboard is permitted in place of or as part of a permitted monument sign on the frontage of an arterial or collector street designated in ~~the~~ TDC Chapter 11, ~~Table 11-2~~ Figure 11-1, provided that the readerboard portion is no more than 75 percent of the allowed sign face area.

(b) Wall signs within a sign band, where the sign band is no higher than 17 feet from the grade used to measure height of structure, are permitted, as set forth in TDC 38.110(3), subject to the following standards:

(i) Number: Each building on site is permitted one wall sign per habitable floor elevation, provided that the building has no less than 2,000 square feet of gross floor area.

(ii) Number of Sides: No more than one.

(iii) Height Above Grade: No higher than the height of the sign band.

(iv) Area: Each wall sign shall be no more than 75 square feet.

(v) Height of Sign Face: No higher than five feet.

(vi) Illumination: Internal or indirect.

(c) Wall signs within a sign band, where the sign band is higher than 17 feet from the grade used to measure height of structure, are permitted, as set forth in TDC 38.110(3), subject to the following standards:

(i) Number: Each building on site is permitted one wall sign per habitable floor elevation, provided that the building has no less than 2,000 square feet of gross floor area.

(ii) Number of Sides: No more than one.

(iii) Height Above Grade: No higher than the height of the sign band.

(iv) Area: Each wall sign shall be no more than eight square feet.

(v) Height of Sign Face: No higher than three feet.

(vi) Illumination: Internal or indirect.

(d) See TDC 38.110(5-15) for additional signage and if used, the standards of TDC 38.110(5-15) apply.

Section 9. TDC 71.065 is amended to read as follows:

Except as otherwise provided for, or permitted, by the provisions of this chapter, and subject to the provisions of the Resource Management Plan, no permanent use of the Wetlands Protected Area (WPA) will be allowed other than passive nature study, wildlife protection and enhancement, the north-south collector road (90th Avenue) and pedestrian bridge through the Zidell property (2S1 23 100), and other activities compatible with the intent, purposes and objectives of this chapter above set forth. ~~The north-south collector shall be located according to Figure 11-2 of the Tualatin~~

~~Development Code.~~ The pedestrian bridge shall be located within 300 foot wide corridor west of the Pratt-Broome property (2S1 23 100).

Except as otherwise provided for, or permitted by the provisions of this chapter (and subject to the Resource Management Plan), no permanent use of the Sweek Pond Management Area (SPMA) will be allowed other than the following uses:

- Public uses;
- Habitat protection;
- Water supply protection;
- Enhancement;
- Restoration;
- Wetland resource protection;
- Historic houses such as the ("Hedges House") relocation;
- Environmental educational facility;
- Gardens;
- Landscaping;
- Trails;
- Parking lot;
- Lighting;
- Signing;
- Picnic facilities;
- Boardwalk with viewing platform into Sweek Pond;
- Access road east of Pond area; and
- Other uses deemed to be consistent with the Resource Management Plan.

All uses in the WPA and SPMA will be subject to the following provisions:

(1) Such permitted uses shall be in all cases and at all times remain subject to the provisions of TDC 71.090(2) and (3) of this chapter and to such other or further restrictions or conditions as may be, or become, reasonably necessary to afford to the owner(s) or to others entitled to possession or control of the area reasonable assurance that they will suffer or incur no loss, damage, expense or liability of any kind by reason of such uses or any activities undertaken in connection therewith.

(2) No discharge of firearms, trapping, poisoning, or intentional destruction of wildlife shall be permitted in the Wetlands Protection District (WPD).

(3) Annual monitoring of the number of plant and animal species and the number within each species occurring within the Wetlands Protection Area (WPA) and 40-foot setback within the Wetlands Fringe Area (WFA) may be undertaken by conservation groups under the supervision, or with the approval, of the Oregon Department of Fish and Wildlife.

(4) Uses occurring within the Wetlands Fringe Area (WFA) shall be restricted to those uses allowed by the primary planning district classifications and standards.

(5) Structures and other permanent improvements to land lying adjacent to the boundary of the Wetlands Protected Area (WPA) and Sweek Pond Management Area (SPMA) shall be located as far removed from such boundary as is consistent with the development objectives and plans of the owners or developers of such adjacent property, subject in all cases to the provisions of TDC 71.061 of this chapter.

(6) Where upland development occurs and immediately adjacent to the Wetlands Protected Area (WPA) and the 40-foot setback provided for by TDC 71.061, such development and usages associated therewith shall be effected in such a manner as to minimize to the greatest extent practicable, consistent with full development and usage of the Wetlands Fringe Area (WFA), disturbance of recognized valuable wildlife forms within the Wetlands Protected Area (WPA) by automobile, truck and pedestrian traffic, shipping and receiving activities, trash and refuse pickup or disposal activities, and outdoor production or manufacturing operations.

Section 10. TDC 71.067 is amended to read as follows:

All crossings of the Wetland Protection District have been completed and no additional crossings are contemplated.

~~(1) A new north-south collector street as more specifically described in Chapter 11 shall be permitted.~~

~~(2) Vehicle Access to the pond area of the Sweek Pond Management Area shall be provided by an access road located adjacent to the east side of such pond area. The right-of-way shall be 45 feet and the centerline shall be located within a 45 foot wide corridor, that being 22.5 feet on either side of the centerline described in Exhibit F. The access road shall be located so as to limit the impact on the Wetlands Protected Area (WPA) and the Sweek Pond Management Area (SPMA) as much as practicable. This access road shall be used to connect the RH/HR District on the east with the RH District on the west.~~

~~(3) A public pedestrian bridge over the Wetlands Protected Area is permitted, provided the bridge shall not impact an area of more than approximately 2,614 square feet within the WPA, shall be located within a corridor, described in Exhibit G. the pedestrian bridge shall be located so as to limit the impact on the Wetlands Protected Area (WPA) as much as practicable.~~

Section 11. TDC 73.160 is amended to read as follows:

The following standards are minimum requirements for commercial, industrial, public and semi-public development, and it is expected that development proposals shall meet or exceed these minimum requirements.

(1) Pedestrian and Bicycle Circulation.

(a) For commercial, public and semi-public uses:

(i) a walkway shall be provided between the main entrance to the building and any abutting public right-of-way of an arterial or collector street where a transit stop is designated or provided. The walkway shall be a minimum of 6 feet wide and shall be constructed of concrete, asphalt, or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be ADA compliant, if applicable;

(ii) walkways shall be provided between the main building entrances and other on-site buildings and accessways. The walkways shall be a minimum of 6 feet wide and shall be constructed of concrete, asphalt, or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be ADA compliant, if applicable;

(iii) walkways through parking areas, drive aisles, and loading areas shall be visibly raised and of a different appearance than the adjacent paved vehicular areas;

(iv) accessways shall be provided as a connection from the development's internal bikeways and walkways to all of the following locations that apply: abutting arterial or collector streets upon which transit stops or bike lanes are provided or designated; abutting undeveloped residential or commercial areas; adjacent undeveloped sites where an agreement to provide an accessway connection exists; and to abutting publicly-owned land intended for general public use, including schools;

(v) fences or gates which prevent pedestrian and bike access shall not be allowed at the entrance to or exit from any accessway.

(vi) bikeways shall be provided which link building entrances and bike facilities on the site with the adjoining public right-of-way and accessways.

(vii) Outdoor Recreation Access Routes shall be provided between the development's walkway and bikeway circulation system and parks, bikeways and greenways where a bike or pedestrian path is designated.

(b) For Industrial Uses:

(i) a walkway shall be provided from the main building entrance to sidewalks in the public right-of-way and other on-site buildings and accessways. The walkway shall be a minimum of 5 feet wide and constructed of concrete, asphalt, or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be ADA compliant, if applicable.

(ii) Walkways through parking areas, drive aisles and loading areas shall have a different appearance than the adjacent paved vehicular areas.

(iii) Accessways shall be provided as a connection between the development's walkway and bikeway circulation system and an adjacent bike lane;

(iv) Accessways may be gated for security purposes;

(v) Outdoor Recreation Access Routes shall be provided between the development's walkway and bikeway circulation system and parks, bikeways and greenways where a bike or pedestrian path is designated.

(c) Curb ramps shall be provided wherever a walkway or accessway crosses a curb.

(d) Accessways shall be a minimum of 8 feet wide and constructed in accordance with the Public Works Construction Code if they are public accessways, and if they are private accessways they shall be constructed of asphalt, concrete or a pervious surface such as pervious asphalt or concrete, pavers or grasscrete, but not gravel or woody material, and be ADA compliant, if applicable.

(e) Accessways to undeveloped parcels or undeveloped transit facilities need not be constructed at the time the subject property is developed. In such cases the applicant for development of a parcel adjacent to an undeveloped parcel shall enter into a written agreement with the City guaranteeing future performance by the applicant and any successors in interest of the property being developed to construct an accessway when the adjacent undeveloped parcel is developed. The agreement shall be subject to the City's review and approval.

(f) Where a bridge or culvert would be necessary to span a designated greenway or wetland to provide a connection to a bike or pedestrian path, the City may limit the number and location of accessways to reduce the impact on the greenway or wetland.

(g) Accessways shall be constructed, owned and maintained by the property owner.

(2) Drive-up Uses.

(a) Drive-up uses shall provide a minimum stacking area clear of the public right-of-way and parking lot aisles from the window serving the vehicles as follows:

(i) Banks--each lane shall provide a minimum capacity for five automobiles.

(ii) Restaurants--each lane shall provide a minimum capacity for eight automobiles.

(iii) Other Drive-Up Uses--each lane shall provide a minimum capacity for two to eight automobiles, as determined through the architectural review process.

(iv) For purposes of this Section, an automobile shall be considered no less than twenty feet in length. The width and turning radius of drive-up aisles shall be approved through the architectural review process.

(b) Parking maneuvers shall not occur in the stacking area. The stacking area shall not interfere with safe and efficient access to other parking areas on the property.

(c) Locate drive-up aisles and windows a minimum of 50 feet from residential planning districts to avoid adverse impacts. A wall or other visual or acoustic may be required through the architectural review process.

(3) Safety and Security.

(a) Locate windows and provide lighting in a manner which enables tenants, employees and police to watch over pedestrian, parking and loading areas.

(b) In commercial, public and semi-public development and where possible in industrial development, locate windows and provide lighting in a manner which enables surveillance of interior activity from the public right-of-way.

(c) Locate, orient and select on-site lighting to facilitate surveillance of on-site activities from the public right-of-way without shining into public rights-of-way or fish and wildlife habitat areas.

(d) Provide an identification system which clearly locates buildings and their entries for patrons and emergency services.

(e) Shrubs in parking areas must not exceed 30 inches in height. Tree canopies must not extend below 8 feet measured from grade.

(f) Above ground sewer or water pumping stations, pressure reading stations, water reservoirs, electrical substations, and above ground natural gas pumping stations shall provide a minimum 6' tall security fence or wall.

(4) Service, Delivery and Screening.

(a) On and above grade electrical and mechanical equipment such as transformers, heat pumps and air conditioners shall be screened with sight obscuring fences, walls or landscaping.

(b) Outdoor storage, excluding mixed solid waste and source separated recyclables storage areas listed under TDC 73.227, shall be screened with a sight obscuring fence, wall, berm or dense evergreen landscaping.

(c) Above ground pumping stations, pressure reading stations, water reservoirs; electrical substations, and above ground natural gas pumping stations shall be screened with sight-obscuring fences or walls and landscaping.

(5) The Federal Americans with Disabilities Act (ADA) applies to development in the City of Tualatin. Although TDC, Chapter 73 does not include the Oregon Structural Specialty Code' s (OSSC) accessibility standards as requirements to be reviewed during the Architectural Review process, compliance with the OSSC is a requirement at the Building Permit step. It is strongly recommended all materials submitted for Architectural Review show compliance with the OSSC.

(6) (a) All industrial, institutional, retail and office development on a transit street designated in TDC Chapter 11 (Figure ~~11-6~~11-5) shall provide either a transit stop pad on-site, or an on-site or public sidewalk connection to a transit stop along the subject property's frontage on the transit street.

(b) In addition to (a) above, new retail, office and institutional uses abutting major transit stops as designated in TDC Chapter 11 (Figure ~~11-6~~11-5) shall:

(i) locate any portion of a building within 20 feet of the major transit stop or provide a pedestrian plaza at the transit stop;

(ii) provide a reasonably direct pedestrian connection between the major transit stop and a building entrance on the site;

(iii) provide a transit passenger landing pad accessible to disabled persons;

(iv) provide an easement or dedication for a passenger shelter as determined by the City; and

(v) provide lighting at the major transit stop.

Section 12. TDC 73.370 is amended to read as follows:

(1) General Provisions.

(a) At the time of establishment of a new structure or use, or change in use, or change in use of an existing structure, within any planning district of the City, off-street parking spaces, off-street vanpool and carpool parking spaces for commercial, institutional and industrial uses, off-street bicycle parking, and off-street loading berths shall be as provided in this and following sections, unless greater requirements are otherwise established by the conditional use permit or the Architectural Review process, based upon clear findings that a greater number of spaces are necessary at that location for protection of public health, safety and welfare or that a lesser number of vehicle parking spaces will be sufficient to carry out the objectives of this section. In the Central Design District, the Design Guidelines of TDC 73.610 shall be considered. In case of conflicts between guidelines or objectives in TDC Chapter 73, the proposal shall provide a balance.

(b) At the time of enlargement of an existing multi-family residential, commercial, institutional or industrial structure or use, TDC 73.370 shall apply to the existing and enlarged structure or use.

(c) Except where otherwise specified, the floor area measured shall be the gross floor area of the building primary to the function of the particular use of the property other than space devoted to off-street parking or loading.

(d) Where employees are specified, the term shall apply to all persons, including proprietors, working on the premises during the peak shift.

(e) Calculations to determine the number of required parking spaces and loading berths shall be rounded to the nearest whole number.

(f) If the use of a property changes, thereby increasing off-street parking or loading requirements, the increased parking/loading area shall be provided prior to commencement of the new use.

(g) Parking and loading requirements for structures not specifically listed herein shall be determined by the Community Development Director, based upon requirements of comparable uses listed.

(h) When several uses occupy a single structure, the total requirements for off-street parking may be the sum of the requirements of the several uses computed separately or be computed in accordance with TDC 73.370(1)(m), Joint Use Parking.

(i) Off-street parking spaces for dwellings shall be located on the same lot with the dwelling. Other required parking spaces may be located on a separate parcel, provided the parcel is not greater than five hundred (500) feet from the entrance to the building to be served, measured along the shortest pedestrian route to the building. The applicant must prove that the parking located on another parcel is functionally located and that there is safe vehicular and pedestrian access to and from the site. The parcel upon which parking facilities are located shall be in the same ownership as the structure.

(j) Required parking spaces shall be available for the parking of operable passenger automobiles of residents, customers, patrons and employees and shall not be used for storage of vehicles or materials or for the parking of trucks used in conducting the business.

(k) Institution of on-street parking, where none is previously provided, shall not be done solely for the purpose of relieving crowded parking lots in commercial or industrial planning districts.

(l) Parking facilities may be shared by users on adjacent parcels if the following standards are met:

(i) One of the parcels has excess parking spaces, considering the present use of the property; the other parcel lacks sufficient area for required parking spaces.

(ii) The total number of parking spaces meets the standards for the sum of the number of spaces which would be separately required for each use.

(iii) Legal documentation, to the satisfaction of the City Attorney, shall be submitted verifying permanent use of the excess parking area on one lot by patrons of the uses deficient in required parking area.

(iv) Physical access between adjoining lots shall be such that functional and reasonable access is actually provided to uses on the parcel deficient in parking spaces.

(v) Adequate directional signs shall be installed specifying the joint parking arrangement.

(vi) Areas in the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or a Clean Water Services Vegetated Corridor would be better protected.

(m) Joint Use Parking. Joint use of parking spaces may occur where two or more separate developments or multiple uses in a development are able to jointly use some or all of the same required parking spaces because their parking demands occur at different times. Joint use of parking spaces may be allowed if the following standards are met:

(i) There shall be no substantial conflict in the principal operating hours of the buildings or uses for which the joint use parking is proposed. Future change of use, such as expansion of a building or establishment of hours of operation which conflict with or affect a joint use parking agreement are prohibited, unless approval is obtained through the Architectural Review process;

(ii) The joint use parking spaces shall be located no more than 500 feet from a building or use to be served by the joint use parking;

(iii) The number and location of parking spaces, hours of use and changes in operating hours of uses subject to joint use shall be approved through the Architectural Review process;

(iv) Legal documentation, to the satisfaction of the City Attorney, shall be submitted verifying the joint use parking between the separate developments. Joint use parking agreements may include provisions covering maintenance, liability, hours of use and cross easements; and

(v) The City Attorney approved legal documentation shall be recorded by the applicant at the Washington or Clackamas County Recorder's Office and a copy of the recorded document submitted to the Planning Department prior to issuance of a building permit.

(vi) Areas in the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or a Clean Water Services Vegetated Corridor would be better protected.

(n) Bicycle parking facilities shall ~~either be~~ include long-term parking that consists of covered, secure stationary racks, lockable enclosures, or rooms

(indoor or outdoor) in which the bicycle is stored, ~~or~~ and short-term parking provided by secure stationary racks (covered or not covered), which accommodate a bicyclist's lock securing the frame and both wheels. The Community Development Director, their designee, or the Architectural Review Board may approve a form of bicycle parking not specified in these provisions but that meets the needs of long-term and/or short-term parking pursuant to Section 73.370.

(o) Each bicycle parking space shall be at least 6 feet long and 2 feet wide, and overhead clearance in covered areas shall be at least 7 feet, unless a lower height is approved through the Architectural Review process.

(p) A 5-foot-wide bicycle maneuvering area shall be provided beside or between each row of bicycle parking. It shall be constructed of concrete, asphalt or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be maintained.

(q) Access to bicycle parking shall be provided by an area at least 3 feet in width. It shall be constructed of concrete, asphalt or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be maintained.

(r) Required bicycle parking shall be located in convenient, secure, and well-lighted locations approved through the Architectural Review process. Lighting, which may be provided, shall be deflected to not shine or create glare into street rights-of-way or fish and wildlife habitat areas.

(s) Long-term b~~B~~icycle parking facilities may be provided inside a building in suitable secure and accessible locations.

(t) Bicycle parking may be provided within the public right-of-way in the Core Area Parking District subject to approval of the City Engineer and provided it meets the other requirements for bicycle parking.

(u) Bicycle parking areas and facilities shall be identified with appropriate signing as specified in the Manual on Uniform Traffic Control Devices (MUTCD) (latest edition). At a minimum, bicycle parking signs shall be located at the main entrance and at the location of the bicycle parking facilities.

(v) Required bicycle parking spaces shall be provided at no cost to the bicyclist, or with only a nominal charge for key deposits, etc. This shall not preclude the operation of private for-profit bicycle parking businesses.

(w) Parking on existing residential, commercial and industrial development may be redeveloped as a transit facility as a way to encourage the development of transit supportive facilities such as bus stops and pullouts, bus shelters and park and ride stations. Parking spaces converted to such uses in conjunction with the transit agency and approved through the Architectural Review process will not be required to be replaced.

(x) Required vanpool and carpool parking shall meet the 9-foot parking stall standards in Figure 73-1 and be identified with appropriate signage.

(2) Off-Street Parking Provisions.

(a) The following are the minimum and maximum requirements for off-street motor vehicle parking in the City, except for minimum parking requirements for the uses in TDC 73.370(2)(a) (Residential Uses: iii, iv, v, vi, vii; Places of Public Assembly: I, ii, iv; Commercial Amusements: I, ii; and Commercial: I, ii, xi, xii, xiv) within the Core Area Parking District (CAPD). Minimum standards for off-street motor vehicle parking for the uses in 73.370(2) (a) Residential Uses: iii, iv, v, vi, vii; Places of Public Assembly: I, ii, iv; Commercial Amusements: I, ii; and Commercial: I, ii, xi, xii, xiv in the CAPD are in TDC 73.370(2)(b). The maximum requirements are divided into Zone A and Zone B, as shown on the Tualatin Parking Zone Map, Figure 73-3. The following are exempt from calculation of maximum parking requirements: parking structures; fleet parking; parking for vehicles for sale, lease or rent; car/vanpool parking; dedicated valet parking; and user-paid parking.

Section 13. TDC 73.370 is amended to read as follows:

(1) General Provisions.

(a) At the time of establishment of a new structure or use, or change in use, or change in use of an existing structure, within any planning district of the City, off-street parking spaces, off-street vanpool and carpool parking spaces for commercial, institutional and industrial uses, off-street bicycle parking, and off-street loading berths shall be as provided in this and following sections, unless greater requirements are otherwise established by the conditional use permit or the Architectural Review process, based upon clear findings that a greater number of spaces are necessary at that location for protection of public health, safety and welfare or that a lesser number of vehicle parking spaces will be sufficient to carry out the objectives of this section. In the Central Design District, the Design Guidelines of TDC 73.610 shall be considered. In case of conflicts between guidelines or objectives in TDC Chapter 73, the proposal shall provide a balance.

(b) At the time of enlargement of an existing multi-family residential, commercial, institutional or industrial structure or use, TDC 73.370 shall apply to the existing and enlarged structure or use.

(c) Except where otherwise specified, the floor area measured shall be the gross floor area of the building primary to the function of the particular use of the property other than space devoted to off-street parking or loading.

(d) Where employees are specified, the term shall apply to all persons, including proprietors, working on the premises during the peak shift.

(e) Calculations to determine the number of required parking spaces and loading berths shall be rounded to the nearest whole number.

(f) If the use of a property changes, thereby increasing off-street parking or loading requirements, the increased parking/loading area shall be provided prior to commencement of the new use.

(g) Parking and loading requirements for structures not specifically listed herein shall be determined by the Community Development Director, based upon requirements of comparable uses listed.

(h) When several uses occupy a single structure, the total requirements for off-street parking may be the sum of the requirements of the several uses computed separately or be computed in accordance with TDC 73.370(1)(m), Joint Use Parking.

(i) Off-street parking spaces for dwellings shall be located on the same lot with the dwelling. Other required parking spaces may be located on a separate parcel, provided the parcel is not greater than five hundred (500) feet from the entrance to the building to be served, measured along the shortest pedestrian route to the building. The applicant must prove that the parking located on another parcel is functionally located and that there is safe vehicular and pedestrian access to and from the site. The parcel upon which parking facilities are located shall be in the same ownership as the structure.

(j) Required parking spaces shall be available for the parking of operable passenger automobiles of residents, customers, patrons and employees and shall not be used for storage of vehicles or materials or for the parking of trucks used in conducting the business.

(k) Institution of on-street parking, where none is previously provided, shall not be done solely for the purpose of relieving crowded parking lots in commercial or industrial planning districts.

(l) Parking facilities may be shared by users on adjacent parcels if the following standards are met:

(i) One of the parcels has excess parking spaces, considering the present use of the property; the other parcel lacks sufficient area for required parking spaces.

(ii) The total number of parking spaces meets the standards for the sum of the number of spaces which would be separately required for each use.

(iii) Legal documentation, to the satisfaction of the City Attorney, shall be submitted verifying permanent use of the excess parking area on one lot by patrons of the uses deficient in required parking area.

(iv) Physical access between adjoining lots shall be such that functional and reasonable access is actually provided to uses on the parcel deficient in parking spaces.

(v) Adequate directional signs shall be installed specifying the joint parking arrangement.

(vi) Areas in the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or a Clean Water Services Vegetated Corridor would be better protected.

(m) Joint Use Parking. Joint use of parking spaces may occur where two or more separate developments or multiple uses in a development are able to jointly use some or all of the same required parking spaces because their parking demands occur at different times. Joint use of parking spaces may be allowed if the following standards are met:

(i) There shall be no substantial conflict in the principal operating hours of the buildings or uses for which the joint use parking is proposed. Future change of use, such as expansion of a building or establishment of hours of operation which conflict with or affect a joint use parking agreement are prohibited, unless approval is obtained through the Architectural Review process;

(ii) The joint use parking spaces shall be located no more than 500 feet from a building or use to be served by the joint use parking;

(iii) The number and location of parking spaces, hours of use and changes in operating hours of uses subject to joint use shall be approved through the Architectural Review process;

(iv) Legal documentation, to the satisfaction of the City Attorney, shall be submitted verifying the joint use parking between the separate developments. Joint use parking agreements may include provisions covering maintenance, liability, hours of use and cross easements; and

(v) The City Attorney approved legal documentation shall be recorded by the applicant at the Washington or Clackamas County Recorder's Office and a copy of the recorded document submitted to the Planning Department prior to issuance of a building permit.

(vi) Areas in the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or a Clean Water Services Vegetated Corridor would be better protected.

(n) Bicycle parking facilities shall either be lockable enclosures in which the bicycle is stored, or secure stationary racks which accommodate a bicyclist's lock securing the frame and both wheels.

(o) Each bicycle parking space shall be at least 6 feet long and 2 feet wide, and overhead clearance in covered areas shall be at least 7 feet, unless a lower height is approved through the Architectural Review process.

(p) A 5-foot-wide bicycle maneuvering area shall be provided beside or between each row of bicycle parking. It shall be constructed of concrete, asphalt or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be maintained.

(q) Access to bicycle parking shall be provided by an area at least 3 feet in width. It shall be constructed of concrete, asphalt or a pervious surface such as pavers or grasscrete, but not gravel or woody material, and be maintained.

(r) Required bicycle parking shall be located in convenient, secure, and well-lighted locations approved through the Architectural Review process. Lighting, which may be provided, shall be deflected to not shine or create glare into street rights-of-way or fish and wildlife habitat areas.

(s) Bicycle parking facilities may be provided inside a building in suitable secure and accessible locations.

(t) Bicycle parking may be provided within the public right-of-way in the Core Area Parking District subject to approval of the City Engineer and provided it meets the other requirements for bicycle parking.

(u) Bicycle parking areas and facilities shall be identified with appropriate signing as specified in the *Manual on Uniform Traffic Control Devices* (MUTCD) (latest edition). At a minimum, bicycle parking signs shall be located at the main entrance and at the location of the bicycle parking facilities.

(v) Required bicycle parking spaces shall be provided at no cost to the bicyclist, or with only a nominal charge for key deposits, etc. This shall not preclude the operation of private for-profit bicycle parking businesses.

(w) Parking on existing residential, commercial and industrial development may be redeveloped as a transit facility as a way to encourage the development of transit supportive facilities such as bus stops and pullouts, bus shelters and park and ride stations. Parking spaces converted to such uses in conjunction with the transit agency and approved through the Architectural Review process will not be required to be replaced.

(x) Required vanpool and carpool parking shall meet the 9-foot parking stall standards in Figure 73-1 and be identified with appropriate signage.

(2) Off-Street Parking Provisions.

(a) The following are the minimum and maximum requirements for off-street motor vehicle parking in the City, except for minimum parking requirements for the uses in TDC 73.370(2)(a) (Residential Uses: iii, iv, v, vi, vii; Places of Public Assembly: I, ii, iv; Commercial Amusements: I, ii; and Commercial: I, ii, xi, xii, xiv) within the Core Area Parking District (CAPD). Minimum standards for off-street motor vehicle parking for the uses in 73.370(2) (a) Residential Uses: iii, iv, v, vi, vii; Places of Public Assembly: I, ii, iv; Commercial Amusements: I, ii; and Commercial: I, ii, xi, xii, xiv in the CAPD are in TDC 73.370(2)(b). The maximum requirements are divided into Zone A and Zone B, as shown on the Tualatin Parking Zone Map, Figure 73-3. The following are exempt from calculation of maximum parking requirements: parking structures; fleet parking; parking for vehicles for sale, lease or rent; car/vanpool parking; dedicated valet parking; and user-paid parking.

(b) The following are the minimum requirements for off-street motor vehicle parking in the Core Area Parking District (CAPD) for the uses in TDC 73.370(2)(a)(Residential Uses: iii, iv, v, vi, vii; Places of Public Assembly: i, ii, iv; Commercial Amusements: i, ii; and Commercial: i, ii, xi, xii, xiv).

(i) Core Area Parking District (CAPD) off-street motor vehicle parking standards are required at 75% of the applicable off-street motor

vehicle parking requirements identified in TDC 73.370(1)(h), 73.370(1)(m) and 73.370(2)(a).

(ii) Off-street motor vehicle parking requirements: (Refer to Core Area Parking District Ordinance TMC Chapter 11-3 for fee schedules and regulations regarding the Core Area Parking District.)

(A) Commercial, semi-public, and public uses except as outlined under TDC 73.370(2)(b)(ii)(B). A minimum of 75% of required CAPD off-street motor vehicle parking shall be provided for the first two floors of gross leasable area for commercial, semi-public, and public uses above grade, except as outlined under TDC 73.370(2)(b)(ii)(B).

(B) Development of a publicly-owned community center on Tract 8 of the Tualatin Commons shall be exempt from providing off-street motor vehicle parking and the impact fee within the CAPD.

(C) Residential Uses:

(1) Common-wall Dwellings including townhouses and condominiums. A minimum of 75% of required CAPD off-street motor vehicle parking shall be provided.

(2) Multi-Family Dwellings. A minimum of 75% of required CAPD off-street motor vehicle parking shall be provided for the first two floors of living units, above grade.

(3) Retirement Housing, Residential Homes and Residential Facilities. A minimum of 75% of required CAPD off-street motor vehicle parking shall be provided for the first two floors of dwelling units, above grade.

(iii) CAPD off-street motor vehicle parking required under TDC 73.370(2)(b)(i) shall be provided for residential uses and gross leasable area of commercial, semi-public, and public uses below grade and above the second floor, except as outlined under TDC 73.370(2)(b)(ii)(B).

(iv) At the time of enlargement of an existing structure or use there shall be no net loss of existing off-street motor vehicle parking in addition to providing new off-street motor vehicle parking required under TDC 73.370(2)(b).

(v) Outdoor dining facilities are exempt from providing off-street motor vehicle parking within the CAPD.

(3) Off-Street Vanpool and Carpool Parking Provisions.

The minimum number of off-street Vanpool and Carpool parking for commercial, institutional and industrial uses is as follows:

Number of Required Parking Spaces	Number of Vanpool or Carpool Spaces
0 to 10	1
10 to 25	2
26 and greater	1 for each 25 spaces.

USE	MINIMUM MOTOR VEHICLE PARKING REQUIREMENT	MAXIMUM MOTOR VEHICLE PARKING REQUIREMENT	BICYCLE PARKING REQUIREMENT	PERCENTAGE OF BICYCLE PARKING TO BE COVERED
Residential Uses:				
(i) Detached single-family dwelling, Residential home, Residential facilities (located in low density (RL) planning districts Townhouse	2.00 vehicle parking spaces per dwelling unit, Residential Home or Residential Facility (stalls or spaces within a residential garage not included, except as approved in Architectural Review).	None	None required	N/a
(ii) Multi-family dwellings in subdivisions	1.50 spaces per unit, in addition to garage	None	Developments with four or more units; none required if a garage is provided as an integral element of a unit; otherwise 1.00 space per unit	100
(iii) Multi-family dwellings in complexes with private internal driveways	1.0 space/studio, 1.25 space/1 bedr., 1.50 space/2 bedr., 1.75 space/3+bedr. in addition to garage	None	Developments with four or more units; none required if a garage is provided as an integral element of a unit; otherwise, 1.00 space per unit	100
(iv) Retirement housing facility	1.00 space per dwelling unit	None	0.50 space per unit	50

USE	MINIMUM MOTOR VEHICLE PARKING REQUIREMENT	MAXIMUM MOTOR VEHICLE PARKING REQUIREMENT	BICYCLE PARKING REQUIREMENT	PERCENTAGE OF BICYCLE PARKING TO BE COVERED
(v) Boarding house, lodging house	1.00 space per guest house accommodation	None	0.25 space per guest house accommodation	50
(vi) Congregate care, assisted living and residential care facilities	0.50 space per dwelling unit	None	2, or 0.20 spaces per dwelling unit, whichever is greater	50
(vii) Residential facilities (located in other than low density residential planning districts)	1.00 space per 3 beds, plus 1.00 space per employee	None	2, or 1.00 space for every 6 beds, whichever is greater	50
(viii) Dwelling units within the Central Design District except as specified in (d), (e), and (f) above	1.50 space per dwelling unit, including garage	None	Developments with four or more units; none required if a garage is provided as an integral element of a unit; otherwise 1.00 space per unit	100
Institutions:				
(i) Convalescent home, nursing home or sanitarium	1.00 space per 2 beds for patients or residents	None	2, or 1.00 space for every 6 beds, whichever is greater	50
(ii) Hospital	1.00 space per 500 sq. ft. of gross floor area	None	1 space per 1000 gross sq. ft.	First 10 spaces or 40%, whichever is greater

USE	MINIMUM MOTOR VEHICLE PARKING REQUIREMENT	MAXIMUM MOTOR VEHICLE PARKING REQUIREMENT	BICYCLE PARKING REQUIREMENT	PERCENTAGE OF BICYCLE PARKING TO BE COVERED
Places of Public Assembly:				
(i) Library, reading room	1.00 space per 400 sq. ft. of public area	None	2, or 1.5 spaces per 1000 gross sq. ft., whichever is greater	10
(ii) Nursery, primary, elementary or middle school, child day care center	2.00 spaces per employee	None	4, or 1.00 space per 5 students based on the design capacity of the facility, whichever is greater	75
(iii) Senior high school	0.2 spaces per student ~~plus 1.00 space per~~ and staff	Zone A and Zone B: 0.3 spaces per student plus 1.00 space per staff	4, or 1.00 space per 5 students based on the design capacity of the facility, whichever is greater	25
(iv) Other places of public assembly, including churches	1.00 space per 4 seats or 8 feet of bench length	Zone A: 0.6 spaces per seat Zone B: 0.8 spaces per seat	1 space per 40 seats or 80 feet of bench length	25
Commercial Amusements:				
(i) Theater	1.00 space per 4 seats	Zone A: 0.4 spaces per seat Zone B: 0.5 spaces per seat	1 space per 30 seats	10

USE	MINIMUM MOTOR VEHICLE PARKING REQUIREMENT	MAXIMUM MOTOR VEHICLE PARKING REQUIREMENT	BICYCLE PARKING REQUIREMENT	PERCENTAGE OF BICYCLE PARKING TO BE COVERED
(ii) Bowling alley	5.00 spaces per lane	None	4, or 0.50 spaces per lane, whichever is greater	40
(iii) Dance hall, skating rink	4.3 spaces per 1000 sq. ft. gross floor area	Zone A: 5.4 spaces per 1000 sq. ft. gross floor area Zone B: 6.5 spaces per 1000 sq. ft. gross floor area	2 spaces per 1000 sq. ft. of floor area	50
(iv) Racquet courts, health club	1.00 space per 1000 sq. ft. gross floor area	Zone A: 1.3 spaces per 1000 sq. ft. gross floor area Zone B: 1.5 spaces per 1000 sq. ft. gross floor area	2 spaces per 1000 sq. ft. of exercise area	50
Commercial:				
(i) Retail shops (under 100,000 sq. ft. gross floor area)	4.00 spaces per 1000 sq. ft. of gross floor area	Zone A: 5.1 spaces per 1000 sq. ft. gross floor area Zone B: 6.2 spaces per 1000 sq. ft. gross floor area	0.50 space per 1000 sq. ft. of gross floor area	50

USE	MINIMUM MOTOR VEHICLE PARKING REQUIREMENT	MAXIMUM MOTOR VEHICLE PARKING REQUIREMENT	BICYCLE PARKING REQUIREMENT	PERCENTAGE OF BICYCLE PARKING TO BE COVERED
(ii) Retail store handling exclusively bulky merchandise such as furniture or automobiles and service or repair shops4	1.00 space per 400 sq. ft. of sales floor area	Zone A: 5.1 spaces per 1000 sq. ft. gross floor area Zone B: 6.2 spaces per 1000 sq. ft. gross floor area	2, or 0.20 space per 1000 sq. ft. of sales floor area, whichever is greater	50
(iii) Shopping center (over 100,000 sq. ft. of gross floor area)	4.1 spaces per 1000 sq. ft. of gross floor area	Zone A: 5.1 spaces per 1000 sq. ft. gross floor area Zone B: 6.2 spaces per 1000 sq. ft. gross floor area	0.50 space per 1000 sq. ft. of gross floor area	50
(iv) Banks/savings and loans	4.30 spaces per 1000 sq. ft. of gross floor area	Zone A: 5.4 spaces per 1000 sq. ft. gross floor area Zone B: 6.5 spaces per 1000 sq. ft. gross floor area	2, or 0.33 spaces per 1000 sq. ft., whichever is greater	10
(v) Medical & dental offices	3.90 spaces per 1000 sq. ft. of gross floor area	Zone A: 4.9 spaces per 1000 sq. ft. gross floor area Zone B: 5.9 spaces per 1000 sq. ft. gross floor area	2, or 0.33 spaces per 1000 gross sq. ft., whichever is greater	First 10 spaces or 40%, whichever is greater

USE	MINIMUM MOTOR VEHICLE PARKING REQUIREMENT	MAXIMUM MOTOR VEHICLE PARKING REQUIREMENT	BICYCLE PARKING REQUIREMENT	PERCENTAGE OF BICYCLE PARKING TO BE COVERED
(vi) General office	2.70 spaces per 1000 sq. ft. of gross floor area	Zone A: 3.4 spaces per 1000 sq. ft. gross floor area Zone B: 4.1 spaces per 1000 sq. ft. gross floor area	2, or 0.50 space per 1000 gross sq. ft., whichever is greater	First 10 spaces or 40%, whichever is greater
(vii) Government office	2.70 spaces per 1000 sq. ft. of gross floor area	Zone A: 3.4 spaces per 1000 sq. ft. gross floor area Zone B: 4.1 spaces per 1000 sq. ft. gross floor area	2, or 0.50 spaces per 1000 gross sq. ft., whichever is greater	First 10 spaces or 40%, whichever is greater
(viii) Restaurant	10.00 spaces per 1000 sq. ft. of gross floor area	Zone A: 19.1 spaces per 1000 sq. ft. gross floor area Zone B: 23.0 spaces per 1000 sq. ft. gross floor area	1.00 space per 1000 gross sq. ft.	25
(ix) Drive-up restaurant	9.90 spaces per 1000 sq. ft. of gross floor area	Zone A: 12.4 spaces per 1000 sq. ft. gross floor area Zone B: 14.9 spaces per 1000 sq. ft. gross floor area	2.00 spaces per 1000 gross sq. ft.	25
(x) Motel	1.00 space per room	None	0.20 space per room	10

USE	MINIMUM MOTOR VEHICLE PARKING REQUIREMENT	MAXIMUM MOTOR VEHICLE PARKING REQUIREMENT	BICYCLE PARKING REQUIREMENT	PERCENTAGE OF BICYCLE PARKING TO BE COVERED
(xi) Mortuary	1.00 space per 4 seats or 8 feet of bench length in chapels	None	1 space per 40 seats or 80 feet of bench length	10
(xii) Office furniture and office furniture sales	1.00 space per 550 gross sq. ft.	None	2, or 0.20 space per 1000 sq. ft. of sales floor area, whichever is greater	10
(xiii) Park and Ride lots	None	None	5% of auto spaces	100
(xiv) Major transit stops (not Park and Ride lots)	None	None	4	100
(xiv) Wireless communication facility	1 space	None	n/a	n/a
Industrial:				
(i) Manufacturing	1.60 spaces per 1000 sq. ft. of gross floor area	None	2, or 0.10 spaces per 1000 gross sq. ft., whichever is greater	First 5 spaces or 30%, whichever is greater
(ii) Warehousing	0.30 spaces per 1000 sq. ft. of gross floor area	Zone A: 0.4 spaces per 1000 sq. ft. gross floor area Zone B: 0.5 spaces per 1000 sq. ft. gross floor area	2, or 0.10 spaces per 1000 gross sq. ft., whichever is greater	First 5 spaces or 30%, whichever is greater
(iii) Wholesale establishment	3.00 spaces per 1000 sq. ft. of gross floor area	None	2, or 0.50 spaces per 1000 gross sq. ft., whichever is greater	First 5 spaces or 30%, whichever is greater

Section 14. TDC 73.380 is amended to read as follows:

A parking lot, whether an accessory or principal use, intended for the parking of automobiles or trucks, shall comply with the following:

(1) Off-street parking lot design shall comply with the dimensional standards set forth in Figure 73-1 of this section, except for parking structures and underground parking where stall length and width requirements for a standard size stall shall be reduced by .5 feet and vehicular access at the entrance if gated shall be a minimum of 18 feet in width.

(2) Parking stalls for sub-compact vehicles shall not exceed 35 percent of the total parking stalls required by TDC 73.370(2). Stalls in excess of the number required by TDC 73.370(2) can be sub-compact stalls.

(3) Off-street parking stalls shall not exceed eight continuous spaces in a row without a landscape separation, except for parking structures and underground parking. For parking lots within the Central Design District that are designed to frame views of the central water feature or identified architectural focal elements as provided in TDC 73.350(3), this requirement shall not apply and the location of parking lot landscape islands shall be determined through the Architectural Review process.

(4) Parking lot drive aisles shall be constructed of asphalt or concrete, including pervious concrete. Parking stalls shall be constructed of asphalt or concrete, or a pervious surface such as pavers or grasscrete, but not gravel or woody material. Drive aisles and parking stalls shall be maintained adequately for all-weather use and drained to avoid water flow across sidewalks. Pervious surfaces such as pervious concrete, pavers and grasscrete, but not gravel or woody material, are encouraged for parking stalls in or abutting the Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or in a Clean Water Services Vegetated Corridor. Parking lot landscaping shall be provided pursuant to the requirements of TDC 73.350 and TDC 73.360. Walkways in parking lots shall be provided pursuant to TDC 73.160.

(5) Except for parking to serve residential uses, parking areas adjacent to or within residential planning districts or adjacent to residential uses shall be designed to minimize disturbance of residents.

(6) Artificial lighting, which may be provided, shall be deflected to not shine or create glare in a residential planning district, an adjacent dwelling, street right-of-way in such a manner as to impair the use of such way or a Natural Resource Protection Overlay District, Other Natural Areas identified in Figure 3-4 of the Parks and Recreation Master Plan, or a Clean Water Services Vegetated Corridor.

(7) Groups of more than 4 parking spaces shall be so located and served by driveways that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley.

(8) Service drives to off-street parking areas shall be designed and constructed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety of pedestrians and vehicular traffic on the site.

(9) Parking bumpers or wheel stops or curbing shall be provided to prevent cars from encroaching on the street right-of-way, adjacent landscaped areas, or adjacent pedestrian walkways.

(10) Disability parking spaces and accessibility shall be provided in accordance with applicable federal and state requirements.

(11) On-site drive aisles without parking spaces, which provide access to parking areas with regular spaces or with a mix of regular and sub-compact spaces, shall have a minimum width of 22 feet for two-way traffic and 12 feet for one-way traffic. On-site drive aisles without parking spaces, which provide access to parking areas with only sub-compact spaces, shall have a minimum width of 20 feet for two-way traffic and 12 feet for one-way traffic.

Section 15. TDC 73.390 is amended to read as follows:

(1) The minimum number of off-street loading berths for commercial, industrial, public and semi-public uses is as follows:

Square Feet of Floor Area	Number of Berths
Less than 5,000	0
5,000 - 25,000	1
25,000 - 60,000	2
60,000 and over	3

(2) Loading berths shall conform to the following minimum size specifications.

(a) Commercial, public and semi-public uses of 5,000 to 25,000 square feet shall be 12' x 25' and uses greater than 25,000 shall be 12' x 35'

(b) Industrial uses - 12' x 60'

(c) Berths shall have an unobstructed height of 14'

(d) Loading berths shall not use the public right-of-way as part of the required off-street loading area.

(3) Required loading areas shall be screened from public view from public streets and adjacent properties by means of sight-obscuring landscaping, walls or other means, as approved through the Architectural Review process.

(4) Required loading facilities shall be installed prior to final building inspection and shall be permanently maintained as a condition of use.

(5) A driveway designed for continuous forward flow of passenger vehicles for the purpose of loading and unloading children shall be located on the site of a school or child day care center having a capacity greater than 25 students.

(6) The off-street loading facilities shall in all cases be on the same lot or parcel as the structure they are intended to serve. In no case shall the required off-street loading spaces be part of the area used to satisfy the off-street parking requirements.

(7) Subject to Architectural Review approval, the Community Development Director may allow the standards in this Section to be relaxed within the Central Design District, where a dense mix of uses is desirable in close proximity, pedestrian circulation is strongly emphasized, and the orientation of structures around a central water feature virtually eliminates the possibility of reserving any side of a building solely for truck access. Adjustments may include, but are not limited to, reduction in the number of loading berths required, adjustment of loading berth size specifications and right-of-way restrictions, shared loading berths and maneuvering areas for use by more than one building, alteration or elimination of screening requirements, and requirements for maintenance of berths in a clean and visually appealing condition. The Community Development Director, their designee, or the Architectural Review Board may allow a loading area adjacent to or within a street right-of-way in the Central Design District where the loading and unloading operations meet all of the following criteria:

(a) short in duration (i.e., less than one hour);

(b) infrequent (fewer than three operations daily);

(c) does not obstruct traffic during peak traffic hours;

(d) does not interfere with emergency response services;

(e) is acceptable to the applicable roadway authority; and

(f) the design standards for the abutting road allow on-street parking.

Section 16. TDC 73.400 is amended to read as follows:

(1) The provision and maintenance of vehicular and pedestrian ingress and egress from private property to the public streets as stipulated in this Code are continuing requirements for the use of any structure or parcel of real property in the City of Tualatin.

Access management and spacing standards are provided in this section of the TDC and TDC Chapter 75. No building or other permit shall be issued until scale plans are presented that show how the ingress and egress requirement is to be fulfilled. If the owner or occupant of a lot or building changes the use to which the lot or building is put, thereby increasing ingress and egress requirements, it shall be unlawful and a violation of this code to begin or maintain such altered use until the required increase in ingress and egress is provided.

(2) Owners of two or more uses, structures, or parcels of land may agree to utilize jointly the same ingress and egress when the combined ingress and egress of both uses, structures, or parcels of land satisfies their combined requirements as designated in this code; provided that satisfactory legal evidence is presented to the City Attorney in the form of deeds, easements, leases or contracts to establish joint use. Copies of said deeds, easements, leases or contracts shall be placed on permanent file with the City Recorder.

(3) Joint and Cross Access

(a) Adjacent commercial uses may be required to provide cross access drive and pedestrian access to allow circulation between sites.

(b) A system of joint use driveways and cross access easements may be required and may incorporate the following:

(i) a continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards.

(ii) a design speed of 10 mph and a maximum width of 24 feet to accommodate two-way travel aisles designated to accommodate automobiles, service vehicles, and loading vehicles;

(iii) stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross access via a service drive;

(iv) a unified access and circulation system plan for coordinated or shared parking areas.

(c) Pursuant to this section, property owners may be required to:

(i) Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;

(ii) Record an agreement with the deed that remaining access rights along the roadway will be dedicated to the city and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;

(iii) Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners;

(iv) If (i-iii) above involve access to the state highway system or county road system, ODOT or the county shall be contacted and shall approve changes to (i-iii) above prior to any changes.

(4) Requirements for Development on Less than the Entire Site

(a) To promote unified access and circulation systems, lots and parcels under the same ownership or consolidated for the purposes of development and comprised of more than one building site shall be reviewed as one unit in relation to the access standards. The number of access points permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area shall comply with the access requirements.

(b) All access must be internalized using the shared circulation system of the principal commercial development or retail center. Driveways should be designed to avoid queuing across surrounding parking and driving aisles.

(5) Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Engineer.

(6) Except as provided in TDC 53.100, all ingress and egress shall connect directly with public streets.

(7) Vehicular access for residential uses shall be brought to within 50 feet of the ground floor entrances or the ground floor landing of a stairway, ramp or elevator leading to dwelling units.

(8) To afford safe pedestrian access and egress for properties within the City, a sidewalk shall be constructed along all street frontage, prior to use or occupancy of the building or structure proposed for said property. The sidewalks required by this section shall be constructed to City standards, except in the case of streets with inadequate right-of-way width or where the final street design and grade have not been established,

in which case the sidewalks shall be constructed to a design and in a manner approved by the City Engineer. Sidewalks approved by the City Engineer may include temporary sidewalks and sidewalks constructed on private property; provided, however, that such sidewalks shall provide continuity with sidewalks of adjoining commercial developments existing or proposed. When a sidewalk is to adjoin a future street improvement, the sidewalk construction shall include construction of the curb and gutter section to grades and alignment established by the City Engineer.

(9) The standards set forth in this Code are minimum standards for access and egress, and may be increased through the Architectural Review process in any particular instance where the standards provided herein are deemed insufficient to protect the public health, safety, and general welfare.

(10) Minimum access requirements for residential uses:

(a) Ingress and egress for single-family residential uses, including townhouses, shall be paved to a minimum width of 10 feet. Maximum driveway widths shall not exceed 26 feet for one and two car garages, and 37 feet for three or more car garages. For the purposes of this section, driveway widths shall be measured at the property line.

(b) Ingress and egress for multi-family residential uses shall not be less than the following:

DWELLING UNITS	MINIMUM NUMBER REQUIRED	MINIMUM WIDTH	WALKWAYS, ETC.
2	1	16 feet	No walkways or curbs required.
3-19	1	24 feet	No walkways or curbs required.
20-49	1 Or	24 feet	6-foot walkway, 1 side only; curbs required.
	2	16 feet (one way)	
50-499	1 Or	32 feet	6-foot walkway, 1 side only; curbs required.
	2	24 feet	
Over 500	As required by City Engineer	As required by City Engineer	As required by City Engineer

(11) Minimum Access Requirements for Commercial, Public and Semi-Public Uses.

In the Central Design District, when driveway access is on local streets, not collectors or arterials and the building(s) on the property is(are) less than 5,000 square feet in gross floor area, or parking is the only use on the property, ingress and egress shall

not be less than 24 feet. In all other cases, ingress and egress for commercial uses shall not be less than the following:

REQUIRED PARKING SPACES	MINIMUM NUMBER REQUIRED	MINIMUM PAVEMENT WIDTH	MINIMUM PAVEMENT WALKWAYS, ETC.
1-99	1	32 feet for first 50 feet from ROW, 24' thereafter.	Curbs required; walkway 1 side only
100-249	2	32 feet for first 50 feet from ROW, 24' thereafter.	Curbs required; walkway 1 side only.
Over 250	As required by City Engineer	As required by City Engineer	As required by City Engineer

(12) Minimum Access Requirements for Industrial Uses.

Ingress and egress for industrial uses shall not be less than the following:

REQUIRED PARKING SPACES	MINIMUM NUMBER REQUIRED	MINIMUM PAVEMENT WIDTH	MINIMUM PAVEMENT WALKWAYS, ETC.
1-250	1	36 feet for first 50' from ROW, 24' thereafter	No curbs or walkway required.
Over 250	As required by City Engineer	As required by City Engineer	As required by City Engineer

(13) One-way Ingress or Egress.

When approved through the Architectural Review process, one-way ingress or egress may be used to satisfy the requirements of Subsections (7), (8), and (9). However, the hard surfaced pavement of one-way drives shall not be less than 16 feet for multi-family residential, commercial, or industrial uses.

(14) Maximum Driveway Widths and Other Requirements.

(a) Unless otherwise provided in this chapter, maximum driveway widths shall not exceed 40 feet.

(b) Except for townhouse lots, no driveways shall be constructed within 5 feet of an adjacent property line, except when two adjacent property owners elect to provide joint access to their respective properties, as provided by Subsection (2).

(c) There shall be a minimum distance of 40 feet between any two adjacent driveways on a single property unless a lesser distance is approved by the City Engineer.

(15) Distance between Driveways and Intersections.

Except for single-family dwellings, the minimum distance between driveways and intersections shall be as provided below. Distances listed shall be measured from the stop bar at the intersection.

(a) At the intersection of collector or arterial streets, driveways shall be located a minimum of 150 feet from the intersection.

(b) At the intersection of two local streets, driveways shall be located a minimum of 30 feet from the intersection.

(c) If the subject property is not of sufficient width to allow for the separation between driveway and intersection as provided, the driveway shall be constructed as far from the intersection as possible, while still maintaining the 5-foot setback between the driveway and property line as required by TDC 73.400(14)(b).

(d) When considering a public facilities plan that has been submitted as part of an Architectural Review plan in accordance with TDC 31.071(6), the City Engineer may approve the location of a driveway closer than 150 feet from the intersection of collector or arterial streets, based on written findings of fact in support of the decision. The written approval shall be incorporated into the decision of the City Engineer for the utility facilities portion of the Architectural Review plan under the process set forth in TDC 31.071 through 31.077.

(16) Vision Clearance Area.

(a) Local Streets - A vision clearance area for all local street intersections, local street and driveway intersections, and local street or driveway and railroad intersections shall be that triangular area formed by the right-of-way lines along such lots and a straight line joining the right-of-way lines at points which are 10 feet from the intersection point of the right-of-way lines, as measured along such lines (see Figure 73-2 for illustration).

(b) Collector Streets - A vision clearance area for all collector/arterial street intersections, collector/arterial street and local street intersections, and collector/arterial street and railroad intersections shall be that triangular area formed by the right-of-way lines along such lots and a straight line joining the right-of-way lines at points which are 25 feet from the intersection point of the right-of-way lines, as measured along such lines. Where a driveway

intersects with a collector/arterial street, the distance measured along the driveway line for the triangular area shall be 10 feet (see Figure 73-2 for illustration).

(c) Vertical Height Restriction - Except for items associated with utilities or publicly owned structures such as poles and signs and existing street trees, no vehicular parking, hedge, planting, fence, wall structure, or temporary or permanent physical obstruction shall be permitted between 30 inches and 8 feet above the established height of the curb in the clear vision area (see Figure 73-2 for illustration).

(17) Major driveways, as defined in 31.060, in new residential and mixed-use areas are required to connect with existing or planned streets except where prevented by topography, rail lines, freeways, pre-existing development or leases, easements or covenants, or other barriers.

Section 17. TDC 74.210 is amended to read as follows:

The width of streets in feet shall not be less than the width required to accommodate a street improvement needed to mitigate the impact of a proposed development. In cases where a street is required to be improved according to the standards of the TDC, the width of the right-of-way shall not be less than ~~the minimums~~ indicated in TDC Chapter ~~11~~74, ~~Transportation Plan~~ Public Improvement Requirements, Figures 74-2A through 74-2G.

(1) For subdivision and partition applications, wherever existing or future streets adjacent to property proposed for development are of inadequate right-of-way width the additional right-of-way necessary to comply with ~~the Transportation Element of the Tualatin Community Plan~~ TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G shall be shown on the final subdivision or partition plat prior to approval of the plat by the City. This right-of-way dedication shall be for the full width of the property abutting the roadway and, if required by the City Engineer, additional dedications shall be provided for slope and utility easements if deemed necessary.

(2) For development applications other than subdivisions and partitions, wherever existing or future streets adjacent to property proposed for development are of inadequate right-of-way width, the additional right-of-way necessary to comply with ~~the Transportation Element of the Tualatin Community Plan~~ TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G shall be dedicated to the City for use by the public prior to issuance of any building permit for the proposed development. This right-of-way dedication shall be for the full width of the property abutting the roadway and, if required by the City Engineer, additional dedications shall be provided for slope and utility easements if deemed necessary.

(3) For development applications that will impact existing streets not adjacent to the applicant's property, and to construct necessary street improvements to mitigate

those impacts would require additional right-of-way, the applicant shall be responsible for obtaining the necessary right-of-way from the property owner. A right-of-way dedication deed form shall be obtained from the City Engineer and upon completion returned to the City Engineer for acceptance by the City. On subdivision and partition plats the right-of-way dedication shall be accepted by the City prior to acceptance of the final plat by the City. On other development applications the right-of-way dedication shall be accepted by the City prior to issuance of building permits. The City may elect to exercise eminent domain and condemn necessary off-site right-of-way at the applicant's request and expense. The City Council shall determine when condemnation proceedings are to be used.

(4) If the City Engineer deems that it is impractical to acquire the additional right-of-way as required in subsections (1)-(3) of this section from both sides of the centerline in equal amounts, the City Engineer may require that the right-of-way be dedicated in a manner that would result in unequal dedication from each side of the road. This requirement will also apply to slope and utility easements as discussed in TDC 74.320 and 74.330. The City Engineer's recommendation shall be presented to the City Council in the preliminary plat approval for subdivisions and partitions, and in the recommended decision on all other development applications, prior to finalization of the right-of-way dedication requirements.

(5) Whenever a proposed development is bisected by an existing or future road or street that is of inadequate right-of-way width according to TDC Chapter ~~11~~74, Public Improvement Requirements, Figures 74-2A through 74-2G, additional right-of-way shall be dedicated from both sides or from one side only as determined by the City Engineer to bring the road right-of-way in compliance with this section.

(6) When a proposed development is adjacent to or bisected by a street proposed in TDC Chapter 11, Transportation Plan (Figure 11-3) and no street right-of-way exists at the time the development is proposed, the entire right-of-way as shown in TDC Chapter ~~11~~74, TDC Public Improvement Requirements, Figures 74-2A through 74-2G, shall be dedicated by the applicant. The dedication of right-of-way required in this subsection shall be along the route of the road as determined by the City.

Section 18. TDC 74.410 is amended to read as follows:

(1) Streets shall be extended to the proposed development site boundary where necessary to:

(a) give access to, or permit future development of adjoining land;

(b) provide additional access for emergency vehicles;

(c) provide for additional direct and convenient pedestrian, bicycle and vehicle circulation;

(d) eliminate the use of cul-de-sacs except where topography, barriers such as railroads or freeways, existing development, or environmental constraints such as major streams and rivers prevent street extension.

(e) eliminate circuitous routes. The resulting dead end streets may be approved without a turnaround. A reserve strip may be required to preserve the objectives of future street extensions.

(2) Proposed streets shall comply with the general location, orientation and spacing identified in the Functional Classification Plan (Figure 11-1), Local Streets Plan~~,~~ (TDC 11.630 and ~~Figure 11-1 and~~ Figure 11-3) and the Street Design Standards (Figures 74-2A through 74-2G).

(a) Streets and major driveways, as defined in TDC 31,060, proposed as part of new residential or mixed residential/commercial developments shall comply with the following standards:

(i) full street connections with spacing of no more than 530 feet between connections, except where prevented by ~~constraints or~~ barriers;

(ii) bicycle and pedestrian accessway easements where full street connections are not possible, with spacing of no more than 330 feet, except where prevented by barriers;

(iii) limiting cul-de-sacs and other closed-end street systems to situations where barriers prevent full street extensions; and

(iv) allowing cul-de-sacs and closed-end streets to be no longer than 200 feet or with more than 25 dwelling units, except for streets stubbed to future developable areas.

(b) Streets proposed as part of new industrial or commercial development shall comply with TDC 11.630, Figure 11-1, and Figures 74-2A through 74-2G.

(3) During the development application process, the location, width, and grade of streets shall be considered in relation to existing and planned streets, to topographical conditions, to public convenience and safety, and to the proposed use of the land to be served by the streets. The arrangement of streets in a subdivision shall either:

(a) provide for the continuation or appropriate projection of existing streets into surrounding areas; or

(b) conform to a street plan approved or adopted by the City to meet a particular situation where topographical or other conditions make continuance of or conformance to existing streets impractical.

(4) The City Engineer may require the applicant to submit a street plan showing all existing, proposed, and future streets in the area of the proposed development.

(5) The City Engineer may require the applicant to participate in the funding of future off-site street extensions when the traffic impacts of the applicant's development warrant such a condition.

Section 19. TDC 74.420 is amended to read as follows:

When an applicant proposes to develop land adjacent to an existing or proposed street, including land which has been excluded under TDC 74.220, the applicant should be responsible for the improvements to the adjacent existing or proposed street that will bring the improvement of the street into conformance with the Transportation Plan (TDC Chapter 11), TDC 74.425 (Street Design Standards), and the City's Public Works Construction Code, subject to the following provisions:

(1) For any development proposed within the City, roadway facilities within the right-of-way described in TDC 74.210 shall be improved to standards as set out in the Public Works Construction Code.

(2) The required improvements may include the rebuilding or the reconstruction of any existing facilities located within the right-of-way adjacent to the proposed development to bring the facilities into compliance with the Public Works Construction Code.

(3) The required improvements may include the construction or rebuilding of off-site improvements which are identified to mitigate the impact of the development.

(4) Where development abuts an existing street, the improvement required shall apply only to that portion of the street right-of-way located between the property line of the parcel proposed for development and the centerline of the right-of-way, plus any additional pavement beyond the centerline deemed necessary by the City Engineer to ensure a smooth transition between a new improvement and the existing roadway (half-street improvement). Additional right-of-way and street improvements and off-site right-of-way and street improvements may be required by the City to mitigate the impact of the development. The new pavement shall connect to the existing pavement at the ends of the section being improved by tapering in accordance with the Public Works Construction Code.

(5) If additional improvements are required as part of the Access Management Plan of the City, TDC Chapter 75, the improvements shall be required in the same manner as the half-street improvement requirements.

(6) All required street improvements shall include curbs, sidewalks with appropriate buffering, storm drainage, street lights, street signs, street trees, and, where designated, bikeways and transit facilities.

(7) For subdivision and partition applications, the street improvements required by TDC Chapter 74 shall be completed and accepted by the City prior to signing the final subdivision or partition plat, or prior to releasing the security provided by the applicant to assure completion of such improvements or as otherwise specified in the development application approval.

(8) For development applications other than subdivisions and partitions, all street improvements required by this section shall be completed and accepted by the City prior to the issuance of a Certificate of Occupancy.

(9) In addition to land adjacent to an existing or proposed street, the requirements of this section shall apply to land separated from such a street only by a railroad right-of-way.

(10) Streets within, or partially within, a proposed development site shall be graded for the entire right-of-way width and constructed and surfaced in accordance with the Public Works Construction Code.

(11) Existing streets which abut the proposed development site shall be graded, constructed, reconstructed, surfaced or repaired as necessary in accordance with the Public Works Construction Code and TDC Chapter 11, Transportation Plan, and TDC 74.425 (Street Design Standards).

(12) Sidewalks with appropriate buffering shall be constructed along both sides of each internal street and at a minimum along the development side of each external street in accordance with the Public Works Construction Code.

(13) The applicant shall comply with the requirements of the Oregon Department of Transportation (ODOT), Tri-Met, Washington County and Clackamas County when a proposed development site is adjacent to a roadway under any of their jurisdictions, in addition to the requirements of this chapter.

(14) The applicant shall construct any required street improvements adjacent to parcels excluded from development, as set forth in TDC 74.220 of this chapter.

(15) Except as provided in TDC 74.430, whenever an applicant proposes to develop land with frontage on certain arterial streets and, due to the access management provisions of Chapter 75, is not allowed direct access onto the arterial, but instead must take access from another existing or future public street thereby providing an alternate to direct arterial access, the applicant shall be required to construct and place at a minimum street signage, a sidewalk, street trees and street lights along that portion of the arterial street adjacent to the applicant's property. The three certain arterial streets are S.W.

Tualatin-Sherwood Road, S.W. Pacific Highway (99W) and S.W. 124th Avenue. In addition, the applicant may be required to construct and place on the arterial at the intersection of the arterial and an existing or future public non-arterial street warranted traffic control devices (in accordance with the Manual on Uniform Traffic Control Devices, latest edition), pavement markings, street tapers and turning lanes, in accordance with the Public Works Construction Code.

(16) The City Engineer may determine that, although concurrent construction and placement of the improvements in (14) and (15) of this section, either individually or collectively, are impractical at the time of development, the improvements will be necessary at some future date. In such a case, the applicant shall sign a written agreement guaranteeing future performance by the applicant and any successors in interest of the property being developed. The agreement shall be subject to the City's approval.

(17) Intersections should be improved to operate at a level of service of at least D and E for signalized and unsignalized intersections, respectively.

(18) Pursuant to requirements for off-site improvements as conditions of development approval in TDC 73.055(2)(e) and TDC 36.160(8), proposed multi-family residential, commercial, or institutional uses that are adjacent to a major transit stop will be required to comply with the City's Mid-Block Crossing Policy.

Section 20. TDC 74.430 amended to read as follows:

(1) When, in the opinion of the City Engineer, the construction of street improvements in accordance with TDC 74.420 would result in the creation of a hazard, or would be impractical, or would be detrimental to the City, the City Engineer may modify the scope of the required improvement to eliminate such hazardous, impractical, or detrimental results. Examples of conditions requiring modifications to improvement requirements include but are not limited to horizontal alignment, vertical alignment, significant stands of trees, fish and wildlife habitat areas, the amount of traffic generated by the proposed development, timing of the development or other conditions creating hazards for pedestrian, bicycle or motor vehicle traffic. The City Engineer may determine that, although an improvement may be impractical at the time of development, it will be necessary at some future date. In such cases, a written agreement guaranteeing future performance by the applicant in installing the required improvements must be signed by the applicant and approved by the City.

(2) When the City Engineer determines that modification of the street improvement requirements in TDC 74.420 is warranted pursuant to subsection (1) of this section, the City Engineer shall prepare written findings of modification. The City Engineer shall forward a copy of said findings and description of modification to the applicant, or his authorized agent, as part of the Utility Facilities Review for the proposed development, as provided by TDC 31.072. The decision of the City Engineer may be appealed to the City Council in accordance with TDC 31.076 and 31.077.

(3) To accommodate bicyclists on streets prior to those streets being upgraded to the full standards, an interim standard may be implemented by the City. These interim standards include reduction in motor vehicle lane width to 10 feet [the minimum specified in AASHTO's A Policy on Geometric Design of Highways and Streets (1990)], a reduction of bike lane width to 4-feet (as measured from the longitudinal gutter joint to the centerline of the bike lane stripe), and a paint-striped separation 2 to 4 feet wide in lieu of a center turn lane. Where available roadway width does not provide for these minimums, the roadway can be signed for shared use by bicycle and motor vehicle travel. When width constraints occur at an intersection, bike lanes should terminate 50 feet from the intersection with appropriate signing.

~~(4) The Local Commercial-Industrial Street Section, B-CI, may have an interim reduced cross-section as determined by the City Engineer. The interim reduced standard would include 24-28 feet of pavement, 3-foot gravel shoulders, 2:1 side slopes to a drainage ditch and a 5-foot asphalt sidewalk on one side. Development to the full B-CI Standard will be determined subject to required traffic study analysis. See Figure 75-2F for the Interim B-CI Street Standard.~~

Section 21. TDC 74.450 is amended to read as follows:

(1) Where proposed development abuts or contains an existing or proposed bikeway, ~~or~~ pedestrian path, or multi-use path, as set forth in TDC Chapter 11, Transportation ~~Plan~~, Figure 11-4, the City may require that a bikeway, ~~or~~ pedestrian path, or multi-use path be constructed, and an easement or dedication provided to the City.

(2) Where required, bikeways and pedestrian paths shall be provided as follows:

(a) Bike and pedestrian paths shall be constructed and surfaced in accordance with the Public Works Construction Code.

(b) The applicant shall install the striping and signing of the bike lanes and shared roadway facilities, where designated.

Section 22. TDC 75.030 is amended to read as follows:

This section shall apply to all City, County and State public streets, roads and highways within the City and to all properties that abut these streets, roads and highways.

(1) Access shall be in conformance with TDC Chapter 73 unless otherwise noted below.

(2) Freeways~~, Expressways~~ and Arterials Designated.

For the purposes of this chapter the following are freeways~~, expressways~~ and arterials:

(a) Interstate 5 Freeway;

(b) Interstate 205 Freeway;

~~(c) I-5/99W Connector;~~

~~(d)~~(c) Pacific Highway 99W;

~~(e)~~(d) Tualatin-Sherwood Road at all points located within the City of Tualatin Planning Area;

~~(f)~~(e) Nyberg Street, from its intersection with Tualatin-Sherwood Road east to 65th Avenue, including the I-5 Interchange;

~~(g)~~(f) 124th Avenue from Pacific Highway 99W south to Tonquin ~~Road and/or the future I5/99W Connector~~;

~~(h)~~(g) Lower Boones Ferry Road, from Boones Ferry Road to the Bridgeport/72nd intersection and from the Bridgeport/72nd intersection to the east City limits;

~~(i)~~(h) Boones Ferry Road at all points located within the City of Tualatin Planning Area;

~~(j)~~(i) ~~SW~~ 65th Avenue from its intersection with Nyberg Street south to City limits ~~Sagert Street~~;

~~(k)~~(j) Borland Road from ~~SW~~ 65th Avenue east to Saum Creek;

~~(l)~~(k) Bridgeport Road from Lower Boones Ferry Road to the west City limits;

~~(m)~~(l) Martinazzi Avenue from Boones Ferry Road south to Sagert Street;

~~(n) Tualatin Road from Boones Ferry Road to Herman Road;~~

~~(o)~~(m) Sagert Street from Martinazzi Avenue to 65th Avenue;

~~(p) Hall Boulevard extension from Tualatin Road to the north City limits;~~

(~~qo~~n) Leveton Drive from ~~1~~108th Avenue to ~~1240~~8th Avenue;

~~(r)~~(o) 108th Avenue from Leveton Drive to Herman Road;

~~(s)~~(p) Herman Road from ~~108th Avenue to~~ Teton Avenue to 124th Avenue;

~~(r)~~(q) 90th Avenue;

~~(s)~~(r) Avery Street;

~~(t)~~(s) Teton Avenue;

~~(r)~~(t) ~~Lower Boones Ferry Road extension west to Tualatin Road.~~

If the Council finds that any other road or street is in need of access control for any reason, it may direct that the street or road be added to this section through a Plan Text Amendment.

(3) Applicability

(a) This chapter applies to all developments, permit approvals, land use approvals, partitions, subdivisions, or any other actions taken by the City Council or any administrative officer of the City pertaining to property abutting any road or street listed in TDC 75.030. In addition, any parcel not abutted by a road or street listed in TDC 75.030, but having access to an arterial by any easement or prescriptive right, shall be treated as if it did abut the arterial and this chapter applies. This chapter shall take precedence over any other TDC chapter and over any other ordinance of the City when considering any development, land use approval or other proposal for property abutting an arterial or any property having an access right to an arterial.

(b) With the approval of the City Council, the City may act on its own initiative to protect the public safety and control access on arterials or any street to be included by TDC 75.030, consistent with its authority as the City's Road Authority.

Section 23. TDC 75.070 is amended to read as follows:

Except as shown ~~on~~ in TDC Chapter 11, Transportation, (Figures 11-1 and 11-3)~~Map 75-1~~, all new intersections with arterials shall have a minimum spacing of ½ mile between intersections.

Section 24. TDC 75.080 is amended to read as follows:

Except as provided in 75.090 all properties which abut two roadways shall have access on the lowest classification roadway, preferable on a local street~~an arterial and another road or street shall not have access on the arterial~~.

Section 25. TDC 75.090 is amended to read as follows:

When a property abuts a freeway~~, expressway~~ or arterial and a future street shown in TDC Chapter 11, Transportation, (Figures 11-1 and 11-3)~~on Map 75-1~~, or abuts or bisects the property, the City Engineer may approve an interim access on the arterial subject to the following conditions:

(1) The City Engineer finds that at the current time the construction of the new street shown in TDC Chapter 11, Transportation, (Figures 11-1 and 11-3)~~on Map 75-1~~ is impractical due to costs of right-of-way acquisition.

(2) The property owner receiving interim access dedicates the right-of-way for the new street as shown in TDC Chapter 11, Transportation, (Figures 11-1 and 11-3)~~on Map 75-1~~ if it would be on the property.

(3) At such time as the City Engineer finds that it is practical to construct a new street as shown in TDC Chapter 11, Transportation, (Figures 11-1 and 11-3)~~on Map 75-1~~, the property owner agrees to pay for or construct its fair share of the new street when it is practical.

(4) At such time as the new street as shown in TDC Chapter 11, Transportation, (Figures 11-1 and 11-3)~~on Map 75-1~~ is constructed, the interim access shall be closed and no longer used. The cost of this closure shall be borne by the property owner.

(5) In granting the interim access the property owner may be required to share said interim access with adjacent properties.

(6) The interim access shall be constructed in a manner to make it as efficient as possible. Improvements required as part of the interim access may include:

(a) A left turn lane.

(b) A right turn lane.

(c) Driveways constructed at street intersections to provide for truck turning movement.

(d) Dedication of additional right-of-way on the arterial.

(e) Installation of traffic control signals.

(f) Limitation of new driveways to right turn in, right turn out movements by construction of raised median barriers or other means.

(7) Any interim access approved in accordance with this chapter shall be set forth in the form of a written agreement, approved by the City Attorney. The agreement shall

be verified by the owner in the manner provided for deeds and restrictions on real property. The agreement shall bind the parties thereto as well as their heirs, successors in interest and assigns and shall not be modified without the express written approval of the City.

Section 26. TDC 75.100 is amended to read as follows:

If the City Engineer finds that it is physically impossible for a property to receive access from any other street or road than an arterial as defined in TDC 75.030 and that the property cannot physically be served by any new street as shown on in TDC Chapter 11, Transportation, (Figures 11-1 and 11-3)~~Map 75-1~~ or any logical extension of or addition thereto, the City Engineer may grant a permanent access directly to an arterial. In doing so the City Engineer may impose conditions on the construction of said access including, but not limited to:

(1) Dedication of additional right-of-way on the arterial.

(2) Creation of a joint access.

(3) Construction of left turn lanes.

(4) Construction of right turn lanes.

(5) Installation of traffic signals.

(6) Limitation of access to right turn in, right turn out by construction of raised median barriers or other means.

Section 27. TDC 75.110 is amended to read as follows:

(1) New streets designed to serve as alternatives to direct, parcel by parcel, access onto arterials are shown in TDC Chapter 11, Transportation, (Figures 11-1 and 11-3)~~on Map 75-1~~. These streets are shown as corridors with the exact location determined through the partition, subdivision, public works permit or Architectural Review process. Unless modified by the City Council by the procedure set out below, these streets will be the only new intersections with arterials in the City. ~~*See map for changes*~~

(2) Specific alignment of a new street may be altered by the City Engineer upon finding that the street, in the proposed alignment, will carry out the objectives of this chapter to the same, or a greater degree as the described alignment, that access to adjacent and nearby properties is as adequately maintained and that the revised alignment will result in a segment of the Tualatin road system which is reasonable and logical.

(3) The City Council may include additional streets on Figures 11-1 and 11-3~~on Map 75-1~~ through the plan amendment procedure. In addition to other required findings, the City Council must find that the addition is necessary to implement the objectives of this chapter.

Section 28. TDC 75.120 is amended to read as follows:

The following list describes in detail the freeways~~, expressways~~ and arterials as defined in TDC 75.030 with respect to access. Recommendations are made for future changes in accesses and location of future accesses. These recommendations are examples of possible solutions and shall not be construed as limiting ~~the~~ City~~'s~~ authority to change or impose different conditions if additional studies result in different recommendations from those listed below.

(1) INTERSTATE 5 (I-5)
I-5 is a State facility and access is controlled by the State.

(2) INTERSTATE 205 (I-205)
I-205 is a State facility and access is controlled by the State.

~~I-5/99W CONNECTOR~~
~~If a Goal exception is granted for the Regional Transportation Plan, the I-5/99W Connector may run from a new interchange near Norwood Road westerly and then northwesterly to Tualatin-Sherwood Road or it may run westerly to Highway 99W south of Sherwood. This roadway is a controlled access highway with possible intersections proposed at the following locations:~~

~~(1) The intersection of Boones Ferry Road and I-5/99W Connector.~~

~~(2) The intersection of Grahams Ferry Road and I-5/99W Connector.~~

~~(3) The intersection of the southern extension of SW 124th Avenue and I-5/99W Connector.~~

~~(4) The intersection of Tualatin-Sherwood Road and I-5/99W Connector.~~

~~If the I-5/99W Connector is constructed in phases, some interim accesses may be provided in accordance with TDC Chapter 75 when the road is a two-lane road. When the road is completed to its design width, it may be necessary to construct sections of a frontage road to provide access to properties along the I-5/99W Connector. This would be mainly in the area between Graham Ferry Road and the Portland and Western (old Burlington Northern) railroad track.~~

(3) PACIFIC HIGHWAY 99W

On the southeasterly side of Pacific Highway 99W access will be provided by Cipole Road, ~~a future street~~ 130th Avenue, 124th Avenue and Hazelbrook Road. ~~Prior to construction of 130th Avenue, interim access in accordance with TDC Chapter 75 may be approved by the City Engineer.~~ In addition to 130th Avenue, shared driveway accesses will be allowed between Tax Lots 2S1 21A1800 (Grimm's Fuel, 18850 ~~99W~~Cipole Road) and 1801 (Construction Equipment Company, ~~18550~~ 18650 99W), and Lots 2000 (~~SW Readymix, 18610 99W~~no street address) and 2101 (Anderson Forge ~~and~~ & Machine, 18500 99W)~~, Tax Map 2S121A~~. A shared driveway ac~~-~~cess will also be allowed between 130th Avenue and 124th Avenue. ~~130th Avenue should match up with a re-aligned Pacific Drive on the northwesterly side of 99W.~~ West of Cipole Road and south of Pacific Highway 99W access will be provided by a new street or private drive extending west of Cipole Road across from the proposed Cummins Drive/Cipole Road intersection.

East of 124th Avenue on the southeasterly side of Pacific Highway 99W, property will access onto Tualatin Road or onto Hazelbrook Road. In this area a central access from Pacific Highway 99W consisting of one right-in and one right-out driveway may be allowed. The access point shall be located within the middle one-third of the frontage between 124th Avenue and Hazelbrook Road. The City Engineer shall determine ~~The~~ the final location ~~shall be determined by the City~~ Engineer at the time any portion of either site is developed.

On the northwesterly side of Pacific Highway 99W access will be provided by Cipole Road and Pacific Drive. West of Cipole Road and north of Pacific Highway 99W, access will be provided by ~~SW~~ Pacific Drive. Pacific Drive will be extended as a frontage road toward the 124th Avenue intersection as far as is practicable as determined by the City Engineer. Past that point shared driveways shall be used as determined by the City Engineer. Pacific Drive will be reconfigured to align with 130th Avenue to form a new intersection. From the reconfigured intersection with Pacific Drive and Pacific Highway 99W to 124th Avenue, interim accesses may be approved in accordance with TDC Chapter 75. Between 124th Avenue and the Tualatin River on the northwesterly side of Pacific Highway 99W existing accesses will remain except as noted below for development or redevelopment due to the median of Pacific Highway 99W these will be limited to right-turn in, right-turn out. Any redevelopment in this area will require that the driveway accesses be consolidated to a minimum number as determined by the City Engineer

(4) TUALATIN-SHERWOOD ROAD

(a) Nyberg Street to Boones Ferry Road:
Access to this section was purchased at the time of right-of-way acquisition. Access will be provided by Martinazzi Avenue and Boones Ferry Road. Notwithstanding other provisions of this Code, a single access onto Tualatin-Sherwood Road shall be allowed along the north side of this section in the block between Martinazzi Avenue and Boones Ferry Road; its exact location and configuration shall be determined by the City Engineer.

(b) Boones Ferry Road to ~~S.W.~~ 89th Avenue:
All access to this property was purchased as part of the right-of-way acquisition. Access shall be limited to right-in, right-out access on the south side at Mohave Court and on the north side ~~opposite~~ kitty-corner or opposite to Mohave Court. Full access shall be prohibited at these locations by means of a median barrier. ~~A new~~An existing four-way intersection serving ~~SW~~ 89th~~,~~ Avenue, ~~and~~ Old Tualatin-Sherwood Road, and a driveway of the Hedges Greene retail development~~strip mall~~ (Tax Lot 2S123D 2600) ~~shall be~~is located approximately 800 feet west of Boones Ferry Road. ~~This intersection shall be designed in cooperation with Washington County.~~

(c) 89th Avenue to Teton Avenue:
Tualatin-Sherwood Road access shall be limited as follows: On the north side of the road the Emery Zidell Commons Subdivision (Tax Map 2S1-~~23A~~23D) shall have two street accesses located at 90th Avenue across from 90th Court and at 95th Place at the west property line. The intersection of 90th Avenue with Tualatin-Sherwood Road shall ~~be~~ remain a four-way intersection. The four-way intersection at the west line of the Emery Zidell Subdivision shall ~~be~~ remain located across from 95th Place on the south side of Tualatin-Sherwood Road.

Between 95th Place and 97th Avenue on the north side of Tualatin-Sherwood Road, the two existing driveways may remain, but limited to right-in, right-out. A cross access will be developed to serve tax lots 2S1 23CA 200, 90000~~500, 501, 600~~, 700, 800, 801, and 900~~, Tax Map 2S123CA~~ for access to 95th Place.

~~At a point 850 feet east of Teton a~~The ~~cul-de-sac~~ street system (of 97th Avenue) ~~will~~ extends north with Potano Street as a stub to the west to ~~pick up~~serve ~~the property behind Premier Indus~~ trial Park Tax Lot 2S1 23CB 100. On the south side ~~Evergreen Business Park~~Tualatin Gardens Subdivision (Tax Lot 2S1 23DA, 1400) shall access onto Old Tualatin-Sherwood Road. Tax Lots 2S1 23DB 00600 and 2S1 23DC 00401~~600, Tax Map 2S1 23DB (9360 Tualatin-Sherwood Road)~~ shall access onto 95th Place. Between 97th Avenue and Teton Road, Tax Lots 2S1 23CC 200 and 300 ~~of Tax Map 2S123CC~~ shall have a joint driveway access, and Tax Lot 400 ~~of Tax Map 2S123CC~~ shall have a cross access to either the joint driveway on Tax Lots 200 and 300 or a cross access over Tax Lot 500 to Teton Avenue.

A driveway~~, which may become or a cul-de-sac street, will~~ extends south of Tualatin-Sherwood Road at 97th Avenue. The driveway ~~or cul-de-sac will~~ provides access for ~~the two~~ Tax Lot 2S1 23CD 300 and the six Tualatin Business West ~~(old Pardue) properties~~ Tax Lots 2S123CD 700, 800, 900,

1000, 1100, and 1200 ~~(2S1 23 CD/200, 300)~~ located between 95th Place and the properties to the west fronting ~~SW~~ Teton (2S1 23CC/1100, 1200, 1300). The properties fronting on Teton Avenue ~~will~~ take access from Teton Avenue. The Washington County water quality facility (Tax Lot 2S1 23CC 1000~~2S123CC/1000~~) is permitted the one existing service driveway adjacent to its east property line.

(d) Teton Avenue to Avery Street/112th Avenue:
On the north side of Tualatin-Sherwood Road no new ~~streets or~~ driveways will be constructed and existing driveways will be removed at the time of development or redevelopment. All of the properties will be served by either Manhasset Drive or 112th Avenue. 112th Avenue will connect to Myslony Street. Tax Lot 2S1 22DD 600 (Western Industrial Ceramics ~~(2S1 22D/200)~~ shall take access to Manhasset Street. An eastern extension off of the 112th Avenue/Myslony Street connection will terminate at and provide access to ~~the~~ Tax Lot 2S1 22D 600 (Pascuzzi Investment LLC ~~(2S1 22D/600)~~ and may provide additional access for Tax Lot 2S1 22DD 100 (UPS ~~(2S122D/301)~~, which has access from the west end of Manhasset Drive ~~properties. The actual align ments of the 112th Avenue/Myslony Street connection and the eastern extension to the Pascuzzi and UPS properties will be determined at the time the surrounding properties are developed.112th Avenue may be constructed over some period of time and will require interim access agreements per TDC 75.090~~.

On the south side of Tualatin-Sherwood Road there will be no new driveways or streets. Development of property east of Tax Lot 2S1 27AA 90000 (Arlington Commons at Tualatin Condominiums)~~Oregon Culvert (2S1 27A/101, 102)~~ on Tualatin-Sherwood Road may be accomplished only with a joint access agreement with ~~Air Liquid~~Lakeside Lumber through ~~the Air Liquid~~ its driveways on Tax Lot 2S1 27AA 2000. ~~The Oregon Culvert property (2S1 27AA/100 and 200)~~Tax Lot 90000 shall have one access onto Tualatin-Sherwood Road. Properties between ~~Oregon Culvert~~Arlington Commons at Tualatin and Avery Street on the south side ~~shall be~~are served from ~~SW~~ Avery Street and Avery Court and no driveway ~~or street~~ access will be constructed with Tualatin-Sherwood Road.

(e) Avery Street/112th to Cipole Road:
On the north side of Tualatin-Sherwood Road between 112th Avenue and Cipole Road the area will be served by the following streets or driveways:

(~~1~~i) ~~An intersection with~~ 115th Avenue ~~approximately 1,100 feet west of the intersection of Tualatin-Sherwood Road and 112th Avenue~~ which will extend north to Amu Street~~and east to an~~

~~intersection at 112th Avenue a minimum of 150 feet north of Tualatin-Sherwood Road~~.

(~~2~~ii) ~~An intersection approximately 1,300 feet east of the intersection of Tualatin-Sherwood Road and~~ 1240th Avenue which will extend north and west to an intersection at 124th Avenue approximately 800 feet north of Tualatin-Sherwood Road.

(~~3~~iii) 124th Avenue.

(~~4~~(iv) Cipole Road.
The exact location and configuration of the streets or driveways shall be determined by the City Engineer.

On the south side of Tualatin-Sherwood Road between Avery Street and 120th Avenue the area will be served by the following street system:

(~~1~~v) ~~An~~~~The intersection with~~ 115th Avenue ~~approximately 1100 feet west of Avery Street~~.

(~~2~~vi) ~~A~~~~The street intersection at~~ 120th Avenue, which may be restricted to right-in, right-out movements in the future.

The exact location and configuration of the streets shall be determined by the City Engineer. No driveways will be constructed in this area and existing driveways will be removed. Tax Lot 2S127B 800 (Select Sales (~~2S1 27B/800~~) shall have a cross access to 115th Avenue.

(5) ~~S.W.~~NYBERG STREET

Tualatin-Sherwood Road to 65th Avenue:

(a) West of I-5:
On the south side between Fred Meyer and I-5 ~~Freeway~~ any development shall be served by the Fred Meyer driveway (Tax Lot 2S1 24CA 200 or Urban Renewal Area Block 6) aligned with the ~~K-Mart~~ Urban Renewal Area Block 2 driveway on the north side and shall not be granted any access to Nyberg Street. No additional driveways will be allowed.

(b) East of I-5:
On ~~the east side of I-5 Freeway on~~ the north side ~~of the road between the Sweetbrier Inn and the Trailer Park of Portland, any additional development or redevelopment shall remove existing~~ driveways and, ~~the~~ Nyberg Woods ~~development~~~~shopping center~~ (Tax Lot 2S1 24A 2503) shall be limited to ~~two~~ one signalized ~~street~~ accesses ~~and~~ one right-in/right-out access.~~,~~ ~~and~~ ~~t~~The driveway for Forest Rim Apartments (Tax Lot 2S1 24A

2800) may remain. ~~and a driveway on the west side of 7035 SW Nyberg Street (2S124A/2505).~~

On the south side~~, east of I-5 Freeway of Nyberg Street, west~~ accesses~~s~~ to Tax Lot 2S1 24DB 200 (Shell)~~Texaco~~ ~~may~~shall be limited to right-in, right-out. ~~and~~ Tax Lot 2S1 24DB 100 (La-Z-Boy)~~zyboy~~ access shall be aligned with the Nyberg Woods signalized access~~Forest Rim Apartments will be relocated to align with the access on the north side of Nyberg Street~~. The existing westside Nyberg Retail access ~~may~~shall be limited to right-in, right-out. Tax Lot 2S1 24DA 100 (~~he~~ Meridian Park Veterinary Hospital and 7~~-11~~ Eleven) shall share a driveways that aligns with ~~may remain, or be closed or combined if redevelopment occurs, or be changed as needed when the~~ the 65th/Nyberg Street intersection ~~is reconfigured~~. There will be no new additional driveways created in this section of roadway.

(6) 124TH AVENUE

(a) Pacific Highway to Tualatin Road:
~~Tualatin Road shall intersect with 124th Avenue as a T-intersection approximately 450 feet south of Pacific Highway. No street or driveway accesses on the west side of this intersection will be permitted.~~ No driveway accesses shall be allowed between Pacific Highway 99W and Tualatin Road.

(b) Tualatin Road to Herman Road:
Between Tualatin Road and Herman Road, access to 124th Avenue shall be limited to a street intersection at Leveton Drive. The area west of the 124th Avenue/Tualatin Road intersection and south of Pacific Highway 99W will be served by a cul-de-sac connecting to the westward extension of Leveton Drive. ~~Access to 124th in this section may require the execution of interim agreements per TDC 75.090 to serve properties on the west side of 124th Avenue until the new street system can be constructed to adequately serve all the properties.~~

(c) Herman Road to Tualatin-Sherwood Road:
On the east side of 124th Avenue between Herman Road and Tualatin-Sherwood Road the area will be served by the following streets or driveways:

~~1~~(i) A street intersection at Myslony Street.

~~2~~(ii) A street or driveway intersection approximately 800 feet south of the Myslony Street/124th Avenue intersection extending east with an alternative to extend north to connect with Myslony Street a minimum

of 150 feet east of 124th Avenue. Access may be limited to right in/right out as determined by the City Engineer.

~~3~~(iii) ~~A street or driveway intersection approximately 800 feet north of the intersection of Tualatin-Sherwood Road and 124th Avenue~~ Cimino Street extending east and south to an intersection at Tualatin-Sherwood Road across from 120th Avenue. The exact location and configuration of the streets and driveways shall be determined by the City Engineer.

On the west side of 124th Avenue between Herman Road and Tualatin-Sherwood Road the area will be served by the following streets or driveways:

~~1~~(iv) A driveway across from Myslony Street.

~~2~~(v) A street or driveway intersection approximately 800 feet north of the intersection of Tualatin-Sherwood Road and 124th Avenue. The exact location and configuration of the streets or driveways shall be determined by the City Engineer.

(d) Tualatin-Sherwood Road to Tonquin Road ~~and/or a future I5/99W Connector~~:

Between Tualatin-Sherwood Road and Tonquin Road ~~and/or a future I5/99W Connector~~, access to 124th Avenue shall be limited to street intersections at Blake Street and the unnamed east-west collector street. Depending on when this segment of 124th Avenue is constructed, ~~and where and when the I-5 to 99W Connector is constructed,~~ a (possibly interim) connection to Tonquin Road may also be provided.

(7) LOWER BOONES FERRY ROAD

(a) Boones Ferry Road to Childs Road:
On the south side of the road, Tax Lot 2S1 24AB 800 ~~the~~ (Club Sport Oregon ~~property (old Costco site)) (2S124AB, 800) (18120 SW Boones Ferry Road)~~ shall have its access located at its east property line. This access shall be combined with the access of the Mt. Hood Chemical Building ~~(the old Chadwick building)~~ (Tax Lot 2S1 24A~~B~~ 700) at its west property line into one joint access.

On the north side of the road is a small lot (Leageld Development; Tax Lot) ~~(~~2S1 13DC 2000) ~~whose~~ the driveway of which shall line up with the intersection of Childs Road and Lower Boones Ferry Road.

(b) Childs Road to I-5 Freeway:

On the south side of the road the existing driveways may be allowed to remain. No new driveways will be permitted. ~~If the properties change to another Planning District, the number and location of the accesses may need to be changed. The property at the northeast corner of Lower Boones Ferry Road and Childs Road, (Foursquare Church) shall take its access off of Childs Road. The Billygan's Roadhouse (2S113DC/700 & 800) shall share an access with 2S113DC/1100.~~

On the north side of the road, the existing driveways may be allowed to remain. No new driveways will be permitted. ~~The Robertson/Bioremediation lots (2S113DC/ 1800 & 1900) shall share a driveway. The Robinson Property (old Directors Furniture site) east of the Schneider Truck Terminal (the old Ryder Truck rental facility) (2S1 13DC/1000) shall align its driveway with the driveway immediately across Lower Boones Ferry Road on the south side. The Barbara Johnson property (2S1 13DC/501) shall share an access and may be limited to right-in, right-out. The CarQuest site (2S113DC/501) shall take access off of Hazel Fern Road.~~

(c) I-5 Freeway northerly to Bridgeport Road:
On the west side, Hazel Fern Road shall intersect with Lower Boones Ferry Road, as Traveller's Lane. ~~The Village Inn's (2S113DB/1200 & 1300) access may remain. If the site is re- developed, access shall be determined by the City Engineer. .Shilo Inn (2S1 13DB 1400) shall access off of Hazel Fern Road.~~

On the east side, the Tri-Met park and ride shall be permitted two driveway accesses as determined by the City Engineer.

(d) 72nd Avenue to the east City limits:
On the north side access shall be permitted only by 65th Avenue and 63rd Avenue and a right-in, right-out driveway between 65th and 63rd Avenues. Between 63rd Avenue and the east City limits the properties fronting Lower Boones Ferry Road shall take access from 63rd Avenue.

On the south side access shall be permitted at 65th Avenue. Between 65th Avenue and the east City limits no new accesses shall be permitted. A median may be constructed to limit access to right-in, right-out.

(8) BOONES FERRY ROAD

(a) North City Limits to the Tualatin River:
All existing driveways will remain. No new driveways will be permitted.

(b)Tualatin River to Tualatin Road:
Between the River and Martinazzi Avenue on the south side, the access for the apartments (Tax Lot 2S1 24B/ 1500) will be closed and converted

over to the Loop Road. The Loop Road ~~may~~ will have a right-in, right-out connection to Boones Ferry Road between the river and Martinazzi Avenue. On the south side of Boones Ferry Road between Martinazzi Avenue and the driveway for the White Lot (~~old~~ formerly Lot C), any development or redevelopment shall take access over the White Lot or from Martinazzi Avenue. Between the White lot and 84th Avenue, all properties shall have combined accesses resulting in only one access on Boones Ferry Road. Between 84th Avenue and Tualatin Road on the south side, any redevelopment shall result in no driveways onto Boones Ferry Road and access shall be taken from 84th Avenue or Seneca Street.

On the north side ~~the Baranzano (~~Tax Lots 2S1 24BC~~/~~ 1301 and~~,~~ 1400 ~~(known for the defunct~~ River House project through applicant Baranzano and owned by CSB LLC~~)~~ and ~~Bray~~ Tax Lot ~~(~~2S1 24B~~/~~ 1300 (Apartments by Hedges Creek; Kaplan) ~~properties~~ shall combine their driveways at a location to be determined by the design of the Martinazzi Avenue-Boones Ferry Road inter-section. ~~T~~Further the ~~Baranzano~~ River House and Kaplan Apartments by Hedges Creek ~~(formerly Greulich) (2S1 24BC/1300)~~ properties shall combine their access into one on Lot 1300 across from the White lot's driveway. Between the Green (~~old~~ former Lot G ~~lot~~) and Blue (~~old~~ former Lot H ~~lot~~) ~~lots~~Lots, any redevelopment of these properties shall remove the existing driveways and take access from the public parking lots from a cross access between the two public lots. Between the Blue ~~lot~~ Lot and Tualatin Road any development or redevelopment shall have access off of Tualatin Road at the north edge of the property or over the Blue ~~lot~~Lot.

(c) Tualatin Road to Tualatin-Sherwood Road:
On the west side of this road is the Portland ~~and~~ & Western ~~(old Burlington Northern) railroad~~ Railroad (PNWR) tracks. There will be no access to Boones Ferry Road across the ~~Portland and~~ ~~Western~~PNWR tracks except an access for a public street to the west side of the railroad tracks, centered on the centerline of Nyberg Street. The existing two driveways to ~~the Pratt-Broome (~~Tax Lot 2S1 23D ~~/2~~3400 (Sweek House also known as Willowbrook) ~~property~~ shall be allowed a gated emergency access onto Boones Ferry Road, the other access shall be closed and access taken over Tax Lot 2S1 23D 2600 (~~the~~ Hedges Greene ~~R~~retail development~~strip mall)~~ to Nyberg Street.

On the east side of this road, all redevelopment shall lead to elimination of all driveways onto Boones Ferry Road. Vehicular access to Boones Ferry Road in this section shall be limited to the Seneca Street intersection and Nyberg Street intersection. This will require interim access agreements per TDC 75.090.

(d) Tualatin-Sherwood Road to Sagert Street:

On the west side, all existing driveways will be allowed to remain. On the frontage of the property of the demolished historic ~~former Old~~ Tualatin ~~Elementary~~Elementary ~~Grade~~ School ~~property~~ (Tax Lots 2S1 23DD 500 and 501), ~~frontage (2S123DD 500),~~ a new local street intersection is allowed on ~~SW~~Boones Ferry Road that connects to a future public street on the Old Tualatin Elementary School property that extends north from ~~SW~~ Sagert Street in the approximate alignment of ~~SW~~ 90th Avenue. The new local street intersection may be located approximately 500 ft. north of the intersection with ~~SW~~ Sagert Street. Tax Lot 2S1 23DA 100 (~~The Tualatin Center~~unnamed ~~strip mall~~ retail development at the intersection with Warm Springs Street~~property (the old Galloway site) (2S1 23DA/100)~~ ~~(19401-19417 Boones Ferry Road~~) will have one access aligned with Warm Springs.

On the east side, the ~~old McDonald's~~ driveway of McDonalds (Tax Lots 2S1 24CB 1201, 1301, and 1400) was closed and shall remain closed ~~(2S1 24CB/1201)~~. Any additional development on the Brock property (2S1 24CB 2100) shall result in closure of this driveway to Boones Ferry Road. Any additional development on ~~the Ziedman property~~ (Tax Lot 2S1 24CB/ 2200 (Tualatin West Center retail development) shall result in closure of this driveway to Boones Ferry Road. Between Warm Springs Street and Tualatin-Sherwood Road, as an option to closing the driveways at Brocks, and Tualatin West Center~~Ziedmans~~, it may be permissible to construct a raised median barrier or other improvements in Boones Ferry Road in this section to physically eliminate left turning movements, thus limiting all these driveways to right turn in, right turn out. Any redevelopment of the residential property between Mohawk and Sagert on the east side of Boones Ferry Road shall be accomplished in such a manner that the ultimate access to this area is from a street off of Sagert Street at its intersection with 86th Avenue. This may require interim agreements in accordance with TDC 75.090. All existing driveways in this area will be allowed to remain so long as the use of the property does not change.

(e) ~~Boones Ferry Road south of~~ Sagert Street to Avery Street:
The existing driveways will be allowed to remain. Any redevelopment of any residential property between Sagert and Avery shall result in no additional driveways being constructed in this area

(f) Avery Street to Ibach Street:
South of Avery Street, the Sundae Meadows Subdivision and Tualatin Presbyterian Church (Tax Lot 2S1 26AC~~,~~ 301) ~~(9230 Siletz Drive)~~ shall access Boones Ferry Road via Siletz Drive. One additional street or private drive (Cherry Lane) will be allowed~~provided~~ for the ~~Boones Ferry Condos (2S1 26AC Supplemental~~Boones Ferry Commons Condominiums (Tax Lot 2S1 26CA 90000).

(g) Ibach Street to Norwood Road:
Development of these residential properties shall result in no more than two driveway accesses for Tualatin High School, one emergency access with no curb cut for Graham's Landing Townhomes Condos (~~SW Corner of Boones Ferry and Ibach~~Tax Lot 2S1 35BA 90000) and only street intersections for other properties. All street intersections on Boones Ferry Road between Ibach and Norwood shall be spaced a minimum of 500 feet apart.

(9) 65TH AVENUE

(a) Nyberg to Borland:
There will be no new additional driveways.

(b) Borland Road to ~~Sagert Street~~south city limits:
~~There will be no new driveways.~~ A street connection will be constructed across from Sagert Street to serve property to the east of 65th Avenue.

(10) BORLAND ROAD

(a) Between 65th and the Entrance to Bridgeport School:
In this section of roadway, as the residential properties develop, all accesses to Borland shall be limited to street intersections. These street intersections shall be spaced a minimum of 500 feet apart. All development in this area shall be interconnected so there are no dead-end entrances from Borland Road.

(b) Bridgeport School Entrance to Saum Creek:
As the residential properties develop, all accesses to Borland shall be limited to street intersections. These street intersections shall be spaced a minimum of 500 feet apart. All development in this area shall be interconnected so there are no dead-end entrances from Borland Road. Access to Prosperity Park Road is allowed.

(11) BRIDGEPORT ROAD

(a) 72nd Avenue to the West City Limits:
On the north side, the existing driveways will be allowed to remain. No new driveways will be permitted. ~~the Durham Quarry (2S113DB/100) access will be limited to three driveways. Two driveways shall align across from Hazel Fern Road and the REI driveway and the final driveway location at the southwest corner of the site shall be determined by the City Engineer. As part of the Durham Quarry development Finday Street in the City of Durham at the northwest corner of the site may be an access to the site.~~

On the south side the existing driveways will be allowed to remain. No new driveways will be permitted. ~~between Lower Boones Ferry Road and Hazel Fern Road no driveway access shall be permitted. From Hazel Fern to the City limits, A-1 Coupling (2S113DB/701) shall take access from Hazel Fern Road. The undeveloped property (2S113DB/600) shall have a joint access with REI (2S113DB/500). Bridgeport Office (Tax Lot 2S1 13DB/ 400) and the driveway easement for Tax Lot 2S1 13DB/ 401 shall combine driveways.~~

(12) 72ND AVENUE

(a) Bridgeport Road to North City Limits:
The existing driveways will be allowed to remain. No new driveways will be permitted. ~~On the east side no street or driveway access shall be permitted. Access to the Tri-Met Park and Ride shall be provided from a new driveway access serving the Borders Book development in the City of Tigard. On the west side no street or driveway access shall be permitted. Access to 72nd from the Durham Quarry development will be in the City of Tigard~~

(13) MARTINAZZI AVENUE

(a) Boones Ferry Road to Seneca Street:
On the west side, any redevelopment on the ~~Doyle (old Silvey)~~ Haberman and Sopft Touch Dentistry property (2S1 24BC/ 1500~~,~~ and 1503) or the ~~Halstin (old post office~~ unnamed retail development property with corner tenant Umpqua Bank ~~)~~ (2S1 24BC/ 1502) shall result in combining these two driveways into one driveway on Martinazzi Avenue, or the Halstin retail development property shall take access from the White ~~public parking~~ Lot (~~old~~ former Lot C) to Boones Ferry Road.

On the east side the existing driveway shall be removed and access shall be taken off of the Loop Road.

(b) Seneca Street to Nyberg Street:
No driveways shall be permitted. The raised center median prohibiting left turns in this area shall remain until driveways are removed. On the west side on Tax Lot 2S1 24BC 2702 ~~the~~ (Wells Fargo Bank), the driveway shall be removed and access taken from Seneca Street or Nyberg Street. On the east side the driveway for Tax Lot 2S1 14B/ 2000 (Tualatin Center retail development Building 1) shall be removed and access taken from the Loop Road or Nyberg Street.

(c) Nyberg Street to Tualatin-Sherwood Road:
There shall be no access to Martinazzi Avenue.

(d) Tualatin-Sherwood Road to Warm Springs Street:
The only access shall be the existing Fred Meyer/Martinazzi Square driveway intersection.

(e) Warm Springs Street to Sagert Street:
There shall be no additional access granted. The only street intersection will be Mohawk Street.

~~(14) TUALATIN ROAD~~

~~(a) Boones Ferry Road to Hall Boulevard Extension~~Chinook Street:
~~On the west side is the Portland and~~ & Western railroad ~~Railroad (PNWR) tracks (the old Burlington Northern tracks). There will be no access to Tualatin Road across the tracks.~~

~~On the east side a driveway access may be permitted for~~ undeveloped ~~Tax Lot~~ 2S1 24BC/ 300. ~~The existing driveways for~~ Tax Lots ~~2S1 24BC/ 100 &~~ and 200 ~~(Tualatin Community Park) may remain.~~

~~Hall Boulevard Extension to Chinook Street:~~

~~On the north and east side no new driveway access shall be permitted. Redevelopment shall require access to be taken from 84th Avenue or Cherokee Street.~~

~~On the south and west side, no new driveway accesses shall be permitted. Access related to redevelopment of 2S123/ 100 shall be determined by the City Engineer.~~

~~(b) Chinook Street to Herman Road:~~
~~No new driveway accesses shall be permitted. On the north side any development or redevelopment of the Tualatin Country Club (2S1 14D/ 500) shall require a street or driveway connection aligning with 90th Avenue. Redevelopment of~~ Tax Lots ~~2S1 23BA/ 2403 or 2S123BA/4800 shall require access to Cheyenne Way connecting to Tualatin Road.~~

~~On the south side of this road is the Portland and~~ & Western railroad ~~Railroad (PNWR)~~ tracks~~(old SP tracks). There will be no access to Tualatin Road across the tracks except for 90th Avenue and the Durametal (~~Tax Lot ~~2S1 23BD/ 800 (multi-tenant industrial building) driveway.~~

(14) SAGERT STREET

(a) Martinazzi Avenue to 65th Avenue

No new driveways or streets shall be allowed, except the City Engineer may allow one driveway from the SE corner lot of Sagert and Martinazzi. This driveway may be restricted to right-in, right-out.

~~HALL BOULEVARD~~
~~Tualatin Road to North City Limits:~~

~~No driveway access shall be allowed to the Hall Boulevard extension. A street connection shall be made for the Lower Boones Ferry Road/Tualatin Road extension.~~

(15) LEVETON DRIVE

(a) 1~~4~~08th Avenue to 1~~0~~18th Avenue:
On the north side of Leveton Drive, JAE (2S122B/ 200) shall align a driveway across from 118th Avenue and be permitted a second driveway approximately 50 feet from their east property line. Novellus (2S122AA/ 500 and 2S122AB/ 100) shall be permitted three driveways located approximately 25 feet and 950 feet from the west property line for Tax Lot 100 and 600 feet west of 108th Avenue for Tax Lot 500.

On the south side, Phight Inc. (2S122/ 300) shall be allowed a driveway aligned with the west Novellus (2S122AB/ 100) driveway and a driveway adjacent to their east property line. Fujimi (2S122/ 400) shall be allowed a driveway adjacent to their west property line and east property line. Tofle (2S122AD/ 400) shall be allowed a driveway aligning across from the Novellus (2S122AA/ 500) driveway and a second driveway approximately 260 feet west of 108th Avenue.

(b) 118th Avenue to 124th Avenue:
The existing driveways will be allowed to remain. No new driveways will be permitted.

(16) 108TH AVENUE

(a) Leveton Drive to ~~H~~herman Road:
On the west side, Tofle (2S122AD/ 400) shall take access from Leveton Drive. The undeveloped property (2S122AD/ ~~500~~1300, 1400 and 1500) shall be allowed one driveway onto 108th Avenue. The old Shulz~~ts~~ Clearwater site (2S122AD/ 800) and then Northwest Pipe and Metal Fab (2S122AD/ 600 &and 700) shall provide a joint driveway access. The Wahco Inc. property (2S122AD/ 900) shall take access from Herman Road.

On the east side, the DOT Inc.~~.~~ site shall have a driveway that aligns with Leveton Drive. The City Operations Center (2S122AD/ 200 &and 300) will be permitted two driveways at locations to be determined by the City Engineer.

(17) HERMAN ROAD

(a) ~~108th~~Teton Avenue to ~~Teton~~108th Avenue:
On the north side~~,~~ the existing driveways will be allowed to remain. No new driveways will be permitted. ~~the City Operations Center (2S122AD/200 & 2300) will be permitted one driveway ap- proximately midpoint along their Herman Road frontage.~~ Airifco (2S123B/ 600) will be permitted one driveway adjacent to their west property line.
On the south side is the Portland ~~and~~ & Western ~~railroad~~ Railroad (PNWR) tracks ~~(the old SP tracks)~~. There will be no access to Herman Road across the tracks except for a shared driveway between the Kem Equipment (2S122AD/ 800) and Marshall Property (2S122AD/ 1000) located on the common property line. The Marshall Property (2S123BC/ 1000) shall take access from Teton Avenue.

(b) ~~Teton~~108th Avenue to ~~12~~418th Avenue:
On the north side the existing driveways will be allowed to remain. No new driveways will be permitted.

On the south side is the Portland & Western Railroad (PNWR) tracks. There will be no access to Herman Road across the tracks.

(c) 118th Avenue to 124th Avenue:
On the north side the existing driveways will be allowed to remain. No new driveways will be permitted.

On the south side is the Portland & Western Railroad (PNWR) tracks. There will be no access to Herman Road across the tracks.

(18) 90TH AVENUE

(a) Tualatin Road to Tualatin-Sherwood Road:
The existing driveways will be allowed to remain. No new driveways will be permitted.

(19) AVERY STREET

(a) Teton Road to Tualatin-Sherwood Road:
The existing driveways will be allowed to remain. No new driveways will be permitted.

(20) TETON AVENUE

(a) Tualatin Road to Herman Road:

The existing driveways will be allowed to remain. No new driveways will be permitted

(b) Herman Road to Tualatin-Sherwood Road:
The existing driveways will be allowed to remain. No new driveways will be permitted.

(c) Tualatin-Sherwood Road to Avery Street:
The existing driveways will be allowed to remain. No new driveways will be permitted.

~~LOWER BOONES FERRY ROAD EXTENSION WEST TO TUALATIN ROAD~~

~~Boones Ferry Road to Tualatin Road:~~

~~Driveway or street locations during redevelopment of the properties west of Boones Ferry Road and east of the river shall be determined by the City Engineer. A street connection shall be at the Hall Boulevard extension. Driveway or street access for properties along Chinook Street will be determined by the City Engineer at the time of development or redevelopment.~~

Section 29. TDC 75.140 is amended to read as follows:

(a) Major Collectors. Direct access from newly constructed single family homes, duplexes or triplexes shall not be permitted. As major collectors in residential areas are fully improved, or adjacent land redevelops, direct access should be relocated to the nearest local street where feasible.

(b) Minor Collectors. Residential, commercial and industrial driveways where the frontage is greater or equal to 70 feet are permitted. Minimum spacing at 100 feet. Uses with less than 50 feet of frontage shall use a common (joint) access where available. ~~Except for collectors designated Cs&p and Cs&2p, direct access from newly constructed single family homes, duplexes or triplexes shall not be permitted. Except for collectors designated Cs&p and Cs&2p, as minor collectors in residential areas are fully improved, or adjacent land redevelops, direct access should be relocated to the nearest local street where feasible.~~

(c) If access is not able to be relocated to the nearest local street, the City Engineer may allow interim access in accordance with 75.090 of this chapter to provide for the eventual implementation of the overall access plan.

Section 30. TDC 75.200 is deleted in its entirety:

Section 31. Section 74.425 is added to the TDC to read as follows:

(1) Street design standards are based on the functional and operational characteristics of streets such as travel volume, capacity, operating speed, and safety. They are necessary to ensure that the system of streets, as it develops, will be capable of safely and efficiently serving the traveling public while also accommodating the orderly development of adjacent lands.

(2) The proposed street design standards are shown in Figures 72A through 72G. The typical roadway cross sections comprise the following elements: right-of-way, number of travel lanes, bicycle and pedestrian facilities, and other amenities such as landscape strips. These figures are intended for planning purposes for new road construction, as well as for those locations where it is physically and economically feasible to improve existing streets.

(3) In accordance with the Tualatin Basin Program for fish and wildlife habitat it is the intent of Figures 74-2A through 74-2G to allow for modifications to the standards when deemed appropriate by the City Engineer to address fish and wildlife habitat.

(4) All streets shall be designed and constructed according to the preferred standard. The City Engineer may reduce the requirements of the preferred standard based on specific site conditions, but in no event will the requirement be less than the minimum standard. The City Engineer shall take into consideration the following factors when deciding whether the site conditions warrant a reduction of the preferred standard:

(a) Arterials:

(i) Whether adequate right-of-way exists

(ii) Impacts to properties adjacent to right-of-way

(iii) Current and future vehicle traffic at the location

(iv) Amount of heavy vehicles (buses and trucks).

(b) Collectors:

(i) Whether adequate right-of-way exists

(ii) Impacts to properties adjacent to right-of-way

(iii) Amount of heavy vehicles (buses and trucks)

(iv) Proximity to property zoned manufacturing or industrial.

(c) Local Streets:

(i) Local streets proposed within areas which have environmental constraints and/or sensitive areas and will not have direct residential access may utilize the minimum design standard. When the minimum design standard is allowed, the City Engineer may determine that no parking signs are required on one or both sides of the street.

Section 36. TDC Chapter 11 is deleted in its entirety and a new Chapter 11 is added to the TDC to read as follows:

Section 11.600.

(1) The Tualatin Transportation System Plan (TSP) establishes a long-range vision for the combination of projects, programs, and policies that will achieve Tualatin's transportation goals. To do this, the TSP looks at the needs of its residents, businesses, employees, and visitors – now (Year 2012), and what is expected for the future (Year 2035). TSPs are required by the state of Oregon for all cities with populations greater than 2,500 people. The current TSP (December 2012) is a major update of the TSP that was adopted in 2001, with analyses completed in 2000. The TSP considers the diverse needs of all users of the City's transportation network, and sets out recommendations that will serve the needs of transit riders, bicyclists, pedestrians, freight traffic, and drivers.

The TSP has been prepared in compliance with state, regional, and local plans and policies, including the Oregon Highway Plan (OHP), the state Transportation Planning Rule (TPR), Metro's Regional Transportation Plan (RTP), Metro's Regional Transportation Functional Plan (RTFP), Washington and Clackamas Counties Transportation System Plans, and Tualatin's Comprehensive Plan. The TSP presents a vision specific to the City's transportation future, while remaining consistent with these state, regional, and local plans. Plan elements will be implemented by the City, private developers, and regional, or state agencies.

(2) Regulatory Requirements. The TPR (OAR 660-012), developed by the state Department of Land Conservation and Development (DLCD) in accordance with state law, and Oregon Revised Statute (ORS) 197.712 guide preparation of the TSP and require that jurisdictions develop the following:

(a) A road plan for a network of arterial and collector roads

(b) A public transit plan

(c)A bicycle and pedestrian plan

(d) An air, rail, water, and pipeline plan

(e) A transportation financing plan

(f) Policies and ordinances for implementing the TSP

The TPR requires that alternate travel modes including cycling, walking, and transit, be given equal consideration with automobile travel and states that reasonable effort must be applied in the development and enhancement of alternate modes in Tualatin's future transportation system. Local jurisdictions must also coordinate their plans with relevant state, regional, and county plans and amend their own ordinances to implement the TSP.

Metro also requires that TSPs meet certain requirements that have been adopted in the RTP and RTFP. Local TSPs must:

(a) Establish an arterial street network, considering Metro's street design concepts and include a conceptual map of new streets

(b) Implement access management standards

(c) Include policies, standards, and projects that connect to transit stops

(d) Develop a transit plan consistent with the regional transit functional plan

(e) Develop pedestrian, bicycle, freight, parking, and transportation system management plans

(f) Ensure that regional transportation needs are incorporated into the TSP

(g) Include regional transportation goals for mode share and vehicles miles traveled

(3) The TSP Technical Memorandum, December 2012, is adopted by reference as a supporting technical document to the Tualatin Development Code (TDC). The TSP Technical Memorandum (December 2012) was prepared in compliance with the requirements of the TPR and includes the following chapters and appendices:

Chapter 1:	Introduction
Chapter 2:	Modal Plans
Chapter 3:	Implementation Policy and Code Language
Appendix A:	Plan and Policy Review
Appendix B:	Existing Conditions and Deficiencies
Appendix C:	Future Transportation Conditions
Appendix D:	Alternatives Analysis
Appendix E:	Transportation Funding and Improvement Costs

Appendix F: Implementing Ordinances
Appendix G: Public Involvement Process
Appendix H: Bicycle and Pedestrian

The Modal Plans element (Chapter 2) of the TSP Technical Memorandum (December 2012) addresses those components necessary for development of the future transportation network. Chapter 2 of the TSP Technical Memorandum (December 2012) was adopted as the transportation element of the Tualatin Community Plan in the Spring of 2013. This chapter is intended to provide policy guidance for transportation improvements, which are then implemented by the TDC.

(4) Plan Process. Tualatin began the process to update the TSP in 2011. Staff organized their work into four basic steps.

Step 1. The team (of staff and consultants) identified existing and future needs, opportunities, project goals, and objectives. City staff and the consultant project team assembled existing and collected new data, analyzed the data to identify deficiencies and opportunities, and attended a number of community events to ask about issues with the transportation system to form an understanding of transportation problems to be addressed in the TSP. Additionally, the project website included an issues map where visitors to the website could identify transportation problems within the City.

Step 2. Next the team created a long list of potential solutions and screened and evaluated potential solutions to see how ideas met project goals and objectives. An open house, several Transportation Task Force (TTF; refer to TDC 11.600) meetings, and Working Group meetings helped create and/or evaluate potential solutions. Throughout each of these steps, the project team engaged the community to ensure that each element was appropriate for Tualatin.

Step 3. The team prepared the draft recommendations for projects to be included into the TSP, refining a number of recommendations for the more complex transportation needs, and prioritizing the project recommendations to help both the City and the community define which projects and programs should be implemented first.

Step 4. Finally the team developed the draft and final TSPs for City adoption. This process focused on compiling all recommendations into the TSP document, and coordinating with relevant stakeholders in reviewing the TSP for completeness and consistency. These stakeholders included the community, City Council, Tualatin Planning Commission (TPC), Tualatin Parks Advisory Committee (TPARK), Washington County, Metro, Oregon Department of Transportation (ODOT), Clackamas County, adjacent cities, and the state's DLCD.

(5) Study Area. In December 2002, Metro expanded the Portland Urban Growth Boundary (UGB). This expansion included lands bordering Tualatin's Planning Area boundary that are intended to develop in the future for industrial uses. Following studies of impacts of these expansions, the city's TSP (2001) was amended to incorporate these new lands.

(a) The City of Tualatin, in conjunction with ODOT, initiated a study of a 23 acre area south of Highway 99W and west of SW Cipole Road in 2004. The Northwest Tualatin Concept plan addressed the impacts of developing this area for industrial uses. A technical analysis was prepared for the Concept Plan, following requirements of the TPR, that specifically addressed the transportation needs associated with developing the concept plan area at urban densities. Development of the Concept Plan was guided by input from an 11-member Technical Advisory Committee (TAC) that met four times during the planning process. The TAC included representatives from the City of Tualatin, ODOT, Washington County, Bonneville Power Administration (BPA), Metro, U.S. Fish and Wildlife Service (representing the Tualatin River National Wildlife Refuge), Portland General Electric (PGE), Clean Water Services (CWS), and TriMet. Mailing to stakeholders and a public open house were used to obtain community feedback on the draft plan. The TSP (2001) amendments relating to the Northwest Tualatin Concept Plan area were accepted by the City Council on June 13, 2005.

(b) The City of Tualatin, in conjunction with ODOT, initiated a study of a 431-acre area south of SW Tualatin-Sherwood Road and west of the Portland & Western railroad tracks in 2004. In 2010, the City analyzed this area plus an additional 183-acres south of the Concept Plan area. The Southwest Tualatin Concept Plan addressed the impacts of developing this area for industrial uses, particularly the portion of the area designated as a "regionally significant industrial area." A technical analysis was prepared for the Concept Plan, following the requirements of the TPR that specifically addressed the transportation needs associated with developing the Concept Plan area at urban densities. Development of the Concept Plan was guided by input from a 31-member TAC that met 12 times during the planning process. The TAC included representatives from the Cities of Tualatin, Sherwood, and Wilsonville; Metro; ODOT; DLCD; Washington County; PGE; BPA; CWS; Oregon Department of Geology and Mineral Industries; Coffee Creek Correctional Facility; Tualatin Valley Fire & Rescue (TVF&R); TriMet; Genessee and Wyoming Railroad; and property owners from the Tonquin Industrial Group, the Itel properties area and from Tigard Sand & Gravel. Mailings to stakeholders and four public open houses were used to obtain community feedback on the draft plan. The TSP (2001) amendments relating to the Southwest Tualatin Concept Plan area were accepted by the City Council on October 11, 2010.

(c) The study area for the current Tualatin TSP (2012) is comprised of the Tualatin Planning Area boundary, with one addition - the Basalt Creek planning area between Tualatin and Wilsonville. This area outside of the Planning Area Boundary, but within the study area, was included because of the transportation impact that it could have on the City's transportation network associated with the potential development of residential and employment areas. The study area is shown on several of the TSP's figures, including Figure 11-1 Functional Classification Plan.

(6) Public Involvement. The TSP planning process actively engaged the citizens of Tualatin in the production of its TSP. Residents, business owners, employees, and agency partners were encouraged to participate and were provided with multiple ways to share their thoughts - from initial goal development and issue identification to evaluation and screening. The public involvement plan outlined a thorough outreach process, making it easy and fun for the public to share ideas. The process provided meaningful ways to influence outcomes and took advantage of existing communication networks to reach more people.

(a) Transportation Task Force. The public involvement plan established a clear decision-making framework for the TSP. The Transportation Task Force (TTF), with input from Working Groups, advised the Tualatin Planning Commission (TPC). The TPC then made a recommendation to the City Council, which then adopted the final TSP Technical Memorandum (December 2012) and any changes to the City's Code. In addition, the TPARK made recommendations on the bicycle and pedestrian elements to the City Council. Each of these organizations received regular project updates from City staff throughout the process and each had representative members on the TTF. These groups were given the opportunity to provide their recommendation before the TTF decisions were forwarded to TPC and the City Council.

The TTF was formed in November 2011 for the purpose of advising the TPC and City Council about the needs and concerns of the community with regard to transportation. The City Council Citizen Involvement Committee selected TTF members carefully to be representative of neighborhoods, the business community, and the interests of Tualatin's advisory committees. Members and alternates were selected from a pool of applications. Neighboring communities, counties, TVF&R, ODOT, Metro, and TriMet also had representatives on the TTF.

Additional information about the TTF, Working Groups, and other aspects of the public involvement process for the TSP are included in Appendix G of the TSP Technical Memorandum (December 2012).

Section 11.610

(1) Over a span of three meetings the TTF prepared a vision for the TSP, conveyed as a set of goals and objectives. In early 2012 they adopted seven principal goals organized into the following goal categories:

Goal 1: Access and Mobility
Goal 2: Safety
Goal 3: Vibrant Community
Goal 4: Equity
Goal 5: Economy
Goal 6: Health and the Environment
Goal 7: Ability to be Implemented

These goals and their associated objectives were also discussed by the community at the first open house in February 2012 and by TPC, TPARK, and City Council. The full description of goals and objectives served as the basis for the TSP's evaluation framework. This means that all TSP recommendations were tied back to the underlying vision as established by these groups.

(2) Goal 1: Access and Mobility. Maintain and enhance the transportation system to reduce travel times, provide travel-time reliability, provide a functional and smooth transportation system, and promote access for all users.

Objectives:

(a) Improve travel time reliability/provide travel information for all modes including freight and transit.

(b) Provide efficient and quick travel between points A and B.

(c) Provide connectivity within the City between popular destinations and residential areas.

(d) Accommodate future traffic, bicycle, pedestrian, and transit demand.

(e) Reduce trip length and potential travel times for motor vehicles, freight, transit, bicycles, and pedestrians.

(f) Improve comfort and convenience of travel for all modes including bicycles, pedestrians, and transit users.

(g) Increase access to key destinations for all modes.

(3) Goal 2: Safety. Improve safety for all users, all modes, all ages, and all abilities within the City of Tualatin.

Objectives:

(a) Address known safety locations, including high-crash locations for motor vehicles, bicycles, and pedestrians.

(b) Address geometric deficiencies that could affect safety including intersection design, location and existence of facilities, and street design.

(c)Ensure that emergency vehicles are able to provide services throughout the City to support a safe community.

(d) Provide a secure transportation system for all modes.

(4) Goal 3: Vibrant Community. Allow for a variety of alternative transportation choices for citizens of and visitors to Tualatin to support a high quality of life and community livability.

Objectives:

(a) Produce a plan that respects and preserves neighborhood values and identity.

(b) Create a variety of safe options for transportation needs including bicycles, pedestrians, transit, freight, and motor vehicles.

(c) Provide complete streets that include universal access through pedestrian facilities, bicycle facilities, and transit on some streets.

(d) Support a livable community with family-friendly neighborhoods.

(e) Maintain a small-town feel.

(5) Goal 4: Equity. Consider the distribution of benefits and impacts from potential transportation options, and work towards fair access to transportation facilities for all users, all ages, and all abilities.

Objectives:

(a) Promote a fair distribution of benefits to and burdens on different populations within the City (that is, low-income, transit-dependent, minority, age groups) and different neighborhoods and employment areas within the City.

(b) Consider access to transit for all users.

(6) Goal 5: Economy. Support local employment, local businesses, and a prosperous community while recognizing Tualatin's role in the regional economy.

Objectives:

(a) Support a vibrant city center and community, accessible to all modes of transportation.

(b) Support employment centers by providing transportation options to major employers.

(c) Increase access to employment and commercial centers on foot, bike, or transit.

(d) Consider positive and negative effects of alternatives on adjacent residential and business areas.

(e) Accommodate freight movement.

(f) Facilitate efficient access for goods, employees, and customers to and from commercial and industrial lands, including access to the regional transportation network.

(7) Goal 6: Health/Environment. Provide active transportation options to improve the health of citizens in Tualatin. Ensure that transportation does not adversely affect public health or the environment.

Objectives:

(a) Provide active transportation options to area schools to reduce childhood obesity.

(b) Promote active transportation modes to support a healthy public and children of all ages.

(c) Provide interconnected networks for bicyclists and pedestrians throughout the City for all age groups.

(d) Consider air quality effects of potential transportation solutions. Protect park land and create an environmentally sustainable community.

(e) Consider positive and negative effects of potential solutions on the natural environment (including wetlands and habitat areas).

(8) Goal 7: Ability to Be Implemented. Promote potential options that are able to be implemented because they have community and political support and are likely to be funded.

Objectives:

(a) Promote fiscal responsibility and ensure that potential transportation system options are able to be funded given existing and anticipated future funding sources.

(b) Evaluate potential options for consistency with existing community, regional, and state goals and policies.

(c) Strive for broad community and political support.

(d) Optimize benefits over the life cycle of the potential option.

(e) Consider transportation options that make the best use of the existing network.

(f) Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood.

Section 11.620

(1) A city's functional classification plan defines the intended operations and character of roadways within the overall transportation system including standards for roadway and right-of-way width, access spacing, and pedestrian and bicycle facilities. The City of Tualatin's functional classification system applies to roadways owned by the City, the County, and the State, and includes principal arterials, major arterials, minor arterials, major collectors, minor collectors, connector, and local roads. Figure 11-1 presents the updated functional classification plan for the City of Tualatin.

The arterial roadways carry a high number of vehicles including transit and freight vehicles, and provide mobility with few opportunities for local access. Collectors assemble traffic from a neighborhood or district and deliver it to the closest arterial street. Collectors serve shorter trip lengths than arterials and have more local access opportunities. Both arterials and collectors within Tualatin are owned by a variety of agencies including the City, ODOT, and Clackamas and Washington Counties. The roadway owners are responsible for maintenance and upkeep on the roadways and they make decisions on upgrades to their facilities. TSP Technical Memorandum (December 2012) describes the functional classifications and the purpose they are intended to serve in more detail; Appendix A, Plan and Policy Review, of the TSP Technical Memorandum provides a detailed description of the various policies associated with roadway ownership.

There are a number of existing freight and truck routes through the City designated by the City, the State, and the Federal government. These routes have specific design criteria and mobility standards to ensure that these roadways serve freight traffic.

(2) Functional Classification Policies. Functional classification policies support the City's transportation goals and objectives included in TDC 11.610. Policies help provide direction for roadways and roadway classifications.

(a) Functional Classification Policy 1: Major and minor arterials will comprise the main backbone of the freight system, ensuring that freight trucks are able to easily move within, in, and out of the City.

(b) Functional Classification Policy 2: Continue to construct existing and future roadways to standard when possible for the applicable functional classification to serve transportation needs within the City.

(3) Street Design Standards. Street design standards by functional classification are included in TDC Section 74.425.

(4) The RTP's Regional Street Design System describes typical features of its street design designations. For comparison purposes, Metro's Regional Street Design System map has been recreated in Figure 11-2. The Tualatin TSP's street design standards for roadways shown on the RTP Regional Street Design System map are generally in conformance with the RTP's concepts, particularly in the areas of pedestrian and bicycle lanes, landscape strips, and medians or center turn lanes.

Section 11.630

(1) The street system modal plan consists of several sections: a listing of street urban upgrades and new streets, other intersection-specific or non-capacity streets projects, access management policies, and traffic operation standards. This modal plan is included in its entirety in the TSP Technical Memorandum (December 2012) and pertinent sections are included in this section of TDC Chapter 11.

(2) Summary of Limitations and Needs of Street System. Key needs identified for the street system include:

(a) Improved Roadway connectivity. New roadway connections should be explored to improve east-west connectivity south of SW Tualatin-Sherwood Road and north-south regional connectivity. Metro RTP policies related to a complete street system identify one-mile spacing between major arterial streets with collector streets or minor arterials spaced a half-mile apart.

(b) Improved travel time along congested corridors. Focus on reducing vehicle delay on key corridors.

(c) Intersection improvements. Address intersection delay and intersection issues in congested areas.

(d) Upgrading roadway geometries. City design standards for roadway width, sidewalks, and bicycle facilities should be followed where specific deficiencies have been identified.

(e) Additionally, safety is a concern for the community. Safety issues were identified at the following intersections:

(i) SW Tualatin-Sherwood Road and SW Boones Ferry Road

(ii) SW Nyberg Street and I-5 southbound off ramps.

(3) Roadway Policies. The following establish the City's policies on roadways.

(a) Roadway Policy 1: Implement design standards that provide clarity to developers while maintaining flexibility for environmental constraints.

(b) Roadway Policy 2: Ensure that street designs accommodate all anticipated users including transit, freight, bicyclists and pedestrians, and those with limited mobility.

(c) Roadway Policy 3: Work with Metro and adjacent jurisdictions when extending roads or multi-use paths from Tualatin to a neighboring City.

(4) Local Streets Plan. The RTP calls for cities to identify all contiguous areas of vacant and re-developable parcels of five or more acres planned or zoned for residential or mixed-use development and to prepare a conceptual new streets plan map. Figure 11-3 presents the City of Tualatin's Local Streets Plan. The intent of this map is to identify the locations of future street connections and desired connections within future development that promote a connected street system. The endpoints of the connections should be considered fixed, unless the Community Development Director or their designee determines that an alternate connection point is preferable due to safety, operations, improved connectivity concerns, or environmental impacts. The routes connecting endpoints may vary, as long as a reasonably direct route between the two points is provided.

(5) Access Management. Access management is important to maintain traffic flow and ensure safety on the City's arterial street network, including SW Tualatin-Sherwood Road, Oregon Highway 99W (OR 99W), and other high-traffic routes. Limiting the number of points where traffic can enter and exit reduces potential conflict points, improves roadway performance, and reduces the need for capacity expansion. The City manages access through Chapter 75 of the TDC; that chapter details where access is permitted on arterial and collector roads within the City. Tualatin must coordinate with Washington and Clackamas Counties and ODOT to manage access on roads the City does not own, including SW Tualatin-Sherwood Road, SW Cipole Road, SW 65th Avenue, SW Borland Road, and sections of SW Boones Ferry Road. Chapter

75 of the TDC, most recently updated in 2012, has specific access standards for each arterial road within Tualatin. It provides recommendations for future changes on specific roads, as well as potential solutions for access issues.

(a) Access Management Policies. Access management policies are:

(i) Access Management Policy 1: No new driveways or streets on arterial roadways within the City, except where noted in the TDC, Chapter 75, usually when no alternative access is available.
(ii) Access Management Policy 2: Where a property abuts an arterial and another roadway, the access for the property shall be located on the other roadway, not the arterial.

(iii) Access Management Policy 3: Adhere to intersection spacing included in Chapter 75 of the TDC.

(iv) Access Management Policy 4: Limit driveways to right-in, right-out (where appropriate) through raised medians or other barriers to restrict left turns.

(v) Access Management Policy 5: Look for opportunities to create joint accesses for multiple properties, where possible, to reduce the number of driveways on arterials.

(vi) Access Management Policy 6: No new single-family home, duplex or triplex driveways on major collector roadways within the City, unless no alternative access is available.

(vii) Access Management Policy 7: On collector roadways, residential, commercial and industrial driveways where the frontage is greater or equal to 70 feet are permitted. Minimum spacing at 100 feet. Uses with less than 50 feet of frontage shall use a common (joint) access where available.

(6) Traffic Operations Standards. This section includes a discussion of standards included in the OHP, ODOT's Highway Design Manual (HDM), and the TPR and City documents for local roadways. Based on the preferred system for operational analysis, there are four intersections that do not meet jurisdictional standards after mitigation strategies are included. These intersections that experience operational constraints are in the SW Lower Boones Ferry Road/I-5 interchange area, and are due to the additional motor vehicle trips associated with the widening of SW Boones Ferry Road from SW Martinazzi Avenue to SW Lower Boones Ferry Road.

The first mitigation strategies developed explored transportation system management techniques (maximizing operations at intersections through signal timing adjustments and/or phasing adjustments). If system management techniques did not

achieve acceptable jurisdictional operations, localized capacity improvements were explored (for example, a new turn pocket). Generally these improvements allowed for adequate signal operations under a mitigated scenario.

There were some intersections located in the downtown core area that were not able to meet jurisdictional standards without the implementation of significant capacity and/or roadway widening improvements. These types of major infrastructure improvements were deemed to be too impactful to the downtown core and were not included in the final preferred system improvements. The downtown Tualatin area is designated a Town Center by Metro, and using that designation, Town Centers are allowed to not meet jurisdictional standards. Alternate standards for Town Centers in the RTP are based on a two-hour peak hour. The standard volume to capacity ratio (v/c) for the first peak hour is 1.1, and for the second peak hour is 0.99. These intersections meet the RTP standards, and there is no need for additional alternate mobility standards.

Section 11.640.

(1) Public transit in Tualatin is envisioned to be multi-faceted by including local and express bus service, commuter rail, potential high capacity transit, and local transit shuttle services. In addition, the community's vision for public transit includes improvements in the quality of transit service, as well as land uses that better complement and encourage use of transit in downtown Tualatin. Figure 11-5 presents the updated transit system for the City of Tualatin.

(2) Summary of Limitations and Needs for Transit. TriMet does not provide transit service within all areas of Tualatin or on all major corridors. No transit service is provided on SW Tualatin-Sherwood Road or SW Tualatin Road, and many residents in the western portion of the City live more than a mile from the nearest transit line. Many residents who do live near a bus line are not served by transit at regular intervals during the day. According to the Conceptual Linking Tualatin Plan (Draft 2012), over 11,000 workers and over 5,000 households (over half of the people living and working in the city) lack regular transit service within a quarter mile of where they live or work. Because of the limitations of service during off-peak hours, noncommuting trips may be more difficult to complete using transit in Tualatin. Community feedback indicated the following specific needs for transit:

(a) Service connecting the west side of Tualatin to the downtown core

(b) Park-and-rides in the west and south areas of Tualatin

(c) Extended service hours, including weekend service

(d) More direct connections to places other than downtown Portland.

Additional needs for transit stops include direct and safe access to transit stops and bicyclist and pedestrian amenities at stops, especially where transit riders are able to transfer lines or modes.

(3) Transit Policies. The City of Tualatin's policies on public transit are as follows:

(a) Transit Policy 1: Partner with TriMet to jointly develop and implement a strategy to improve existing transit service in Tualatin.

(b) Transit Policy 2: Partner with the Tualatin Chamber of Commerce to support grant requests that would expand the Tualatin Shuttle services.

(c)Transit Policy 3: Partner with TriMet, Metro, and neighboring communities to plan the development of high-capacity transit in the Southwest Corridor, as adopted in the Metro High Capacity Transit System Plan.

(d) Transit Policy 4: Partner with TriMet, Metro, and neighboring communities to plan development of high-capacity transit connecting Tualatin and Oregon City, as adopted in the Metro High Capacity Transit System Plan.

(e) Transit Policy 5: Coordinate with ODOT and neighboring communities on conversations related to Oregon Passenger Rail between Portland and Eugene.

(f) Transit Policy 6: Develop and improve pedestrian and bicycle connections and access to transit stops.

(g) Transit Policy 7: Encourage higher-density development near high-capacity transit service.

(h) Transit Policy 8: Metro in the RTP calls for increased WES service frequency. The City will coordinate with TriMet, Metro, and ODOT to explore service frequency improvements and the possible inclusion of a second WES station in south Tualatin.

(i) In addition to the transit policies included here, Bicycle and Pedestrian Policies 7 and 8, included in TDC 11.650, are applicable to transit.

Section 11.650.

(1) This modal plan describes pedestrian and bicycle improvements to comfortably and safely accommodate bicyclists and pedestrians within the City. These include multi-use paths, specific bicycle and pedestrian improvements, and street

upgrades. Figure 11-4 presents the updated bicycle and pedestrian system for the City of Tualatin.

(2) Summary of Limitations and Needs for Bicycle and Pedestrian Facilities. This section summarizes limitations and needs for bicycle and pedestrian facilities, and multi-use paths. A full description of existing conditions and deficiencies for the bicycle, pedestrian, and pathway system can be found in Appendix B of the TSP Technical Memorandum (December 2012).

(a) Bicycle Facility Needs. Existing bicycle facilities in Tualatin have a few gaps and challenging connections:

(i) Difficult left-turn maneuvers

(ii) Difficult areas with low bike visibility

(iii) Bike lanes outside of turn lanes

(iv) Obstacles within the bike lanes

(v) Gaps in the network

(vi) In addition to these needs, there are a number of high-crash locations. Most crashes result in an injury to the bicyclist, and most occur on a dry roadway surface in daylight conditions. High-crash locations include SW Boones Ferry Road and SW Tualatin-Sherwood Road, as well as the SW Nyberg Road interchange ramps at I-5.

(b) Pedestrian Facility Needs. Pedestrian facility needs include:

(i) Fill sidewalk gaps on arterials and collector streets

(A) Sections of SW Herman Road
(B) Sections of SW Grahams Ferry Road
(C) Sections of SW Boones Ferry Road
(D) SW Blake Street between SW 105th and SW 108th Avenues
(E) SW Sagert Street overpass over I-5
(F) SW 105th Avenue between SW Paulina Drive and SW Blake Street

(ii) Narrow or obstructed sidewalks

(iii) Wide or angled crosswalks at intersections

(iv) Difficult crossing on major roadways (SW Boones Ferry Road, SW Tualatin-Sherwood Road, and roadways in the downtown core)

(v) Most of the pedestrian crashes reported in the 5-year crash study timeframe occurred on SW Boones Ferry Road, generally when a vehicle failed to yield for pedestrians. Most crashes occurred when a vehicle was turning.

(c) Multi-use Path Needs. Additional bicycle and pedestrian connections over the Tualatin River are needed to connect with existing regional paths, as well as to provide alternate routes to the one existing Ki-a-Kuts bridge that is exclusively for bicycles and pedestrians (from Tualatin Community Park to Durham City Park in Durham). Additionally, many of the existing multi-use paths are fragmented and do not connect; signs and other wayfinding guides are needed to inform bicyclists or pedestrians how to move among the various pathways, and from the pathways to on-street facilities. The planned multi-use path network is only half constructed, once the system is complete, the multi-use path network will be more comprehensive.

(3) Bicycle and Pedestrian Policies. The City of Tualatin's policies on bicycle and pedestrian facilities are as follows:

(a) Bicycle and Pedestrian Policy 1: Support Safe Routes to Schools (SRTS) for all Tualatin schools

(b) Bicycle and Pedestrian Policy 2: Work with partner agencies to support and build the Ice Age Tonquin Trail

(c) Bicycle and Pedestrian Policy 3: Allow wider sidewalks downtown for strolling and outdoor cafes

(d) Bicycle and Pedestrian Policy 4: Add benches along multi-use paths for pedestrians throughout the City (especially in the downtown core)

(e) Bicycle and Pedestrian Policy 5: Develop and implement a toolbox, consistent with Washington County, for mid-block pedestrian crossings

(f) Bicycle and Pedestrian Policy 6: Implement bicycle and pedestrian projects to help the City achieve the regional non-single-occupancy vehicle modal targets in Table 11-1.

(g) Bicycle and Pedestrian Policy 7: Implement bicycle and pedestrian projects to provide pedestrian and bicycle access to transit and essential destinations for all mobility levels, including direct, comfortable, and safe pedestrian and bicycle routes

(h) Bicycle and Pedestrian Policy 8: Ensure that there are bicycle and pedestrian facilities at transit stations

(i) Bicycle and Pedestrian Policy 9: Create on- and off-street bicycle and pedestrian facilities connecting residential, commercial, industrial, and public facilities such as parks, the library, and schools

(j) Bicycle and Pedestrian Policy 10: Create obvious and easy to use connections between on- and off-street bicycle and pedestrian facilities, and integrate off-street paths with on-street facilities.

(4) Bicycle Boulevards. Currently, there are no existing bicycle boulevards in Tualatin, though Washington County has bicycle boulevard policies and design standards.

Bicycle boulevards are roadways that use a variety of design treatments to reduce vehicle speeds so that motorists and bicyclists generally travel at the same speed, to create a safer and more-comfortable environment for all users. Bicycle boulevards may include a variety of applications ranging from minor street signing enhancements (such as shared lane markings) to larger scale projects (for example, bike-only access at intersections, traffic diverters). Boulevards also incorporate treatments to facilitate safe and convenient crossings where bicyclists must traverse major streets. Traffic controls along a boulevard may assign priority to through cyclists while encouraging through vehicle traffic to use alternate parallel routes.

Bicycle boulevards work best in well-connected street grids, where riders can follow intuitive and reasonably direct routes. Boulevards also work best when higher-order parallel streets exist to serve through vehicle traffic. Bicycle boulevards are generally located on streets with lower traffic volumes and vehicle speeds, such as minor collectors or local streets passing through residential neighborhoods. Typically a bicycle boulevard would be located on a street where vehicles travel less than 30 miles per hour and average daily traffic volume is less than 3,000 vehicles (in both directions).

Proposed bicycle boulevards in Tualatin are shown on Figure 11-4. These are all low volume, low speed streets that connect neighborhoods with roadways and trails where bicycle infrastructure investments have been made. As a short-term action, the City should consider signing these roadways as bicycle routes, and monitor usage on an annual basis. As bicycle usage increases, and bicyclists and drivers become more used to sharing travel lanes, further investments could be considered to enhance safety for bicyclists.

Section 11.660.

(1) Efficient truck movement plays a critical role in the economic wellbeing and development of Tualatin. Trucks must be able to access commercial, industrial,

manufacturing, distribution, and other employment areas both in Tualatin and connecting to the regional system. Future commercial/industrial uses are expected to be located consistent with the land uses identified in the Comprehensive Plan, which matches the current planning district designations, as codified in the TDC.

(2) The freight network illustrated in Figure 11-6 is largely consistent with the functional classification plan (Figure 11-1), which strives to connect industrial and manufacturing uses to the regional and state transportation network via a series of major and minor arterial roadways. The movement of raw materials and finished products via designated truck routes provides for efficient movement of goods while maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. Federally and state designated truck routes, part of the National Highway System (NHS), have been identified on I-5 and OR 99W. Metro identifies "road connectors" in the RTP freight network on SW 124th Avenue, SW Tualatin-Sherwood Road, SW Lower Boones Ferry Road, and SW Boones Ferry Road. The City of Tualatin designates additional truck routes on roadway facilities that connect commercial/industrial districts within the City to major arterials and, ultimately, to OR 99W, I-5, and I-205.

(3) The needs of the freight system are consistent with those identified in the Street System Plan (TDC 11.630). Projects that address needs related to truck routes, either directly or by providing alternate routes that improve traffic operations along truck routes, serve the needs of the freight system. All new roadways should be built to current City design standards to meet the operational needs of trucks on designated truck routes.

Section 11.670.

(1) Portland and Western Railroad (PNWR) owns and operates two freight rail lines within the City. One track (running north-south) accommodates both freight and the WES commuter rail, and an east-west line runs along the south side of SW Herman Road. As of November 2012 the east-west line carries one train daily in each direction, and the north south has two freight trains daily in addition to the WES trains described in the Transit section.

There are 13 gated public railroad crossings in Tualatin and a number of additional driveways or private roads that cross the railroad. The private crossings are stop controlled, but not signalized. Freight trains have the right of way at all intersections. The low number of trains does not present a large safety concern in the City, and recent Quiet Zone work done in conjunction with the north-south WES rail line opening added gates at all public crossings.

(2) PNWR has no current plans to increase freight service through Tualatin. Although the east-west track runs adjacent to manufacturing areas, no rail sidings or other access to businesses are planned.

(3) Freight Rail Policies. Following are policies for freight rail:

(a) Freight Rail Policy 1: Continue to coordinate with PNWR and TriMet to ensure that railroad crossings are safe and have few noise impacts on adjacent neighborhoods

(b) Freight Rail Policy 2: Look for opportunities to shift goods shipments to rail to help reduce the demand for freight on Tualatin's roads.

(c)Freight Rail Policy 3: Look for opportunities to create multi-modal hubs to take advantage of the freight rail lines

(4) Passenger Rail Policies. The City of Tualatin's policies on public transit are described in TDC 11.640 as part of the Transit Modal Plan. Those policies that may relate to the existing heavy rail lines in Tualatin include Transit Policies 3, 4, 5, and 8:

Section 11.680.

This section includes the Water, Pipeline and Air Plans.

(1) Water Plan. The Tualatin River is the only large waterway within the City of Tualatin. The river is used primarily for recreation and is open for canoeing and kayaking. Therefore, the TSP does not include any specific policies, programs or projects for the Tualatin River as part of the transportation network. However, several projects are proposed in other sections of the TSP Technical Memorandum (December 2012) to increase access to the river for recreation purposes.

(2) Pipeline Plan. A natural gas transmission pipeline and a gasoline pipeline cross through the City. There is no anticipated need to increase pipeline capacity or construct new pipelines through the City, and therefore no such improvements are proposed in the TSP.

(3) Air Plan. There are no airports within the City of Tualatin, although several airports are located within 30 miles of the City: the Aurora State Airport, Hillsboro Municipal Airport, and Portland International Airport. These airports meet the commercial, freight, and business aviation needs of Tualatin residents. No plans are proposed to construct airport facilities within the City of Tualatin; existing airports are anticipated to continue serving the citizens of Tualatin adequately.

Section 11.690.

(1) The TPR requires all cities with populations greater than 25,000 people to develop a Transportation Demand Management (TDM) Plan. The RTP also requires that TDM strategies be used to encourage alternative transportation modes and achieve higher vehicle occupancy targets. TDM measures are designed to change travel behavior in order to reduce the need for more road capacity and improve performance

of the road system. Typical TDM projects include encouraging use of travel modes other than the auto, ride sharing, and measures to reduce the need for travel—such as telecommuting policies.

TDM policies and projects can be cost-effective ways to reduce congestion by encouraging the use of other modes, reducing the need for travel or reducing the number of vehicle-miles driven. The City of Tualatin can implement a range of TDM measures to manage travel demand, in conjunction with partner organizations in many cases. Providing bicycle, pedestrian, and transit infrastructure can be effective means to encourage drivers to switch to other modes. Many of the pedestrian, bicycle, and transit improvements proposed in other sections of the TSP can be considered TDM measures as they encourage use of travel modes other than the auto. In addition to these infrastructure projects, a number of strategies are applicable to Tualatin, as discussed in detail in the TSP Technical Memorandum (December 2012).

(2) Transportation Demand Management Policies. The following policies support other modal plans in the TSP and help Tualatin meet its mode-share targets, as required by the RTP and presented in Table 11-1:

(a) TDM Policy 1: Support demand reduction strategies, such as ride sharing, preferential parking, and flextime programs.

(b) TDM Policy 2: Partner with the Tualatin Chamber of Commerce, the Westside Transportation Alliance, major employers, and business groups to implement TDM programs

(c) TDM Policy 3: Explore the use of new TDM strategies to realize more efficient use of the City's transportation system

(d) TDM Policy 4: Support Washington County's regional TDM programs and policies to reduce the number of single-occupancy vehicle (SOV) trips

(e) TDM Policy 5: Promote the use and expansion of the Tualatin Shuttle program.

(3) Metro Modal Targets. Metro in its 2035 RTP established modal targets for how residents in the region will make trips in 2040. These are separated out by regional designations. Tualatin has a number of designations within the City limits, as described in the following sections and shown in Figures 9-4 (Design Type Boundaries) and 11-2 (Metro Regional Street Design System).

(a) Town Center. This designation is consistent with the Town Center Plan study area, centered on the Lake of the Commons and includes land south of the Tualatin River and west of I-5, including the Tualatin Community Park. The western Boundary is SW 95th Avenue south to SW Tualatin-Sherwood Road, and then~~~~ southern boundary is SW Tualatin-

Sherwood Road to approximately SW Boones Ferry Road then continues east near SW Warm Springs Street.

(b) Corridors. There are a number of corridors in Tualatin: SW Tualatin-Sherwood Road is a regional street, along with 99W, SW 124th Avenue, and SW Tualatin Road. SW Boones Ferry Road is a community street, and SW Tualatin-Sherwood Road/SW Nyberg Street in downtown are community boulevards. Regional arterials include 99W, SW 124th Avenue, SW Boones Ferry Road, SW Tualatin-Sherwood Road, SW Herman Road, SW Nyberg Street, SW Sagert Street, SW Borland Road, and SW 65th Avenue.

(c) Employment Land. Most of western Tualatin is employment land south of SW Tualatin Road and west of the railroad tracks.

(d) Parks and Natural Areas. Hedges Creek is designated a park and natural area, along with many of the other greenway areas including Nyberg Creek Greenway, Saum Creek, and other City parks.

(e) Neighborhoods. Neighborhood areas include southern Tualatin near SW Boones Ferry Road, northern Tualatin north of SW Tualatin Road, and eastern Tualatin excluding the hospital area and the greenways and parks.

(f) These designations have modal targets associated with them, as seen in Table 11-1. The non-drive-alone modal target for Tualatin is 45-55 percent in the Town Center and Station Community, and 40-45 percent for the employment land, parks and natural areas, and neighborhoods.

Remainder of page left blank for formatting purposes

TABLE 11-1
Metro Modal Targets

2040 Regional Designation	Non-drive-alone Modal Target	2040 Regional Designation	Non-drive-alone Modal Target
Regional Centers Town Centers Main Streets Station Communities Corridors Passenger Intermodal Facilities	45–55%	Regional Centers Town Centers Main Streets Station Communities Corridors Passenger Intermodal Facilities	45–55%
Industrial Areas Freight Intermodal Facilities Employment Areas Inner Neighborhoods Outer Neighborhoods	40–45%	Industrial Areas Freight Intermodal Facilities Employment Areas Inner Neighborhoods Outer Neighborhoods	40–45%

Source: Metro's 2035 RTP

Section 11.700.

(1) Transportation System Management (TSM) measures are designed to increase the efficiency, safety, capacity, and level of service of the transportation system without physically increasing roadway capacity. Typical TSM projects include traffic light synchronization, traffic calming, travel information systems, access management, and parking management strategies. Many of the projects listed in the modal plans—including the Transit, Pedestrian and Bicycle, and Access Management plans—qualify as TSM measures.

Many TSM tools can be implemented inexpensively to help make the existing system work more efficiently. A wide range of TSM strategies are applicable to Tualatin. These are discussed in detail in the TSP Technical Memorandum (December 2012).

Section 11.710.

(1) The City owns several public parking lots in downtown Tualatin to support denser development in the City's core area. A separate taxing district has been created to support ongoing maintenance and operations of these parking lots. The City completed a study in 2011 which identified that the existing parking supply is sufficient to meet the parking demand in downtown Tualatin.

(2) The RTFP requires parking policies and a parking plan in a TSP or other planning document. The current TDC includes parking minimums and is compliant with this requirement.

Section 11.720.

(1) The project table for each modal plan in the Tualatin TSP Technical Memorandum (December 2012) includes recommendations for applicable funding sources. Additionally, the relative importance of TSP projects are identified in the project tables, based on community goals, the magnitude of the deficiency or issue that the project addresses, and the ability to secure funding, conduct engineering, and build a project. Appendix E of the TSP Technical Memorandum (December 2012) provides a detailed description of transportation funding and improvement costs for all of the TSP's recommendations.

(2) A variety of established federal, state, regional, and local funding sources are available to fund future transportation projects in the Tualatin TSP Technical Memorandum (December 2012), depending on the eligibility requirements. Implementation of TSP projects will depend on funding and community priorities.

(3) Prioritization. Prioritization of projects within the TSP Technical Memorandum (December 2012) is separated into three categories: short-term, medium-term, and long-term. Short term projects are expected to be built within 0-5 years, while medium-term are 5-10 years, and long-term projects are expected to be built in the 10-20 year time frame. Prioritization is determined based on a combination of the most important projects to implement first, the ease of implementation, and the potential cost – some projects will take a number of years to identify and secure funding. Some projects will also need regional coordination and support, which may take time to secure an agreement. Prioritization is an estimate: long-term projects may be implemented sooner than 10-20 years due to funding becoming available, a high degree of community support or other factors. The suggested priority for projects in the TSP Technical Memorandum (December 2012) is a general guide and not a required timeframe.

The City will need to periodically update the TSP, and will review the need and timing for longer-term improvements at those times. Prioritizing specific near-term projects will occur annually when the City updates its five-year financial plan and prepares its capital improvement plan (CIP) for the following year. Future road improvements or related transportation projects listed or not listed in the TSP Technical Memorandum (December 2012) are not required to be reviewed and approved through a land use process.

The construction of roads, storm drainage, water, sewer, and electrical facilities in conjunction with local development activity should be coordinated if the City of Tualatin is to continue to develop in an orderly and efficient way. Consequently, the plans proposed in the TSP Technical Memorandum (December 2012) should be

considered in light of developing infrastructure sequencing plans, and may need to be modified accordingly.

Section 31. Figures, Maps and Tables, are amended as follows:

Figures 74-2A through 74-2~~F~~G, Street Design Standards are deleted and replaced by **Exhibits A - G**.

Figure 11-1 Functional Classification and Traffic Signal Plan, is deleted and replaced with **Exhibit H**.

Figure 11-2, Metro Regional Street Design System is deleted and replaced by **Exhibit I.**

Figure 11-3, Local Street Plan is deleted and replaced by **Exhibit J.**

Figure 11-4, ~~Tualatin~~ Bicycle and Pedestrian System ~~Plan~~ is deleted and replaced by **Exhibit K.**

Figure 11-5, ~~Tualatin Bicycle~~ Transit Plan~~System~~ is deleted and replaced by **Exhibit L.**

Figure 11-6, ~~Tualatin Transit Plan~~Freight Routes is deleted and replaced by **Exhibit M.**

~~Figures 11-8a through 11-8d, Financially Constrained TSP Projects.~~

~~Figures 75-2A through 75-2G, Recommended Street Design Standards~~

~~Map 75-1, Access Management.~~

Table 11-1, Metro Modal Targets~~Tualatin Functional Classification Descriptions.~~

Remainder of page intentionally left blank for formatting purposes

~~Table 11-2, Street Functional Classification Summary.~~

~~Table 11-3, Transportation Improvement Program Summary.~~

~~Table 11-4, Projects Unfunded or Requiring New Funding Sources.~~

~~Table 75-1, Functional Classification Design Standards Summary~~

INTRODUCED AND ADOPTED this 25th Day of February, 2013.

CITY OF TUALATIN, OREGON

BY_____
Mayor

ATTEST:

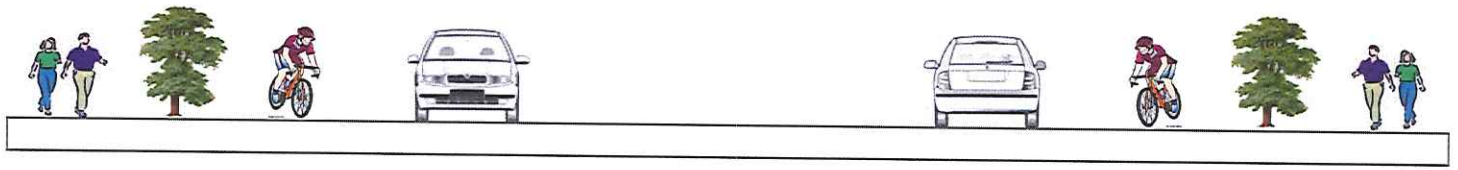
BY_____
City Recorder

APPROVED AS TO LEGAL FORM

BY_____
City Attorney

MAJOR ARTERIAL

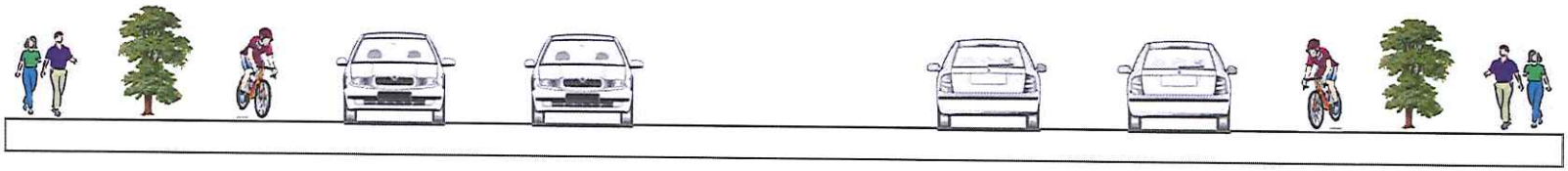
Minimum



5' SIDEWALK*	6' PLANTER STRIP	5' BIKE LANE*	12' TRAVEL LANE	14' CENTER TURN LANE OR LANDSCAPED MEDIAN	12' TRAVEL LANE	5' BIKE LANE*	6' PLANTER STRIP	5' SIDEWALK*

70'

Preferred



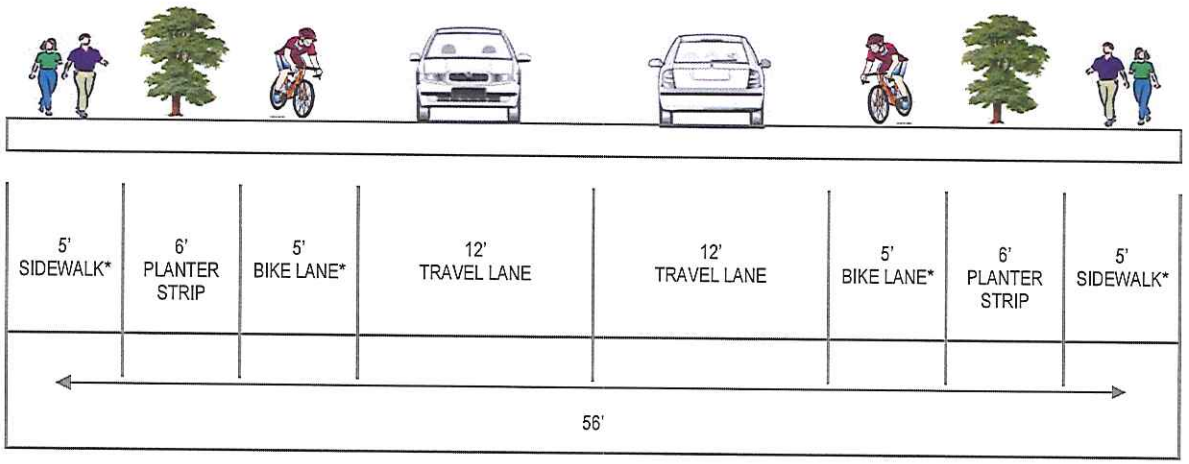
6' SIDE-WALK*	6' PLANTER STRIP	6' BIKE LANE*	12' TRAVEL LANE	12' TRAVEL LANE	14' CENTER TURN LANE OR LANDSCAPED MEDIAN	12' TRAVEL LANE	12' TRAVEL LANE	6' BIKE LANE*	6' PLANTER STRIP	6' SIDE-WALK*

98'

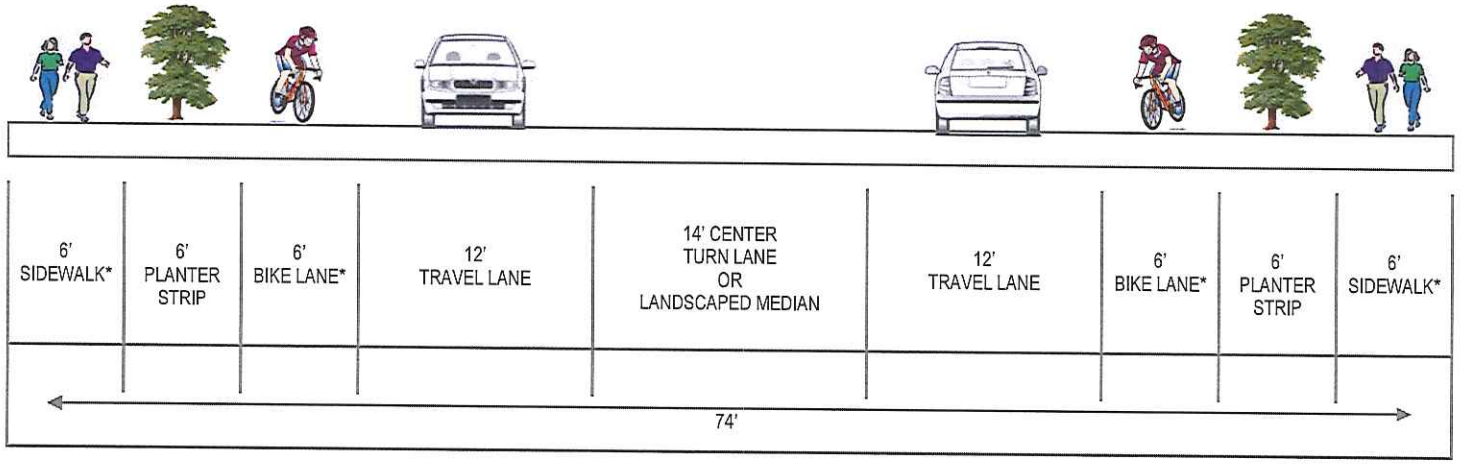
*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

MINOR ARTERIAL

Minimum



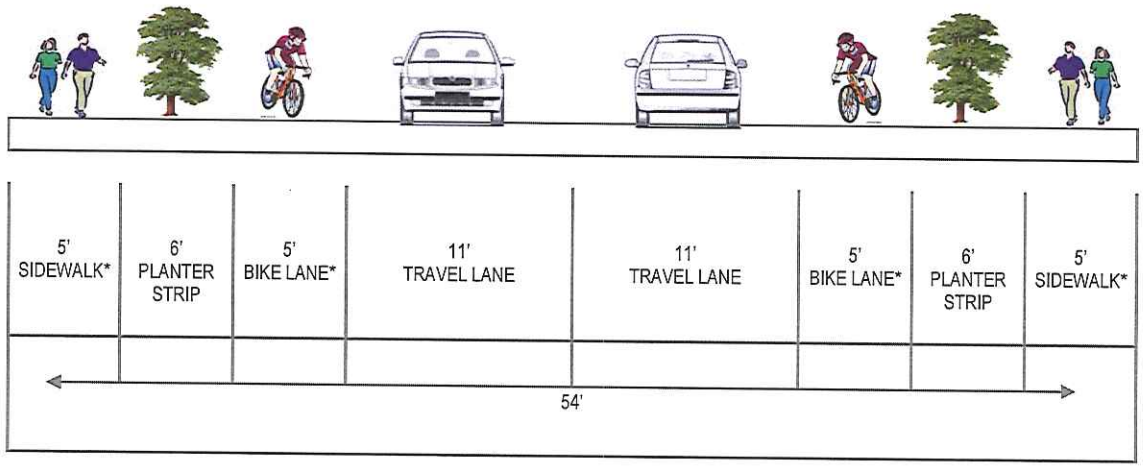
Preferred



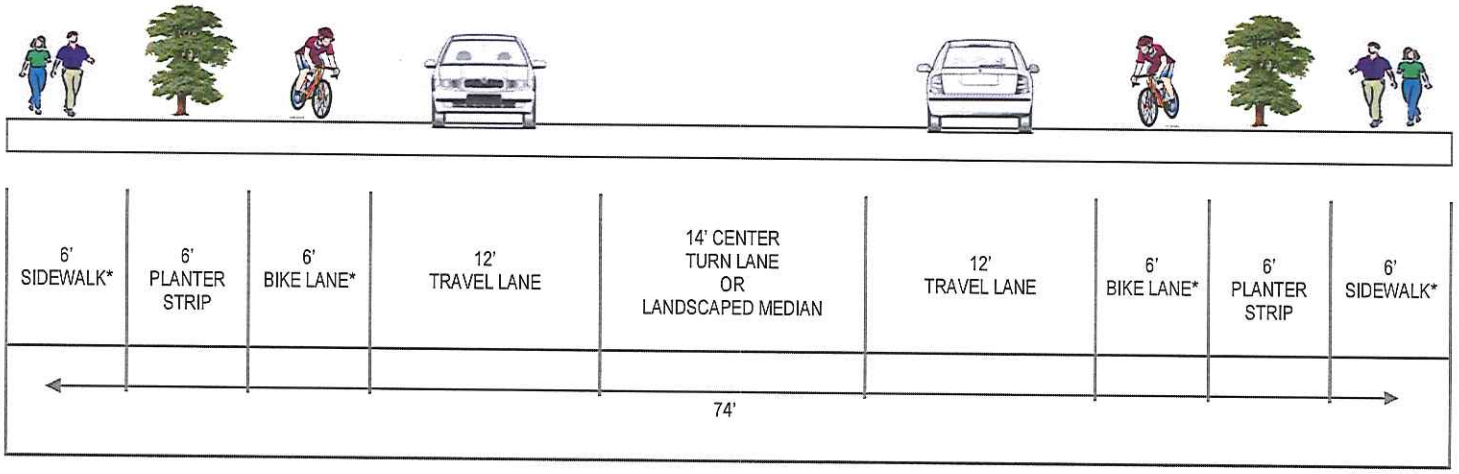
*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

MAJOR COLLECTOR

Minimum



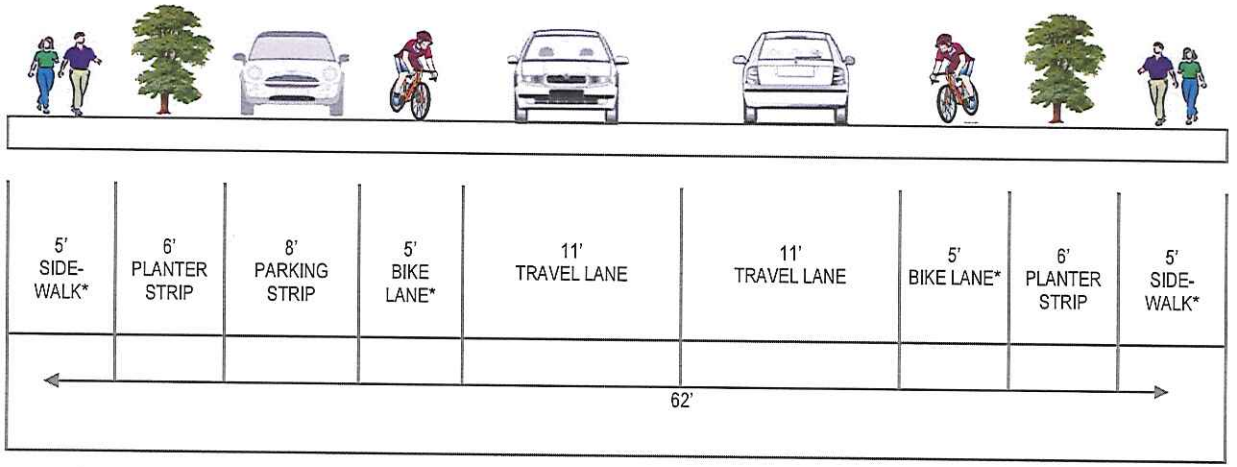
Preferred



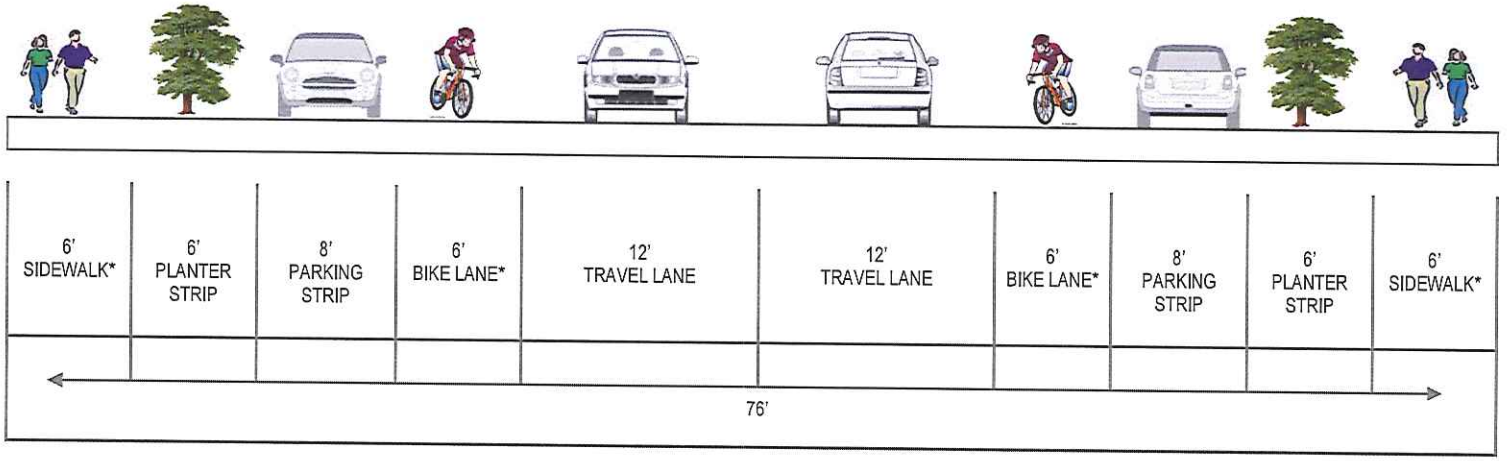
*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

MINOR COLLECTOR

Minimum



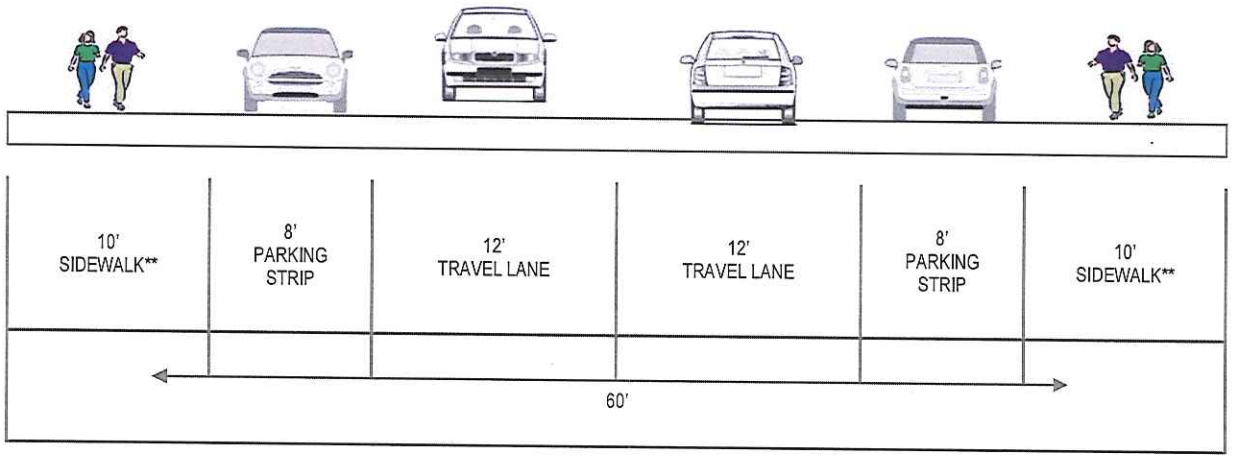
Preferred



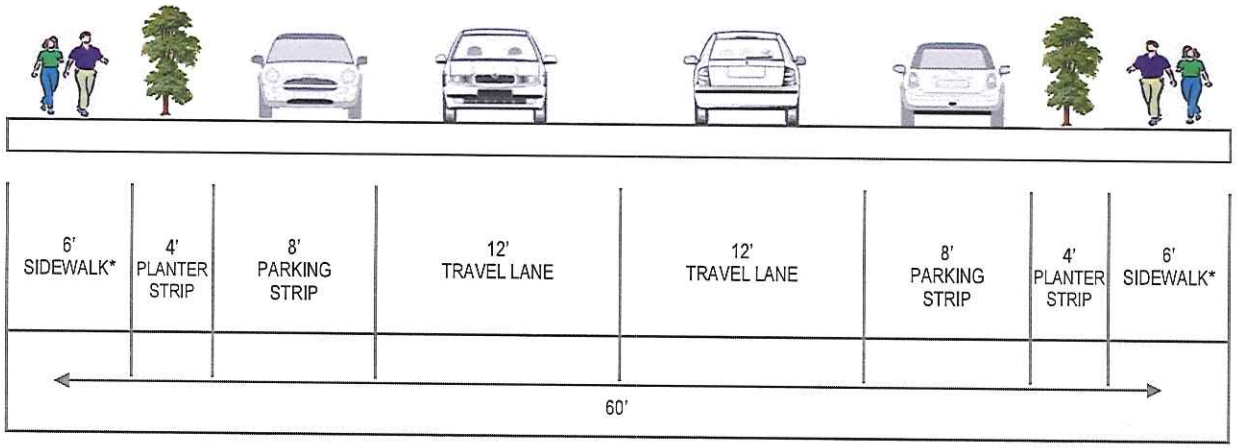
*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

CONNECTOR

Downtown Core



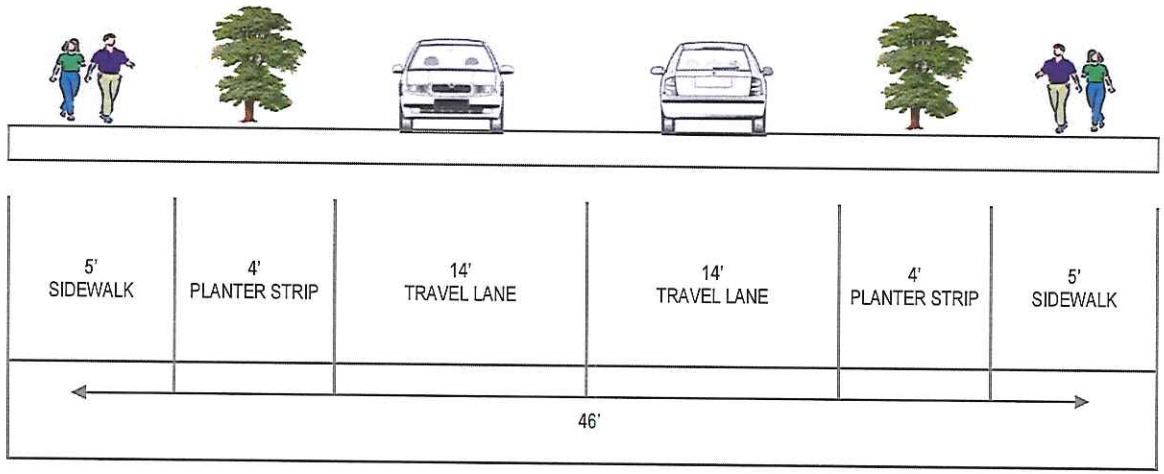
Commercial/Industrial



*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.
**Sidewalks on the downtown connector roads have 5 x 5' tree grates instead of planter strips.

LOCAL

Minimum



Preferred

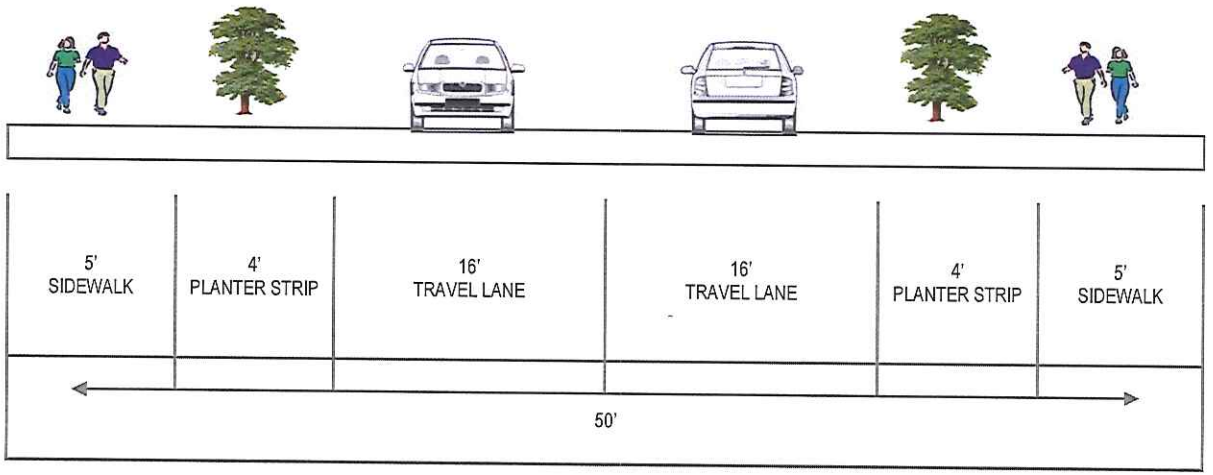
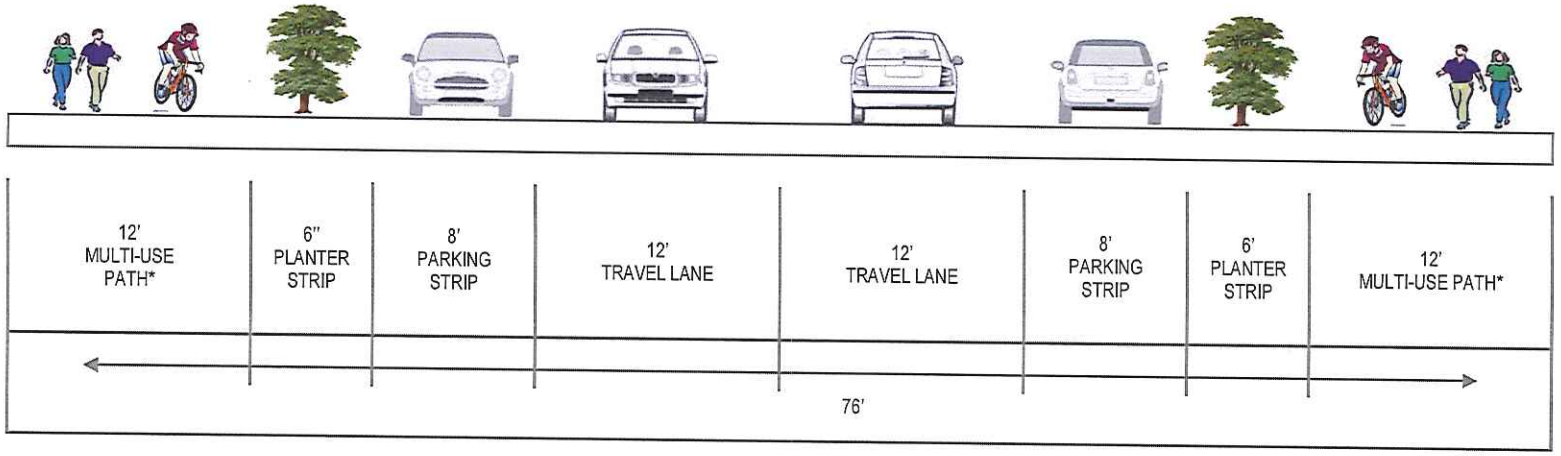


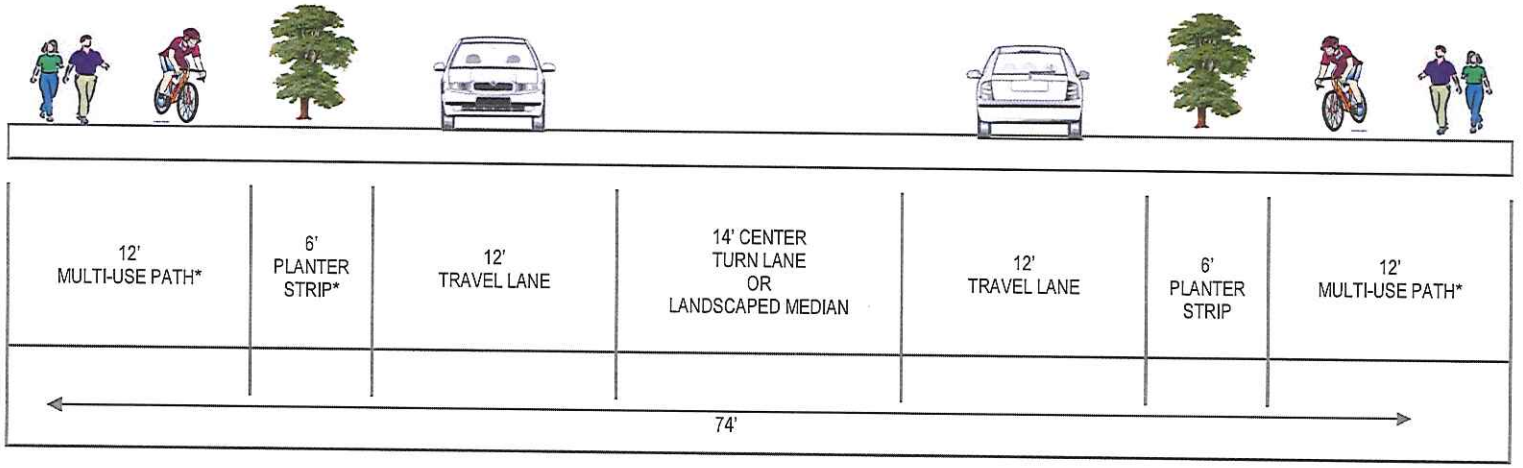
Exhibit A-G

WITH MULTI-USE PATH

Preferred Collector



Preferred Arterial

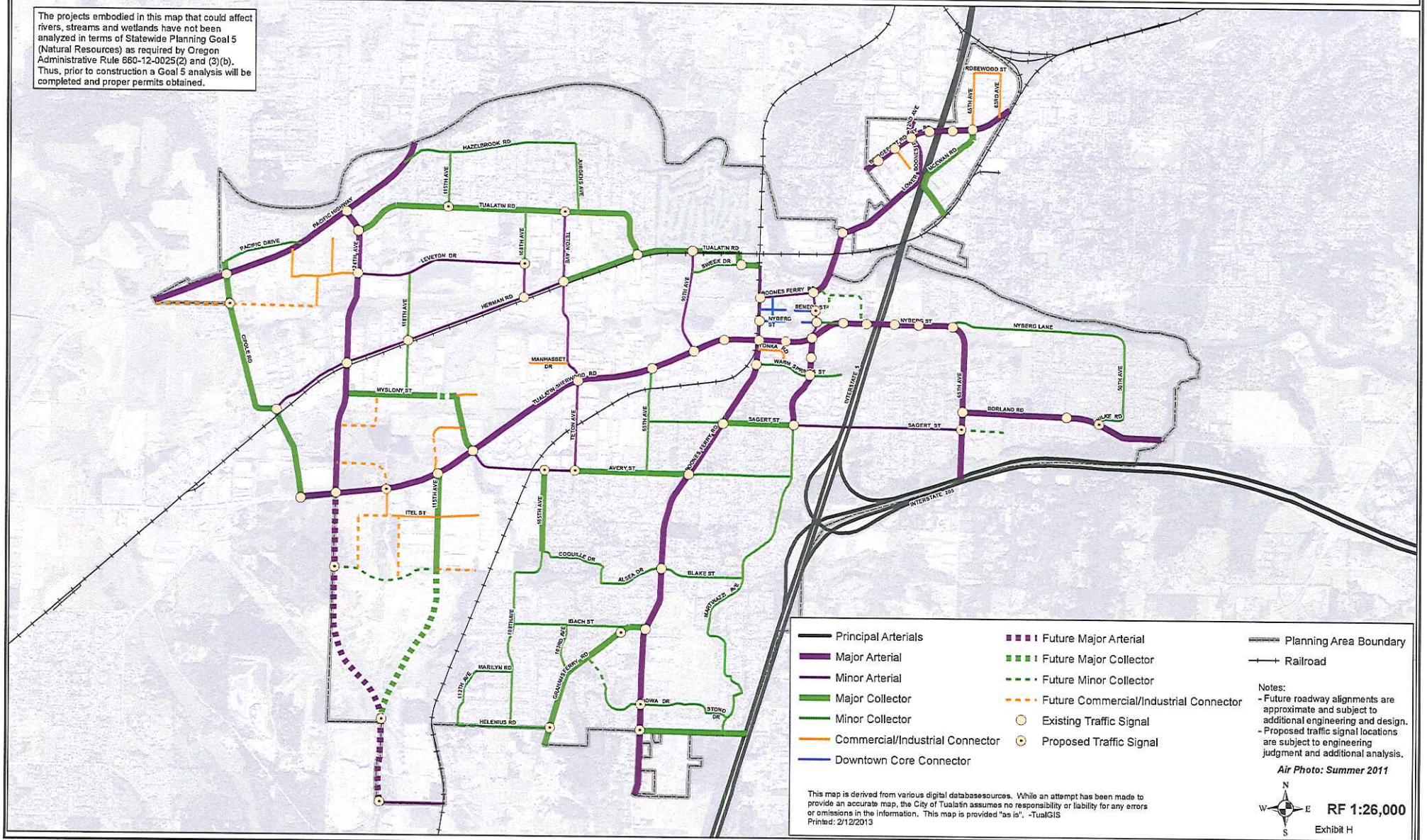


*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

Figure 11-1: Functional Classification and Traffic Signal Plan

TUALGIS

The projects embodied in this map that could affect rivers, streams and wetlands have not been analyzed in terms of Statewide Planning Goal 5 (Natural Resources) as required by Oregon Administrative Rule 660-12-0025(2) and (3)(b). Thus, prior to construction a Goal 5 analysis will be completed and proper permits obtained.



Notes:
- Future roadway alignments are approximate and subject to additional engineering and design.
- Proposed traffic signal locations are subject to engineering judgment and additional analysis.

Air Photo: Summer 2011

N W E S

RF 1:26,000

Exhibit H

This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS
Printed: 2/12/2013

Figure 11-2: Metro Regional Street Design System

TUALGIS

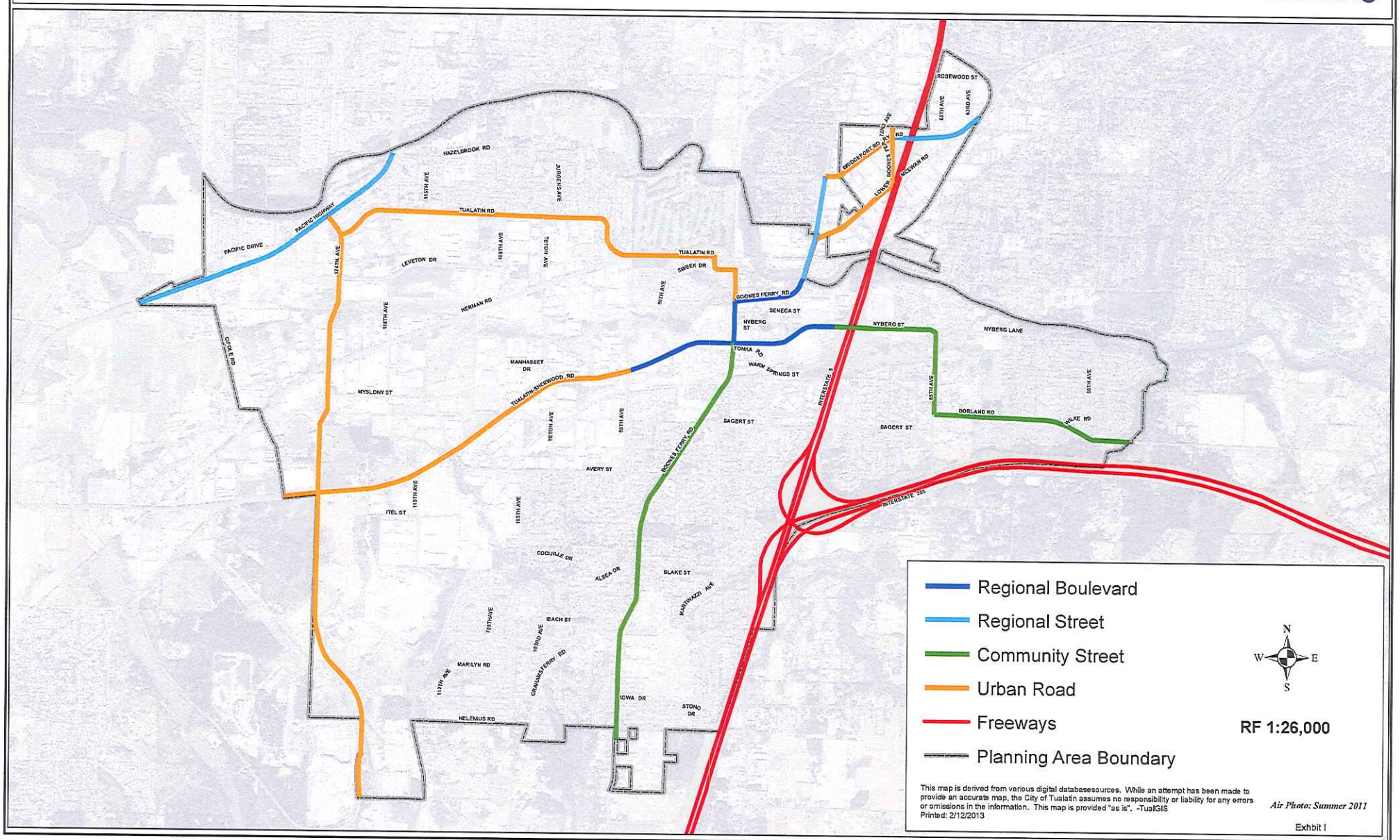


Figure 11-3: Local Street Plan

Minor Collector

Local Street Connection

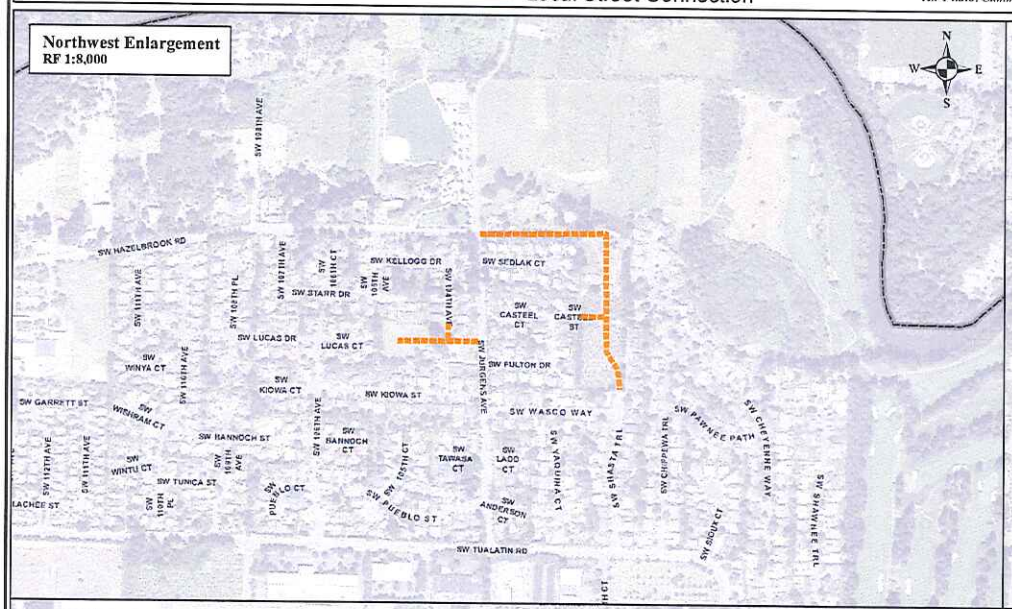
Planning Area Boundary

Air Photo: Summer 2011

Note:
Future roadway alignments are approximate and subject to additional engineering and design.

This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS
Printed 1/8/2013

TUALGIS



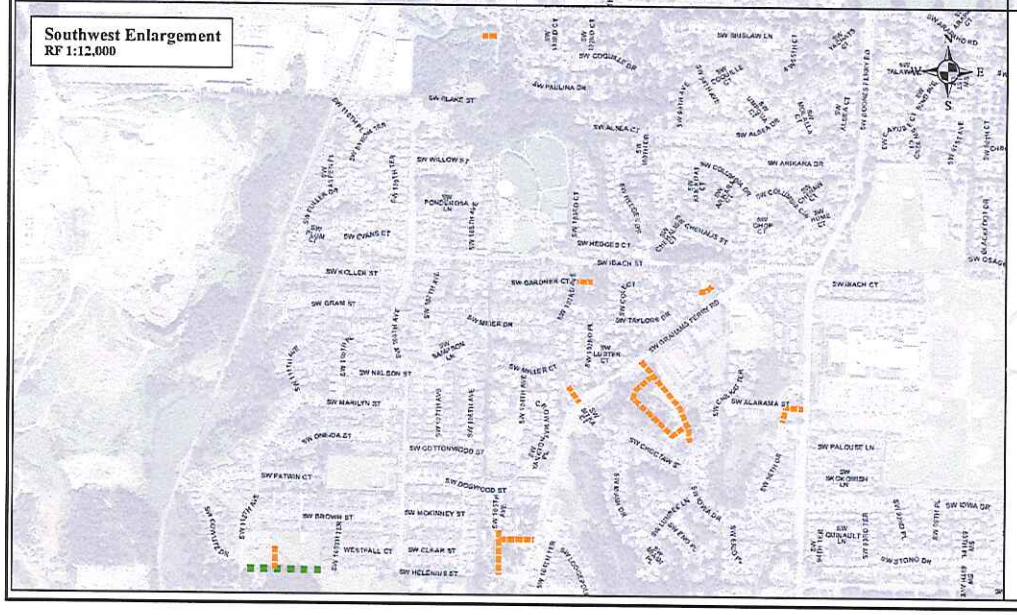

Southwest Enlargement
RF 1:12,000
SW CLARK ST
SW PAULINA DR
SW WILLOW ST
SW PONDEROSA LN
SW EVANS CT
SW KOLLER ST
SW GRANT ST
SW MILLER DR
SW NELSON ST
SW MARILYN ST
SW ONEIDA CT
SW COTTONWOOD ST
SW PATRIN CT
SW DOGWOOD ST
SW BROWN ST
SW MCKINNEY ST
SW WESTFALL CT
SW CLEAR ST
SW HELENIUS ST
SW GARDNER CT
SW TAYLORS FERRY RD
SW IBACH ST
SW IBACH CT
SW HEDGES CT
SW ALABAMA ST
SW PALOUSE LN
SW IOWA DR
SW STONO DR
SW ARIKARA DR
SW COLUMBIA DR
SW COLUMBIA CT
SW CHINOOK ST
SW OSAGE ST
SW BUSHAW LN
SW COQUILLE DR
SW ALSEA CT
SW ALSEA LOOP
SW ALSEA DR
SW ALSEA TER
SW ALSEA PL
SW ALSEA CIR
SW ALSEA WAY
SW ALSEA CT
SW ALSEA ST
SW ALSEA LN
SW ALSEA AVE
SW ALSEA PL
SW ALSEA TER

Figure 11-4: Bicycle and Pedestrian Plan

TUALGIS

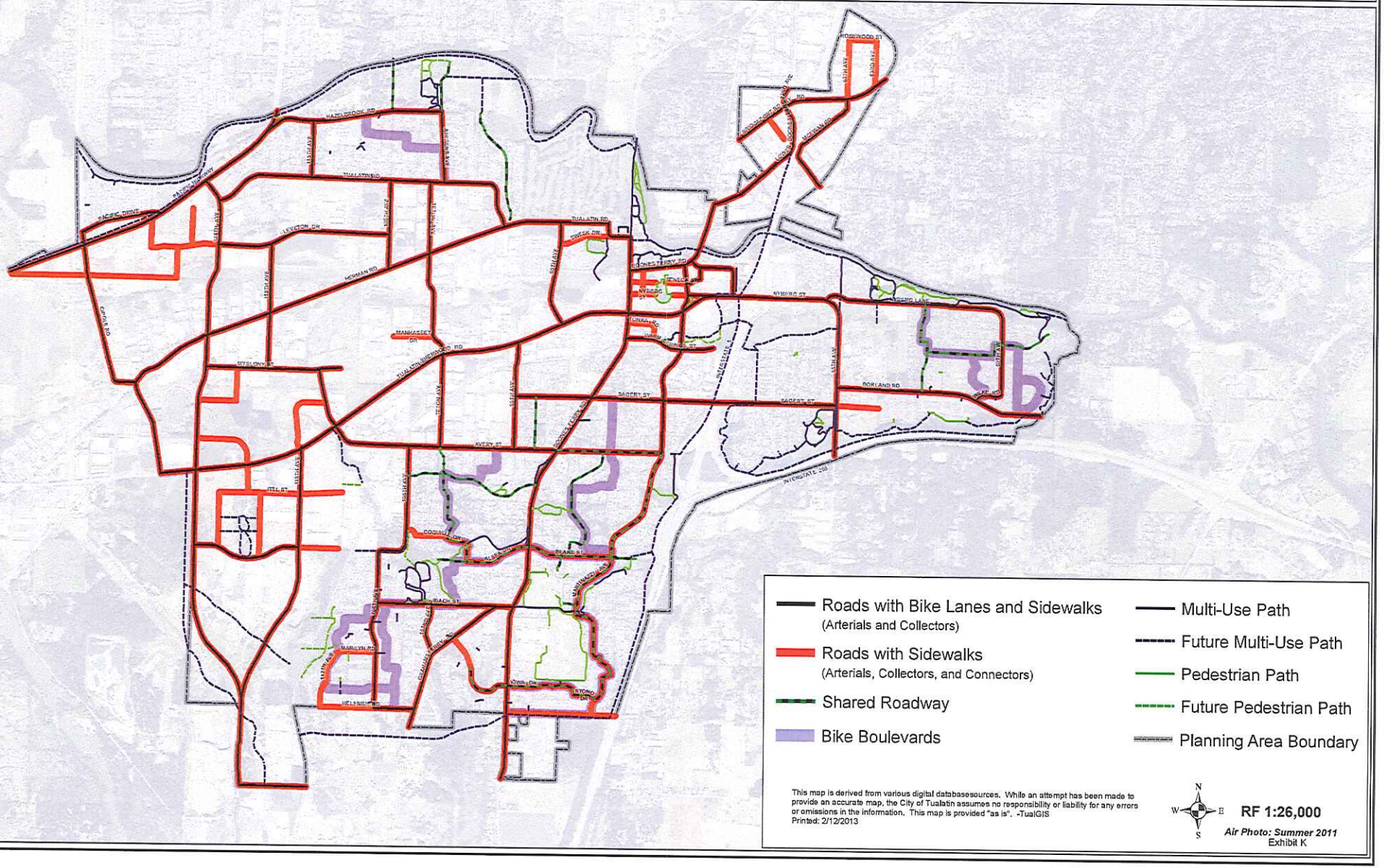
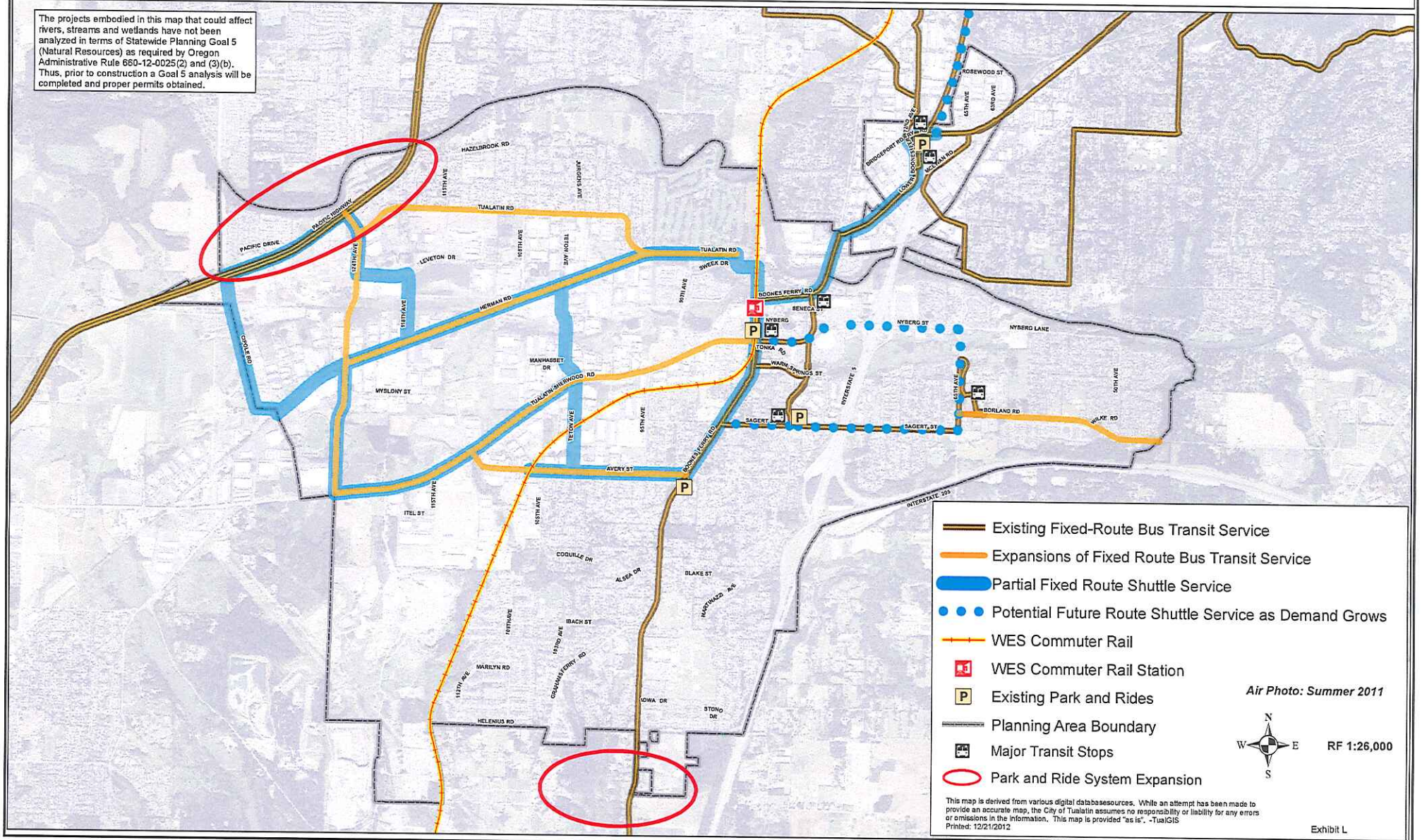


Figure 11-5: Tualatin Transit Plan

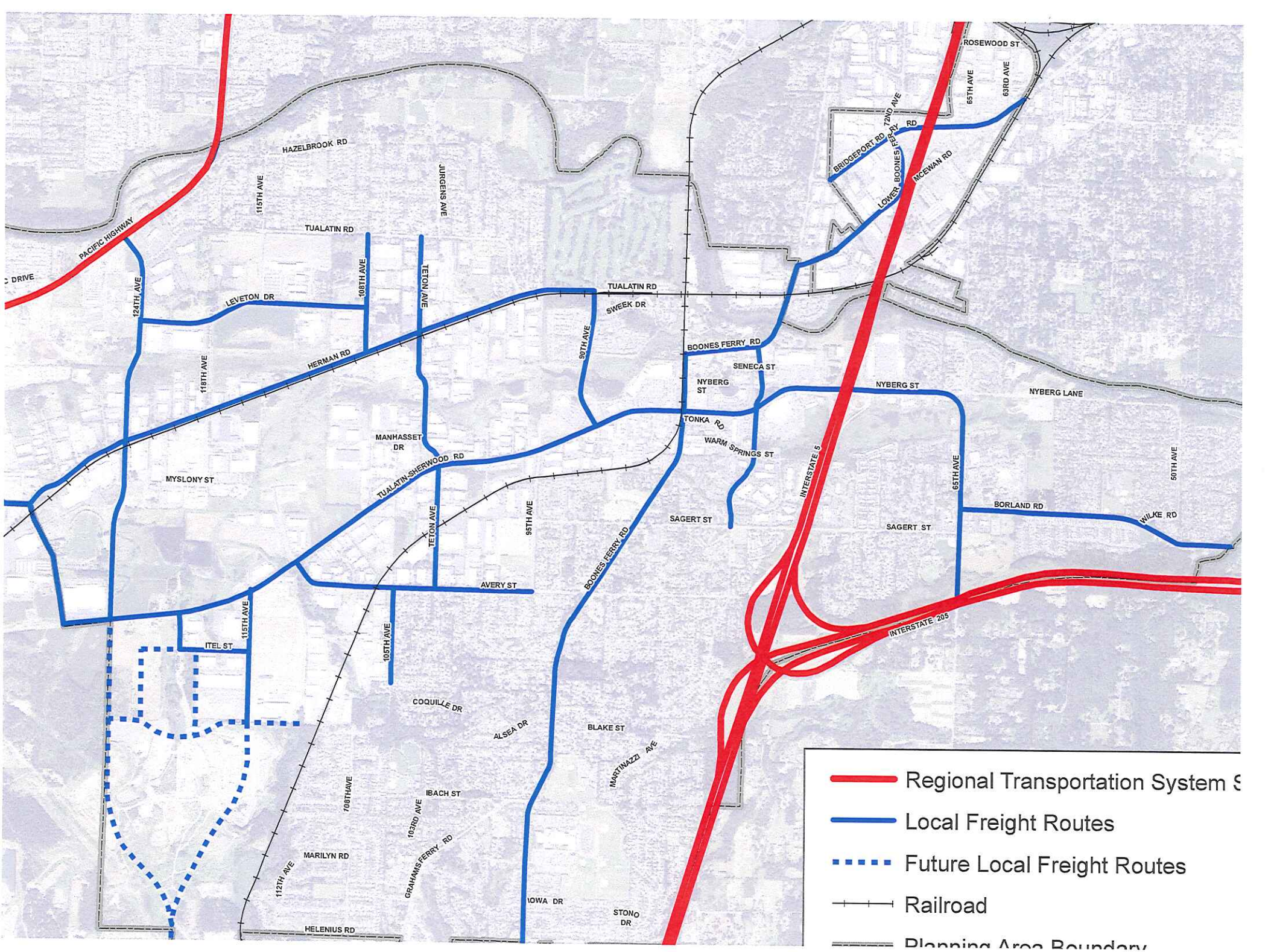
TUALGIS

The projects embodied in this map that could affect rivers, streams and wetlands have not been analyzed in terms of Statewide Planning Goal 5 (Natural Resources) as required by Oregon Administrative Rule 660-12-0025(2) and (3)(b). Thus, prior to construction a Goal 5 analysis will be completed and proper permits obtained.



This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS
Printed: 12/21/2012

Exhibit L


ROSEWOOD ST
65TH AVE
63RD AVE
72ND AVE
BRIDGEPORT RD
LOWER BOONES FERRY RD
MCEWAN RD
HAZELBROOK RD
115TH AVE
JURGENS AVE
TUALATIN RD
PACIFIC HIGHWAY
124TH AVE
108TH AVE
TETON AVE
LEVETON DR
SWEEK DR
90TH AVE
BOONES FERRY RD
SENECA ST
NYBERG ST
NYBERG LANE
HERMAN RD
118TH AVE
TONKA RD
WARM SPRINGS ST
MANHASSET DR
MYSLONY ST
TUALATIN-SHERWOOD RD
INTERSTATE 5
65TH AVE
50TH AVE
BORLAND RD
WILKE RD
SAGERT ST
95TH AVE
AVERY ST
115TH AVE
ITEL ST
105TH AVE
INTERSTATE 205
COQUILLE DR
ALSEA DR
BLAKE ST
MARTINAZZI AVE
IBACH ST
103RD AVE
MARILYN RD
112TH AVE
GRAHAMS FERRY RD
IOWA DR
STONO DR
HELENIUS RD
Regional Transportation System
Local Freight Routes
Future Local Freight Routes
Railroad
Planning Area Boundary

Revised Tualatin Transportation System Plan Update

Prepared for

City of Tualatin

February 2013

CH2MHILL®

With

Angelo planning group

DKS

jla public involvement

This page left blank intentionally.

Contents

Section		Page
Acronyms and Abbreviations		**v**
Acknowledgements		**vii**
	Transportation Task Force	vii
	Transportation System Plan Working Groups	vii
	Tualatin Park Advisory Committee	x
	Tualatin Planning Commission	x
	Tualatin City Council	x
Chapter 1. Introduction		**1**
	Plan Process	1
	Project Goals	5
	Regulatory Requirements	5
	Organization of the TSP	9
Chapter 2. Modal Plans		**11**
1	**Functional Classification Plan**	**11**
2	**Street System Modal Plan**	**25**
	Existing and Future Roadway Conditions	25
	Roadway Policies	26
	Roadway Projects	26
	Access Management	41
	Traffic Operations Standards	41
3	**Transit Modal Plan**	**47**
	Existing Conditions for Public Transit	47
	Transit Policies	49
	Transit Projects	50
4	**Pedestrian, Bicycle, and Multi-Use Path Modal Plan**	**57**
	Existing Conditions for Bicyclists and Pedestrians	57
	Bicycle and Pedestrian Policies	59
	Bicycle and Pedestrian Projects	60
	Multi-Use Path Projects	60
	Regional Coordination	62
5	**Freight Plan**	**69**
6	**Rail Plan**	**73**
	Freight Rail Policies	73
	Freight Rail Projects	73
	Passenger Rail Policies	73
7	**Water, Pipeline, and Air Plan**	**75**
	Water	75
	Pipeline	75
	Air	75

Contents

8 Transportation Demand Management 77
Transportation Demand Management Policies 77
TDM Programs 78

9 Transportation System Management 83

10 Parking Plan 87

Chapter 3. Implementation 89
Funding Sources 89

Policy and Code Language 97
Tualatin TSP Policies 97
Performance Measures 101

Appendixes

A Plan and Policy Review
B Existing Conditions and Deficiencies
C Future Transportation Conditions
D Alternatives Analysis
E Transportation Funding and Improvement Costs
F TPR and RTFP Compliance
G Public Involvement Process
H Bicycle and Pedestrian Plan

Tables

Table 1 Goals and Objectives of the Tualatin Transportation System Plan 7
Table 2 City of Tualatin Functional Classification Description 12
Table 3 Street Design Standards 17
Table 4 City Urban Upgrade Cost Estimates and Prioritization 27
Table 5 Regional Urban Upgrade Cost Estimates and Prioritization 29
Table 6 City Street Extension Cost Estimates and Prioritization 33
Table 7 Regional Street Extension Cost Estimates and Prioritization 34
Table 8 City Roadway Project Cost Estimates and Prioritization 34
Table 9 Regional Roadway Project Cost Estimates and Prioritization 36
Table 10 2035 PM Peak Hour Preferred System Intersection Operations 42
Table 11 Transit Project Cost Estimates and Prioritization 53
Table 12 Bicycle and Pedestrian Project Cost Estimate and Prioritization 60
Table 13 Multi-Use Path Project Cost Estimates and Prioritization 61
Table 14 Regional Bicycle and Pedestrian Project Cost Estimates and Prioritization 63
Table 15 Regional Multi-Use Path Project Cost Estimate and Prioritization 64
Table 16 Metro Modal Targets 78
Table 17 Planned Metro TDM Projects in Tualatin 82
Table 18 Potential Traffic-Calming Strategies 84
Table 19 Planned Metro TSMO Projects in Tualatin 85

Figures

1 Functional Classification Plan 13
2 Street Design Standards 21
3 Roadway Element: Urban Upgrades 31
4 Roadway Element: Projects 39
5 2035 Peak Hour TSP Preferred System Intersection Operations 45
6 Transit Element 55
7 Bicycle and Pedestrian Element 65
8 Freight Element 71

This page left blank intentionally.

Acronyms and Abbreviations

CIO	Citizen Involvement Organization
ESL	English as a Second Language
HDM	ODOT's *Highway Design Manual*
HOV	High-Occupancy Vehicle
LID	Local Improvement District
MBP	Minor Betterment Program
MSTIP	Major Streets Transportation Improvement Program (Washington County funding source)
NHS	National Highway System
ODOT	Oregon Department of Transportation
OHP	*Oregon Highway Plan*
OR 99W	Oregon Highway 99W
PNWR	Portland and Western Railroad
RTFP	Metro's *Regional Transportation Functional Plan*
RTP	Metro's *Regional Transportation Plan*
SDC	System Development Charges
SMART	South Metro Area Regional Transit
SOV	Single-Occupancy Vehicle
SRTS	Safe Routes to School
STIP	Statewide Transportation Improvement Program
TDC	Tualatin Development Code
TDM	Transportation Demand Management
TDT	Transportation Development Tax
TE	Transportation Enhancement
TMA	Transportation Management Association
TPC	Tualatin Planning Commission
TPARK	Tualatin Parks Advisory Committee
TPR	Transportation Planning Rule
TSM	Transportation System Management
TSMO Plan	Metro's 2035 *Transportation System Management and Operations Plan*
TSP	*Transportation System Plan*

TTF	Transportation Task Force
UGB	Urban Growth Boundary
WES	Westside Express Service

Acknowledgements

Transportation Task Force

Community Representatives

Alan Aplin, TPC
Bruce Andrus-Hughes, TPARK
Bill Beers, TPC
Monique Beikman, City Councilor
Charlie Benson, Citizen
Ryan Boyle, Citizen
Wade Brooksby, City Councilor
Joelle Davis, City Councilor
Cheryl Dorman, Business/Chamber of Commerce
Travis Evans, Citizen
Jan Giunta*, CIO
Allen Goodall, Business
Gail Hardinger*, Business
Nic Herriges*, Citizen
John Howorth*, Citizen
Candice Kelly*, Tualatin Tomorrow
Nancy Kraushaar, Citizen
Lou Ogden*, Mayor
Ray Phelps, Business
Valerie Pratt*, TPARK
Mike Riley, CIO
Bethany Wurtz, Tualatin Tomorrow

Agency Representatives

Brian Barker, Tualatin Valley Fire & Rescue
Kelly Betteridge, TriMet
Karen Buehrig, Clackamas County
Judith Gray, City of Tigard
Julia Hajduk, City of Sherwood
Steve L. Kelley, Washington County
Deena Platman, Metro
Lidwien Rahman, ODOT

Transportation System Plan Working Groups

Working Groups were loosely structured committees open to the public that helped develop content for the TSP. The following individuals signed in at one or more of the Working Group meetings.

Bicycle and Pedestrian Working Group

Bruce Andrus-Hughes
Hal Ballard
Monique Beikman, City Councilor
June Bennet
Carol Cesnalis
Joelle Davis, City Councilor
Suzette Davis
Ann DeHaan
Jeff DeHaan
Joe Freichante
Jan Giunta
Nic Herriges
Marissa Houlberg
Michael Houlberg
John Howorth
Nancy Kraushaar
Connie Ledbetter
Joe Lipscomb
Lonnie Martinez
Linda Moholt
Alex Sander
Doug Ulmer

Downtown Working Group

Toni Anderson
Monique Beikman, City Councilor
June Bennett
Wade Brooksby, City Councilor
Frank Bubenik, City Councilor
Joelle Davis, City Councilor

Travis Evans
Jan Giunta
Cathy Holland
Marissa Houlberg
Michael Houlberg
Dolores Hurtado
Del Judy
Candice Kelly
Robert Kellogg
Nancy Kraushaar
Joe Lipscomb
Linda Moholt
Del Moore
Dorothy Moore
Ray Phelps
Alex Sander
Steve Titus
Ed Truax, City Councilor
Christine Tunstall

Industrial and Freight Working Group

Bruce Andrus-Hughes
Carol Cesnalis
John Cesnalis
Jonathan Crane
Joelle Davis, City Councilor
Mike Elden
Jan Giunta
Gail Hardinger
Cathy Holland
Dolores Hurtado
Nancy Ismail
Robert Kellogg
Todd Kond
John Kuypers
Joe Lipscomb
Linda Moholt
Dick Neely
Christopher Nelson
Kathy Newcomb
Kenn Nickall
Mayor Lou Ogden
Ray Phelps
Randy Pitchford
Mike Riley
Dean Sorensen
Steve Titus
Ed Truax, City Councilor
Robin Walker

Neighborhood Livability Working Group

William Beers
Monique Beikman, City Councilor
June Bennett
J Binn
Wade Brooksby, City Councilor
Frank Bubenik, City Councilor
Carol Cesnalis
Deborah Conchuratt
Cori Conway
Allison Cornilles
Rob Cornilles
Joelle Davis, City Councilor
Linda Fletcher
Dave Gellos
Teri Gellos
Jan Giunta
Kathy Holland
John Howorth
Dolores Hurtado
Bob Ingber
Candice Kelly
Nancy Kraushaar
Joe Lipscomb
Julia Makarowsky
Christopher Nelson
Cindy Phillips
Judy Pozo
Alex Sander
Steve Titus
Margo Traines
Chris Tunstall
Doug Ulmen

Major Corridors and Intersections Working Group

Toni Anderson
Alan Aplin
Monique Beikman, City Councilor
June Bennett
John Bosket
Wade Brooksby, City Councilor
Carol Cesnalis
John Cesnalis
Cheryl Dorman
Mark Eberhart
Jan Giunta
Cameron Grile
Cathy Holland
John Howorth
Dolores Hurtado
Robert Kellogg
Joe Lipscomb
Grace Lucini
John Lucini
Del Moore
Dorothy Moore
Dick Neely
Amanda Nelson
Christopher Nelson
Kathy Newcomb
Kenn Nickell
Lou Ogden, Mayor
Randy Pitchford
Tom Re
Susan Rupert
Alex Sander
Tim Stackin
Stephen Titus
Reba Tobey
Christine Tunstall
Doug Ulmen
Jill Williams

Transit Working Group

Toni Anderson
Ron Audette
Brian Barker
Bill Beers
Carol Bellows
June Bennett
Charlie Benson
Kelly Betteridge
Frank Bubenik, City Councilor
Molly Burns
Carol Cesnalis
Lisa Cline
Doug Cline
Joelle Davis, City Councilor
Cheryl Dorman
Norma Frison
Dave Gellos
Jan Giunta
Cathy Holland
Marissa Houlberg
Michael Houlberg
John Howorth
Dolores Hurtado
Del Judy
Candice Kelly
Connie Ledbetter
Joe Lipscomb
Gregg Moreland
Christopher Nelson
Kathy Newcomb
Lou Ogden, Mayor
Mike Riley
Alex Sander
Carl Townsend
Margo Traines
Joe Troccoli
Chris Tunstall
Doug Ulmer

Tualatin Park Advisory Committee

Bruce Andrus-Hughes
Kay Dix
Connie Ledbetter
Dana Paulino
Valerie Pratt
Steve Ricker
Dennis Wells, Chair

Tualatin Planning Commission

Alan Aplin, Vice-Chair
Bill Beers
Jeff DeHaan
Cameron Grile
Nic Herriges
Steve Klingerman
Mike Riley, Chair

Tualatin City Council

Monique Beikman, President
Wade Brooksby
Frank Bubenik
Joelle Davis
Nancy Grimes
Lou Ogden, Mayor
Ed Truax

City Project Staff

Denice Ambrosio
Ben Bryant
Colin Cortes
Tony Doran
Cindy Hahn
Will Harper
Paul Hennon
Kaaren Hofmann, City Project Manager
Aquilla Hurd-Ravich
Ginny Kirby
Sherilyn Lombos
Alice Rouyer
Carol Rutherford
Lynette Sanford
Matt Scheidegger
Sara Singer
Carl Switzer
Dayna Webb

Consultant Staff

Sam Beresky, JLA Public Involvement
Theresa Carr, CH2M HILL, Technical Consultant Project Manager
Mat Dolata, DKS
Darren Hippenstiel, CH2M HILL
Eryn Deeming Kehe, JLA Public Involvement, Public Involvement Project Manager
Terra Lingley, CH2M HILL
Kate Lyman, CH2M HILL
Shayna Rehberg, Angelo Planning Group
Darci Rudzinski, Angelo Planning Group
Alan Snook, DKS

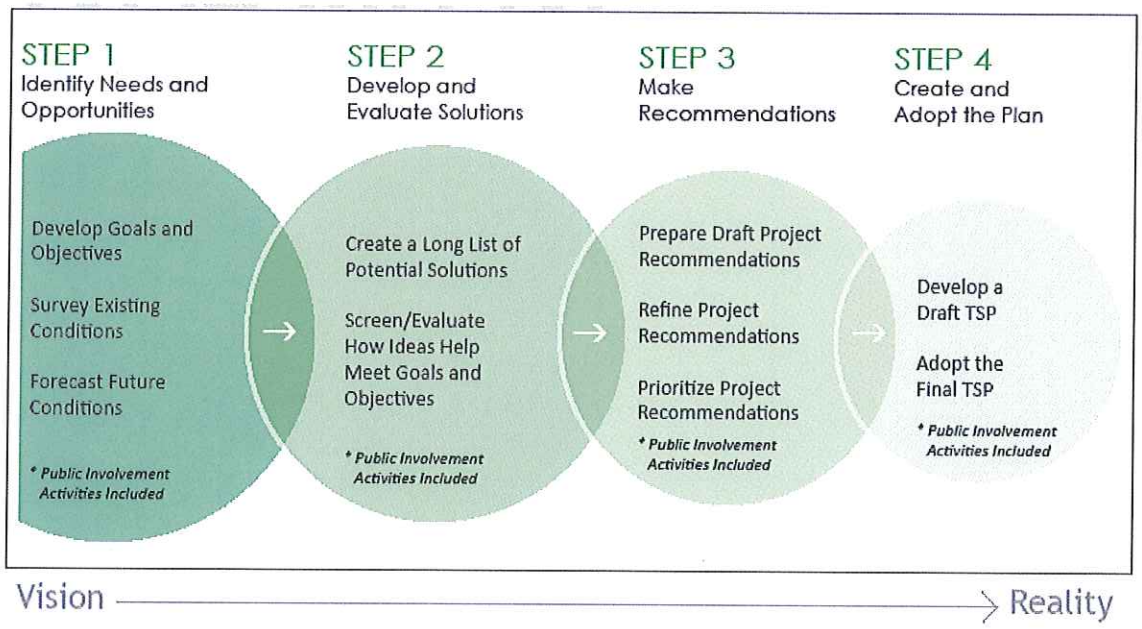
Chapter 1. Introduction

The Tualatin Transportation System Plan (TSP) establishes a long-range vision for the combination of projects, programs, and policies that will achieve Tualatin's transportation goals. To do this, the TSP looks at the needs of its residents, businesses, employees, and visitors – now (year 2012), and what is expected for the future (Year 2035). TSPs are required by the state of Oregon for all cities with populations greater than 2,500 people, and this is not Tualatin's first TSP. However, it serves as a major update. The previous TSP was adopted in 2001, with analyses completed in 2000, necessitating a new evaluation of transportation conditions in Tualatin and an updated vision for its future. The TSP considers the diverse needs of all users of the City's transportation network, and sets out recommendations that will serve the needs of transit riders, bicyclists, pedestrians, freight traffic, and drivers.

This plan has been prepared in compliance with state, regional, and local plans and policies, including the *Oregon Highway Plan* (OHP), the state *Transportation Planning Rule* (TPR), Metro's *Regional Transportation Plan* (RTP), Metro's *Regional Transportation Functional Plan* (RTFP), Washington and Clackamas Counties Transportation System Plans, and Tualatin's Comprehensive Plan. The TSP presents a vision specific to the City's transportation future, while remaining consistent with these state, regional, and local plans. Plan elements will be implemented by the City, private developers, and regional, or state agencies.

Plan Process

Tualatin began the process to update their TSP in 2011. Staff organized their work into four basic steps, as described here and illustrated in the graphic below. Step 1 identified existing and future needs, opportunities, project goals, and objectives. City staff and the consultant project team assembled existing and collected new data, analyzed the data to identify deficiencies and opportunities, and attended a number of community events to



The Adopted Tualatin Transportation System Plan (TSP):

- Creates a vision for Tualatin's future as it relates to transportation
- Establishes our community's priorities so we know what should be done first
- Helps the City of Tualatin get funding and build projects

ask about issues with the transportation system to form an understanding of transportation problems to be addressed in the TSP. Additionally, the project website included an issues map where visitors to the website could identify transportation problems within the City.

Step 2 of the process included creating a long list of potential solutions, then screening and evaluating the potential solutions to see how ideas help meet project goals and objectives. An open house, several Transportation Task Force meetings, and the working group meetings helped create and/or evaluate potential solutions (working groups are described in the next section). Throughout each of these steps, the project team engaged the community to ensure that each element was appropriate for Tualatin. The Public Involvement section presents more information about the public involvement activities.

Step 3 included preparing the draft recommendations for projects to be included into the TSP, refining a number of recommendations for the more complex transportation needs, and prioritizing the project recommendations to help both the City and the community define which projects and programs should be implemented first.

Step 4 included developing the draft and final TSPs for City adoption. This process focused on compiling all recommendations into the TSP document, and coordinating with relevant stakeholders in reviewing the TSP for completeness and consistency. These stakeholders included the community, City Council, Tualatin Planning Commission (TPC), Tualatin Parks Advisory Committee (TPARK), Washington County, Metro, Oregon Department of Transportation (ODOT), Clackamas County, adjacent cities, and the state's Department of Land Conservation and Development (DLCD).

Study Area

The study area for the Tualatin TSP is comprised of the Tualatin Planning Area Boundary, with two additions - the Basalt Creek planning area between Tualatin and Wilsonville, and the SW Concept Plan area between the Cities of Sherwood and Tualatin. Those areas outside of the City limits, but within the study area, were included because of the transportation impact that they could have on the City's transportation network associated with the potential development of residential and employment areas. The Tualatin River serves as the northerly boundary of the City west of I-5, with SW Cipole Road and SW 124th Avenue as the boundary to the west, and SW Helenius Street and SW Norwood Road to the south. There is a section of the city north and east of the Tualatin River south of SW Peters Road and west of SW Upper Boones Ferry Road. Additionally, the Horizon Christian High School south of SW Norwood Road is within City limits. The eastern study area boundary from the south follows the west side of I-5 until north of I-205. The City then extends east into Clackamas County east of SW 65th Avenue to Halcyon Road. The City also includes a section of the Bridgeport Village shopping center on the west side of I-5. The northern part of the City also extends to the east side of I-5 to the rail line, and north of the Tualatin River to approximately SW Rosewood Street. In addition to the City limits, there are a handful of areas that are surrounded by the City but not officially incorporated. The study area is shown on several of the TSP's figures, including Figure 1 in the following section.

Public Involvement for the Transportation System Plan

The TSP planning process actively engaged the citizens of Tualatin in the production of its TSP. Residents, business owners, employees, and agency partners were encouraged to participate and were provided with multiple ways to share their thoughts - from initial goal development and issue identification to evaluation and screening. The public involvement plan outlined a thorough outreach process, making it easy and fun for the public to share ideas. The process provided meaningful ways to influence outcomes and took advantage of existing communication networks to reach more people.

Transportation Task Force

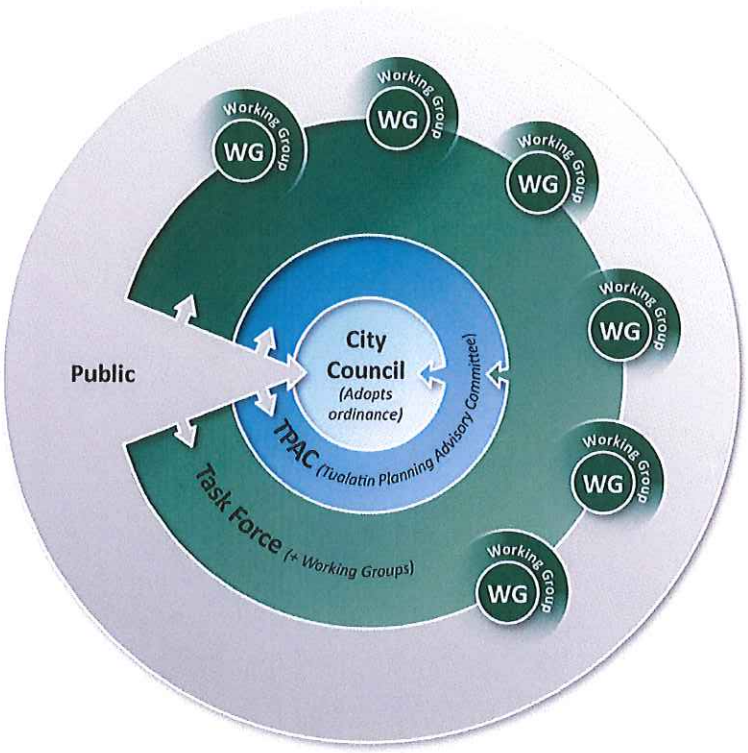
The public involvement plan established a clear decision-making framework for the TSP. The Transportation Task Force (TTF), with input from the Working Groups (described below), advised the TPC. TPC then made a recommendation to the City Council, which will then adopt the final TSP and any changes to the City's Code. In addition, TPARK made recommendations on the bicycle and pedestrian elements to the City Council. Each of these organizations received regular project updates from City staff throughout the process and each had representative members on the TTF. These groups were given the opportunity to provide their recommendation before the TTF decisions were forwarded to TPC and the City Council.

The TTF was formed in November 2011 for the purpose of advising TPC and the City Council about the needs and concerns of the community with regard to transportation. The City Council Citizen Involvement Committee selected TTF members carefully to be representative of neighborhoods, the business community, and the interests of Tualatin's advisory committees. Members and alternates were selected from a pool of applications. Neighboring communities, counties, Tualatin Valley Fire & Rescue, ODOT, Metro, and TriMet also had representatives on the TTF.

The TTF met 16 times between November 2011 and November 2012. The TSP was discussed at most meetings, though the TTF also helped to prepare Tualatin's companion land use plan for high capacity transit, known as *Linking Tualatin* during the same timeframe. TTF meetings were advertised by the City and open to the public. The TTF agenda included time for public comment at the beginning and end of every meeting.

Public Open Houses

The TSP process featured two in-person public involvement opportunities as well as a two-month long online open house. The City of Tualatin held the "Tualatin Year of Transportation" kick-off meeting on February 16, 2012, to provide information and an opportunity to comment on various transportation projects in the Tualatin area. The City also sponsored a Transportation Summit on September 20, 2012, to allow the public an opportunity to understand the full picture of how proposed projects work together. The Summit included a presentation by technical staff and provided a "town hall" style forum for comment and discussion of final recommendations before the draft TSP was developed.



Working Groups

Working Groups were another forum for public engagement in the project. The groups were open to the public and generated ideas and transportation solutions to be considered by the TTF. Six groups were established: Neighborhood Livability, Transit, Downtown, Bike and Pedestrian, Industrial and Freight, and Major Corridors and Intersections. Each working group met at least three times between February and July 2012, and anyone with an interest was encouraged to attend. Between six and thirty-five participants attended each working group meeting.

Because community members are much more likely to get involved if invited by a trusted source, the project made use of established lines of communication within the community. Notifications for events and opportunities to participate were sent through the City's list of interested citizens, the Tualatin Mayor's email list, the Chamber of Commerce email list, and members of City advisory committees. Emails were also sent to major employers and the Portland Hispanic Professionals Network. The City posted fliers and meeting notices in English and Spanish at City offices and the library. Event information was presented in school newsletters. The project produced press releases and submitted articles for the City's sponsored newsletter and the local newspaper, *Tualatin Life.*

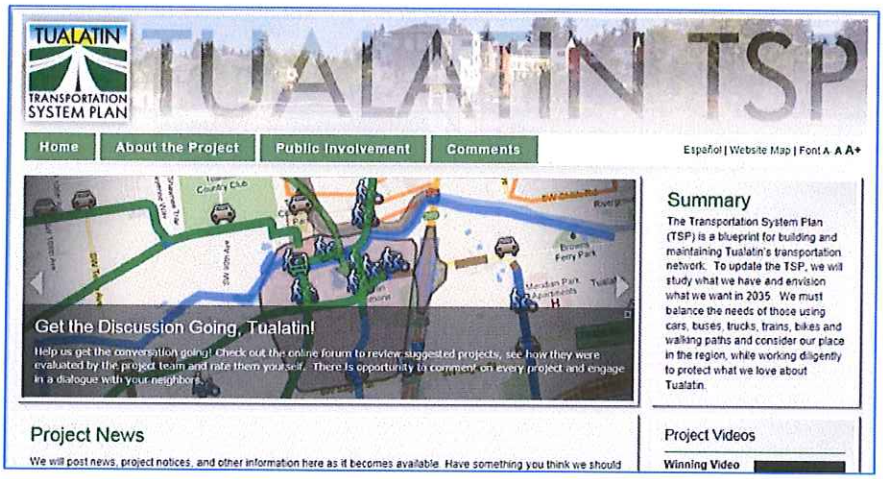
Spanish Language Outreach

According to the 2005–2009 American Community Survey, 17 percent of Tualatin's population speaks Spanish at home. For that reason, attention was placed on reaching out to this important part of the population. Interviews with leaders in the Latino community held early in the process suggested several ways to engage the Spanish-speaking population of Tualatin. Following these suggestions, the project team:

- Created English and Spanish language materials
- Visited the bilingual Parent-Teacher Organization at Bridgeport Elementary School
- Provided materials at the library and especially at Spanish-language events attended by families
- Shared information at local English as a Second Language (ESL) classes
- Contacted local churches (Tualatin Spanish Seventh-Day Adventist Church and Esperanza Iglesia)
- Left materials at local businesses

Making Involvement Easy and Fun

In addition to the more traditional meetings and events, this TSP process employed many unique tools for making involvement easy and fun.



All project information was shared on the website, www.tualatintsp.org, with information available in both English and Spanish. The website was updated weekly throughout the project with new deliverables, upcoming meetings, ways to get involved, questions for the community, and updates on what the team was doing. Project videos were produced that appeared on the project website that provided fun and unique updates from community members throughout the process. More than 2,240 people accessed the website during the project and more than 460 people submitted comments online on the Comment Map, the TSP Ideas Map, and the general comments section.

All TSP information was posted to the website to maintain an open and transparent process. TTF materials—including agendas, technical material, and meeting summaries—were posted on the City of Tualatin's website at http://www.tualatinoregon.gov/meetings and linked through the TSP project site.

Through the summers of 2011 and 2012, City staff attended public events to educate people about the TSP update and seek input on transportation system needs and recommendations. During this time staff attended the Tualatin Farmers Market, Concerts on the Commons, ArtSplash Arts Festival, and the annual Crawfish Festival.

Staff also attended each of the city Advisory Committee meetings, made contact with the Juanita Pohl Senior Center attendees, and made presentations to the Tualatin Chamber and the Tualatin Rotary.

In the summer of 2011 the project team developed an iPhone application and a map-based web tool for the public to suggest project ideas and identify system needs. About 250 people participated, providing more than 360 suggestions. The project also sponsored a video contest and honored two winners in October 2011. The City used its Facebook account to share TSP updates with its 392 followers and the project ran a Facebook ad in August 2012. Finally, the team prepared a short video to encourage input on the TSP's preliminary recommendations in summer 2012; this video was featured in several prominent spots and helped drive traffic to the project website. These non-traditional methods expanded the reach of the outreach program and engaged more Tualatin residents in development of the TSP.

Project Goals

Over a span of three meetings the TTF prepared a vision for the TSP, conveyed as a set of goals and objectives. In early 2012 they adopted seven principal goals organized into the following goal categories:

1. Access and Mobility
2. Safety
3. Vibrant Community
4. Equity
5. Economy
6. Health and the Environment
7. Ability to be Implemented

These goals and objectives were also discussed by the community at the first open house in February 2012 and by TPC, TPARK, and City Council. The full description of goals and objectives, included as Table 1, served as the basis for the TSP's evaluation framework. This means that all TSP recommendations were tied back to the underlying vision as established by these groups.

Regulatory Requirements

The TPR, developed by the state DLCD in accordance with state law, requires that local TSPs contain the following elements:

- A road plan for a network of arterial and collector roads
- A public transit plan
- A bicycle and pedestrian plan
- An air, rail, water, and pipeline plan
- A transportation financing plan
- Policies and ordinances for implementing the TSP

The TPR requires that alternate travel modes including cycling, walking, and transit, be given equal consideration with automobile travel and states that reasonable effort must be applied in the development and enhancement of alternate modes in Tualatin's future transportation system. Local jurisdictions must also coordinate their plans with relevant state, regional, and county plans and amend their own ordinances to implement the TSP.

This page left blank intentionally.

TABLE 1

Goals and Objectives of the Tualatin Transportation System Plan

Goal Category	Goal	Objective
Access and Mobility	Maintain and enhance the transportation system to reduce travel times, provide travel-time reliability, provide a functional and smooth transportation system, and promote access for all users.	Improve travel time reliability/provide travel information for all modes including freight and transit.
		Provide efficient and quick travel between points A and B.
		Provide connectivity within the City between popular destinations and residential areas.
		Accommodate future traffic, bicycle, pedestrian, and transit demand.
		Reduce trip length and potential travel times for motor vehicles, freight, transit, bicycles, and walkers.
		Improve comfort and convenience of travel for all modes including bicycles, pedestrians, and transit users.
		Increase access to key destinations for all modes.
Safety	Improve safety for all users, all modes, all ages, and all abilities within the City of Tualatin.	Address known safety locations, including high-crash locations for motor vehicles, bicycles, and pedestrians.
		Address geometric deficiencies that could affect safety including intersection design, location and existence of facilities, and street design.
		Ensure that emergency vehicles are able to provide services throughout the City to support a safe community.
		Provide a secure transportation system for all modes.
Vibrant Community	Allow for a variety of alternative transportation choices for citizens of and visitors to Tualatin to support a high quality of life and community livability.	Create a variety of safe options for transportation needs including bicycles, pedestrians, transit, freight, and motor vehicles.
	Produce a plan that respects and preserves neighborhood values and identity.	Provide complete streets that include universal access through pedestrian facilities, bicycle facilities, and transit on some streets.
		Support a livable community with family-friendly neighborhoods.
		Maintain a small-town feel.
Equity	Consider the distribution of benefits and impacts from potential transportation options, and work towards fair access to transportation facilities for all users, all ages, and all abilities.	Promote a fair distribution of benefits to and burdens on different populations within the City (that is, low-income, transit-dependent, minority, age groups) and different neighborhoods and employment areas within the City.
		Consider access to transit for all users.

Goal Category	Goal	Objective
Economy	Support local employment, local businesses, and a prosperous community while recognizing Tualatin's role in the regional economy.	Support a vibrant city center and community, accessible to all modes of transportation.
		Support employment centers by providing transportation options to major employers.
		Increase access to employment and commercial centers on foot, bike, or transit.
		Consider positive and negative effects of alternatives on adjacent residential and business areas.
		Accommodate freight movement.
		Facilitate efficient access for goods, employees, and customers to and from commercial and industrial lands, including access to the regional transportation network.
Health/Environment	Provide active transportation options to improve the health of citizens in Tualatin. Ensure that transportation does not adversely affect public health or the environment.	Provide active transportation options to area schools to reduce childhood obesity.
		Promote active transportation modes to support a healthy public and children of all ages.
		Provide interconnected networks for bicyclists and pedestrians throughout the City for all age groups.
		Consider air quality effects of potential transportation solutions.
		Protect park land and create an environmentally sustainable community.
		Consider positive and negative effects of potential solutions on the natural environment (including wetlands and habitat areas).
Ability to Be Implemented	Promote potential options that are able to be implemented because they have community and political support and are likely to be funded.	Promote fiscal responsibility and ensure that potential transportation system options are able to be funded given existing and anticipated future funding sources.
		Evaluate potential options for consistency with existing community, regional, and state goals and policies.
		Strive for broad community and political support.
		Optimize benefits over the life cycle of the potential option.
		Consider transportation options that make the best use of the existing network.
		Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood.

Metro also requires that TSPs meet certain requirements that have been adopted in the RTP and RTFP. Local TSPs must:

- Establish an arterial street network, considering Metro's street design concepts and include a conceptual map of new streets
- Implement access management standards
- Include policies, standards, and projects that connect to transit stops
- Develop a transit plan consistent with the regional transit functional plan
- Develop pedestrian, bicycle, freight, parking, and transportation system management plans
- Ensure that regional transportation needs are incorporated into the TSP
- Include regional transportation goals for mode share and vehicles miles traveled

Organization of the TSP

The TSP document is organized into three chapters and seven appendixes, as follows.

Chapter 1. Introduction

This chapter explained the purpose, goals, and benefits of the TSP, regulatory requirements guiding plan development, and organization of the TSP.

Chapter 2. Modal Plans

This chapter discusses the preferred transportation system for the City of Tualatin, including the required plan elements discussed earlier. It includes the following sections:

1. **Functional Classification Plan** describes the methods of classifying streets based on the service they are intended to provide for travel in Tualatin

   – Street Design Standards: updates and expands on existing street design standards

2. **Street System Plan** describes the changes to the street system including the functional classification, street design standards, streets to upgrade, and new streets. Projects to improve City roadways are included in the street system plan.

   – Street Urban Upgrades: contains improvements needed to bring certain roadway segments and intersections up to standards
   – New Streets: details new streets and street extensions designed to improve local connectivity
   – Additional Roadway Projects: contains street signals, intersection modifications, additional lanes, and other projects that will enhance the road network.
   – Access Management: discusses road access control measures designed to improve safety, maintain traffic flow, and preserve roadway capacity.
   – Traffic Operations Standards: compares the TSP to adopted State, County, and local standards.

3. **Transit Modal Plan** details transit enhancements and new transit projects, including expanded bus routes, park-and-rides, expansion of the Tualatin Chamber of Commerce Shuttle service, and Tualatin's role in regional transit planning.

4. **Pedestrian and Bicycle Modal Plan** lists recommended bicycle and pedestrian improvement projects, featuring a robust network of multi-modal paths.
5. **Freight Plan** lists projects needed to improve freight movement reliability, reduce freight delay, and address other freight system deficiencies.
6. **Rail Plan** evaluates the current and future rail system and sets forth improvements to serve both freight and passenger rail travel.
7. **Water, Pipeline, and Air Plan** describes existing and future pipeline and air service needs in Tualatin.
8. **Transportation Demand Management Plan** discusses projects designed to manage travel demand in Tualatin, preserving transportation system capacity.
9. **Transportation System Management Plan** discusses how best to use existing infrastructure to optimize travel on the current network.
10. **Parking Plan** determines a parking plan for the downtown core and Tualatin High School.

Implementation

This section includes information on potential funding sources and prioritization of TSP projects.

Chapter 3. Policy Language

This chapter contains recommended policy language to be considered for adoption by the City.

Appendixes

The appendixes contain technical information and documentation supporting the TSP and are organized largely by technical memoranda produced as part of the TSP process. They are as follows:

- **Appendix A, Plan and Policy Review** details the policy framework that guided development of the TSP and serves as a basis for updating out-of-date or inconsistent City policies.
- **Appendix B, Existing Conditions and Deficiencies** documents the current (2011) transportation conditions in Tualatin, current land use, and identifies existing deficiencies. Existing conditions are evaluated based on relevant mobility and operations standards.
- **Appendix C, Future Transportation Conditions** describes transportation system conditions for the future study year 2035 based on population growth, anticipated employment growth, and future traffic analysis.
- **Appendix D, Alternatives Analysis** describes the evaluation framework uses to select or reject different alternatives, the project brainstorming process, the narrowing process, and how TSP recommendations were moved forward to be included in the TSP.
- **Appendix E, Transportation Funding and Improvement Costs** summarizes existing transportation funding sources and potential future funding sources that could be considered to fund projects in the TSP. Included are high-level planning cost estimates for the recommended TSP projects.
- **Appendix F, Implementing Ordinances** recommends changes to the Tualatin Development Code that will enable plan implementation, encourage alternate modes, and protect facility and corridor function consistent with regulatory requirements.
- **Appendix G, Public Involvement Process** details the public process used in developing the plan, including outreach activities, community workshops, open houses, and the Transportation Task Force and Working Group meetings.

Chapter 2. Modal Plans

This chapter outlines the preferred transportation system for the City of Tualatin. It is organized by modal element, though it should be noted that many TSP programs and projects benefit more than one mode of transportation. All attempts have been made to describe multi-modal TSP recommendations under the mode primarily served, with cross references made to other modes benefited by the project.

This chapter consists of a street system plan, a transit plan, a bicycle, pedestrian, and trail plan, a rail plan, a freight plan, a water and pipeline plan, and an air plan. As per TPR requirements this chapter also specifically includes plans for TDM, TSM, and parking.

Definitions: TDM and TSM

TDM

Projects designed to manage travel demand, preserving transportation system capacity. Examples include teleworking, carpooling, and a Transportation Management Association.

TSM

Projects designed to optimize travel on the current network. Examples include traffic calming techniques, signal timing, and signal coordination.

1 Functional Classification Plan

A city's functional classification plan defines the intended operations and character of roadways within the overall transportation system including standards for roadway and right-of-way width, access spacing, and pedestrian and bicycle facilities. The City of Tualatin's functional classification system applies to roadways owned by the City, the County, and the State, and includes principal arterials, major arterials, minor arterials, major collectors, minor collectors, connector, and local roads. Figure 1 presents the updated functional classification plan for the City of Tualatin. Table 2 describes the functional classifications and the purpose they are intended to serve.

Tualatin's street system has a well-established network of arterials and collectors serving a variety of land uses throughout the City. The arterial roadways carry a high number of vehicles including transit and freight vehicles, and provide mobility with few opportunities for local access. Collectors assemble traffic from a neighborhood or district and deliver it to the closest arterial street. Collectors serve shorter trip lengths than arterials and have more local access opportunities. Both arterials and collectors within Tualatin are owned by a variety of agencies including the City, ODOT, and Clackamas and Washington Counties. The roadway owners are responsible for maintenance and upkeep on the roadways and they make decisions on upgrades to their facilities. Appendix A, Plan and Policy Review, provides a detailed description of the various policies associated with roadway ownership.

There are a number of existing freight and truck routes through the City designated by the City, the State, and the Federal government. These routes have specific design criteria and mobility standards to ensure that these roadways serve freight traffic.

Functional Classification Policies

Policies support the City's transportation goals and objectives included in the previous section. Policies help provide direction for roadways and roadway classifications.

- **Functional Classification Policy 1:** Major and minor arterials will comprise the main backbone of the freight system, ensuring that freight trucks are able to easily move within, in, and out of the City
- **Functional Classification Policy 2:** Continue to construct existing and future roadways to standard when possible for the applicable functional classification to serve transportation needs within the City

Functional Classification Changes

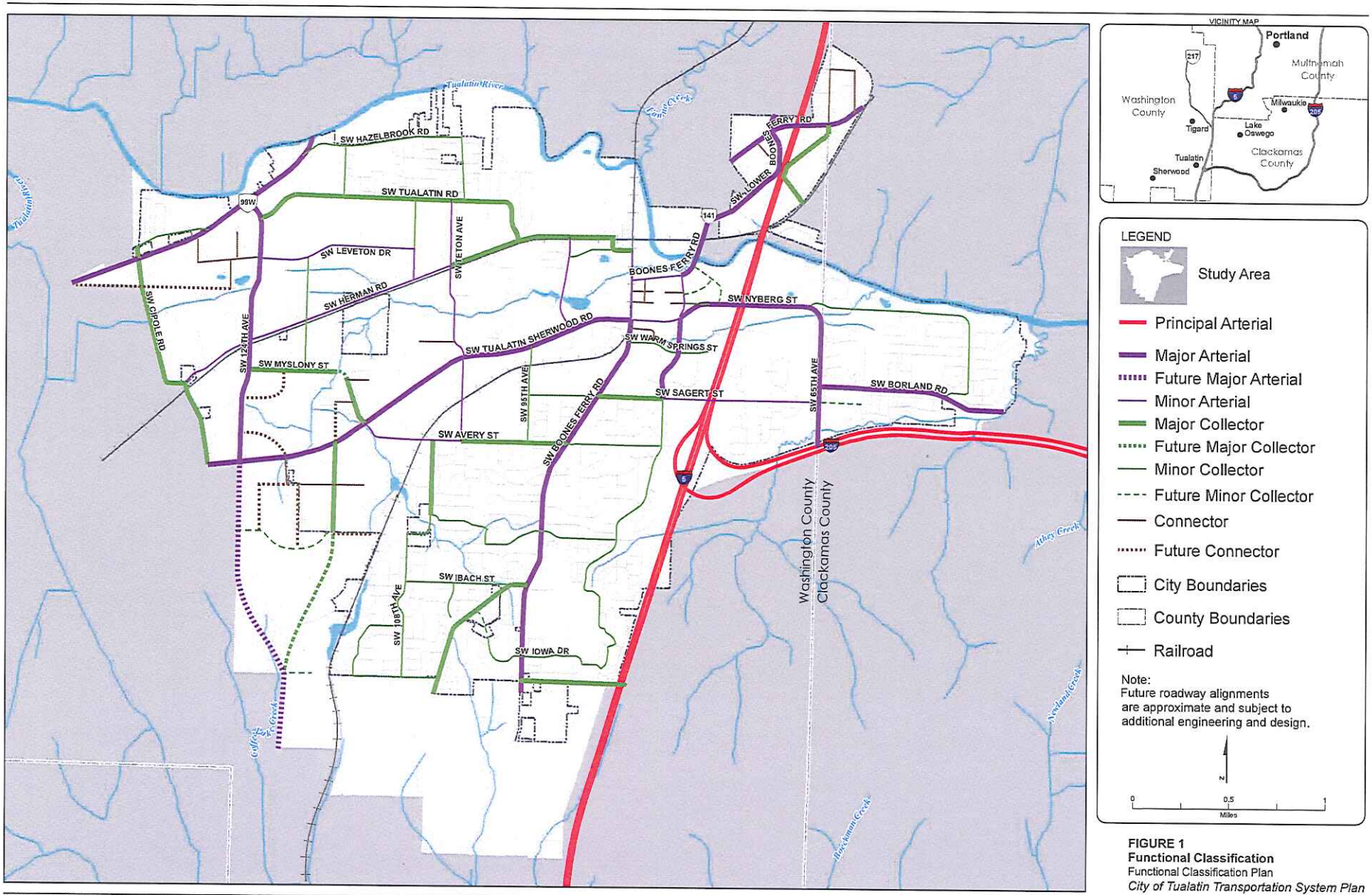
Several changes were made to the City's functional classification system in this TSP update, including a simplification of the classifications themselves (from nine to seven classifications), updates to the descriptions and design standards, and several modifications within the City. Table 2 includes the description of the functional classifications, and Figure 1 includes a map of the updated Functional Classifications in Tualatin.

TABLE 2
City of Tualatin Functional Classification Description

Functional Classification	Description
Principal Arterial	Primary function is to serve through, intra-city, regional, and interstate travel; connects major cities and states; connects to the major arterial system; serves through and regional freight movements; facilities are fully and partially access controlled; access control through medians, interchanges; no on-street parking, few sidewalks and bicycle facilities; may be used by public transit.
Major Arterial	Primary function is to serve both local and through traffic as it enters and leaves the urban area; connects the minor arterial and collector street system to principal arterials and other major arterials; serves freight movements between Tualatin and the regional system; provides access to other cities and communities; serves major traffic movements; access control through medians and/or channelization; restricted on-street parking; sidewalks and bicycle facilities required; may allow a right-turn pocket if warranted; will be used by public transit.
Minor Arterial	Primary function is to serve local and through traffic between community and regional facilities; distributes traffic from major arterials to collectors and local streets; serves freight movements between Tualatin and the regional system; higher degree of access than major arterials; trip lengths, traffic volumes, and speeds are lower than on major arterials; sidewalks and bicycle lanes required; may allow a right turn pocket if warranted; likely to be used by public transit.
Major Collector	Primary function is to serve local traffic between neighborhoods and community facilities; principal carrier between arterials and local streets; provides some degree of access to adjacent properties, while maintaining circulation and mobility for all users; carries lower traffic volumes at slower speeds than arterials; typically has two to three lanes; typically does not include on-street parking; pedestrian and bicycle facilities are required; may be used by public transit.
Minor Collector	Primary function is to connect neighborhoods with major collector streets to facilitate movement of local traffic; serves as primary routes into residential neighborhoods; has slower speeds to ensure community livability and safety for pedestrians and bicyclists; on-street pedestrian and bicycle facilities are required; bicycle facilities may be exclusive or where street parking is prevalent, shared roadways depending on traffic volumes, speeds, and extent of bicycle travel; may be used by public transit.
Connector	Primary function is to provide direct access to adjacent land uses, specifically in the downtown core* and industrial, commercial, and manufacturing areas; characterized by short roadway distances, slow speeds, and low volumes; offers a high level of accessibility; provides on-street parking, serves passenger cars, pedestrians, bicycles, and trucks for industrial areas. May be used by public transit; pedestrian facilities are required. Does not serve through traffic.
Local Street**	Primary function is to provide direct access to adjacent land uses; characterized by short roadway distances, slow speeds, and low volumes; offers a high level of accessibility; serves passenger cars, pedestrians, and bicycles, but not trucks; pedestrian facilities are required.

* The downtown core is consistent with the Town Center Plan study area, centered on the Lake of the Commons and includes land south of the Tualatin River and west of I-5, including the Tualatin Community Park. The western Boundary is SW 95th Avenue south to SW Tualatin-Sherwood Road, and then east near SW Warm Springs Street.

** Local streets are not address in the TSP as per the TPR Section 660-012-0020(2)(b)



VICINITY MAP

LEGEND

- Study Area
- Principal Arterial
- Major Arterial
- Future Major Arterial
- Minor Arterial
- Major Collector
- Future Major Collector
- Minor Collector
- Future Minor Collector
- Connector
- Future Connector
- City Boundaries
- County Boundaries
- Railroad

Note:
Future roadway alignments are approximate and subject to additional engineering and design.

N

0 0.5 1
Miles

FIGURE 1
Functional Classification
Functional Classification Plan
City of Tualatin Transportation System Plan

TBC091912115639PDX_TSP_FunctionalClassification_11

CH2MHILL.

Figure 1 continued

Major Arterials

The following roadways are either reclassified as major arterials or are future major arterials:

- **SW Lower Boones Ferry Road** between SW Boones Ferry Road and SW Bridgeport Road changed from a minor arterial. This section of SW Lower Boones Ferry Road provides the only non-highway north-south connection within the City and carries a large amount of regional traffic from I-5 into Tualatin.
- **SW 124th Avenue** south of SW Tualatin-Sherwood Road (future road). This connection will allow industrial and manufacturing properties on the west side of Tualatin to access the regional highway system south of the City.
- **SW 65th Avenue** south of SW Sagert Street to the city limits changed from a minor collector. This designation recognizes that south of SW Sagert Street, SW 65th Avenue provides connections to the Stafford area, and changing this designation makes it consistent with the rest of SW 65th Avenue within the City.

Minor Arterials

The following roadways are reclassified as minor arterials:

- **SW 108th Avenue** between SW Leveton Drive to SW Herman Road changed from a major arterial. Downgrading this section of roadway recognizes that freight and regional traffic will access SW Leveton Drive due to the existing land uses, but it is not a major freight throughway. A minor arterial will serve the industrial and manufacturing area without attracting additional through traffic to SW Tualatin Road.
- **SW Leveton Drive** between SW 118th and SW 124th Avenues changed from a minor collector, and SW Leveton Drive between SW 118th and SW 108th Avenues changed from a major arterial. These changes address the freight traffic anticipated on SW Leveton Drive and recognize the importance of connecting to the regional transportation system via SW 124th Avenue and OR 99W.
- **SW Herman Road** west of SW Teton Avenue to SW 108th Avenue changed from a major arterial, and SW Herman Road between SW 108th Avenue and SW Cipole Road changed from a major collector. These changes make the roadway a consistent minor arterial between SW Cipole Road and SW Teton Avenue, and help support the community's desire to remove some through traffic off of SW Tualatin Road to SW Herman Road.
- **SW Teton Avenue** between SW Tualatin Road and SW Avery Street changed from a major collector. SW Teton Avenue is recommended as a freight route to reduce pressure on SW Tualatin Road, upgrading to a minor arterial indicates the anticipated traffic.
- **SW Avery Street** between SW Teton Avenue and SW Tualatin-Sherwood Road changed from a major collector. Upgrading this section of SW Avery Street provides a connection to the minor arterial on SW Teton Avenue and SW Tualatin-Sherwood Road, a major arterial to allow freight and other regional traffic access to I-5 and OR 99W.
- **SW Sagert Street** from SW Martinazzi Avenue to SW 65th Avenue changed from a major arterial. This change acknowledges that SW Sagert Street is an important connection between SW 65th Avenue and SW Martinazzi Avenue, but recognizes that the road carries local trips and serves residential land uses. SW Sagert Street carries a mix of through and local traffic.
- **SW 90th Avenue** from SW Tualatin Road to SW Tualatin-Sherwood Road changed from a major arterial. This change is in response to removing the Hall Street north-south extension over the Tualatin River from the City's TSP. Reducing the classification from a major to a minor collector reflects the reduced importance of SW 90th Avenue without that connection.

Major Collectors

The following roadways are reclassified as major collectors or are future major collectors:

- **SW Grahams Ferry Road** between SW Ibach Street and the southern City limits changed from a minor collector. This change anticipates planned development along SW Graham's Ferry Road both in Tualatin and to the south, recognizing that it is the only route from the neighborhoods to arterial connections and the regional network.
- **SW Myslony Street Extension** (Future road) to SW 112th Avenue as a future major collector. This is consistent with roadway designations on either side of the future connection.
- **SW Tualatin Road** between SW 90th Avenue and the curve south at SW Chinook Street changed from a major arterial. This change creates consistency between the segments east and west, which are already major collectors. Originally this was a major arterial because along with SW 90th Avenue, it was to connect to a future Hall Boulevard extension over the river. Since the Hall Boulevard extension was removed from the City's TSP, this roadway was downgraded.
- **SW Norwood Road** between SW Boones Ferry Road and the eastern City limits changed from a local road. SW Norwood Road is one of the only east-west connections in the south part of the City, and provides a connection over I-5. There are very few local accesses along SW Norwood Road, and the connectivity makes it consistent with a major collector designation.

Minor Collectors

The following roadways are future minor collectors:

- **New Roads in Urban Renewal Block 2**[1] will be classified as minor collectors since they connect two major arterials, SW Boones Ferry Road and SW Nyberg Street.
- **New Road** east of SW 65th Avenue and SW Borland Road.

Regional Coordination

Several roadways within the City of Tualatin are owned by Washington County, Clackamas County, or ODOT. Coordination with these regional partners is key to implement a functional roadway network. Many of the County- and State-owned roadways are major and principal arterials respectively, and serve regional traffic needs. The City of Tualatin will continue to work with regional partners to implement projects on County and State-owned roadways in Tualatin. Within the following modal plans, the projects that require regional coordination are called out separately than the projects under the City's sole jurisdiction.

Street Design Standards

Street functional classification guides the design standards including the number of travel lanes, presence of bicycle lanes, the width of sidewalks, and other design elements. Table 3 shows the design standards by functional classification, and Figure 2 has the minimum and preferred street cross sections.

[1] Urban Renewal Block 2 is the site of the former Kmart. It is located north of SW Nyberg Road west of I-5 in the northwest quadrant of the interchange. More information on Urban Renewal in downtown Tualatin is located here: www.tualatinoregon.gov/sites/default/files/fileattachments/economicdevelopment/webpage/12237/curp-curr_oct_2009.pdf

TABLE 3
Street Design Standards

Functional Classification	Cross-section width	Travel lanes	Center lane or landscaped median[¥]	Bike lanes	Sidewalks*	Multi-use path[†]	On-street Parking	Planter Strip[£]
Major Arterial	70-98'	Two to four lanes at 12' each	14'	5-6' on both sides	5-6' on both sides	12' multi-use path could replace bike lanes and sidewalks on one or both sides	None	6' on both sides
Minor Arterial	56-74'	Two lanes at 12' each	Optional 14'	5-6' on both sides	5-6' on both sides	12' multi-use path could replace bike lanes and sidewalks on one or both sides	None	6' on both sides
Major Collector	54-74'	Two lanes, 11' minimum, 12' maximum	Optional 14'	5-6' on both sides	5-6' on both sides	12' multi-use path could replace bike lanes and sidewalks on one or both sides	None	6' on both sides
Minor Collector	62-76'	Two lanes, 11' minimum, 12' maximum	None	5-6' on both sides	5-6' on both sides	12' multi-use path could replace bike lanes and sidewalks on one or both sides	8' parking strip on one or both sides	6' on both sides
Connector	60'	Two lanes at 12' each	None	None	6' on both sides	None	8' parking strip on both sides	4' on both sides, 5' x 5' tree well for downtown connector streets
Local Street	46-50'	Two lanes, 14' minimum, 16' maximum	None	None	5' on both sides	None	Allowed	4' on both sides

*All sidewalks shall have a clear zone - minimum unobstructed width of five feet for all City streets, and assume a 6" curb
[†] The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.
[¥] Landscaped medians may include pedestrian refuges where appropriate, and where they can be installed by meeting appropriate design standards.
[£] Low Impact Development Approaches (LIDA) are allowed, where appropriate as determined by the City Engineer

For roadways all efforts are made to achieve the preferred cross sections described in Table 3 and illustrated in Figure 2. However it is acknowledged that this preferred width is not always achievable, due to environmental constraints or existing development.

The City Engineer may reduce the requirements of the preferred standard based on specific site conditions, but in no event will the requirement be less than the minimum cross-section. The City Engineer shall take into consideration the following factors when decision whether the site conditions warrant a reduction of the preferred standard:

Arterials

1. Whether adequate right-of-way exists
2. Impacts to properties adjacent to right-of-way
3. Current and future vehicle traffic at the location
4. Amount of heavy vehicles (buses and trucks)

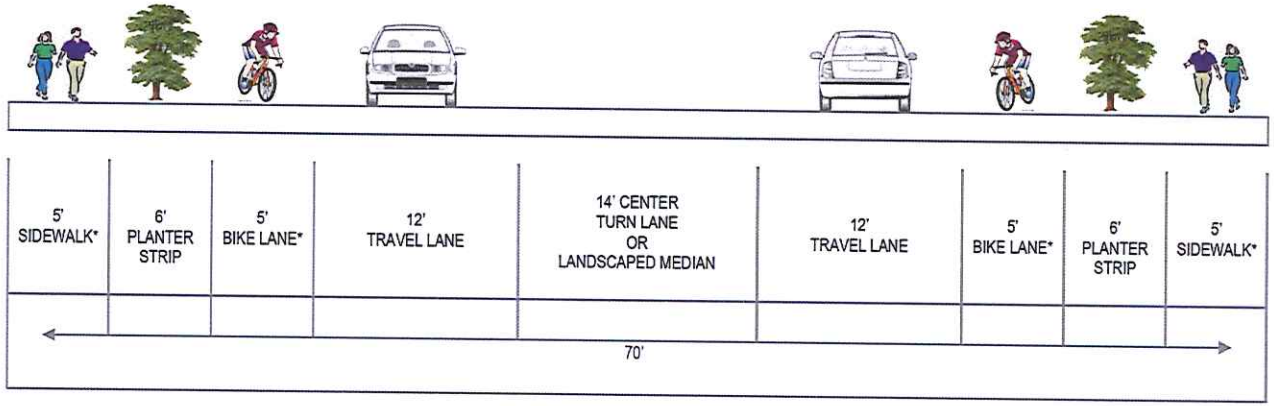
Collectors

1. Whether adequate right-of-way exists
2. Impacts to properties adjacent to right-of-way
3. Amount of heavy vehicles (buses and trucks)
4. Proximity to property zoned manufacturing or industrial

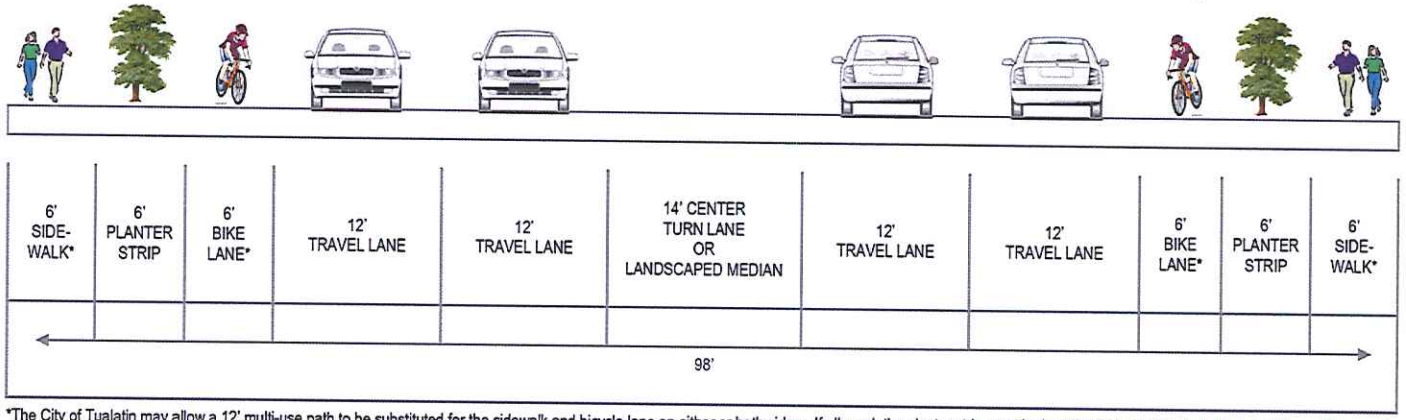
Figure 2. Street Design Standards

Major Arterial

Minimum



Preferred

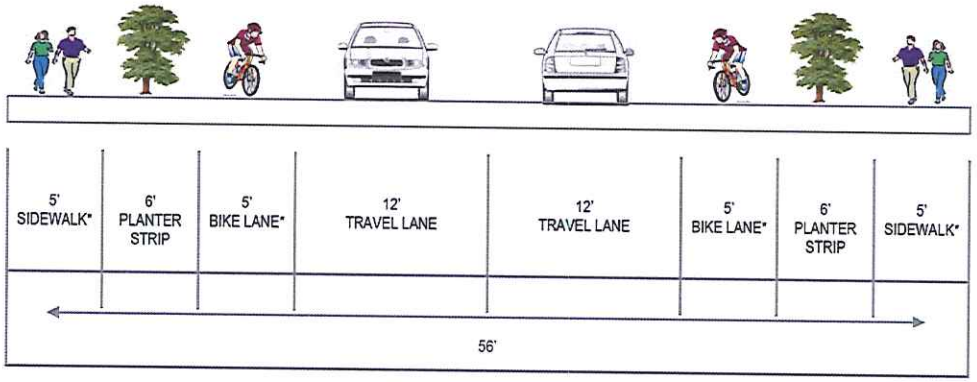


*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

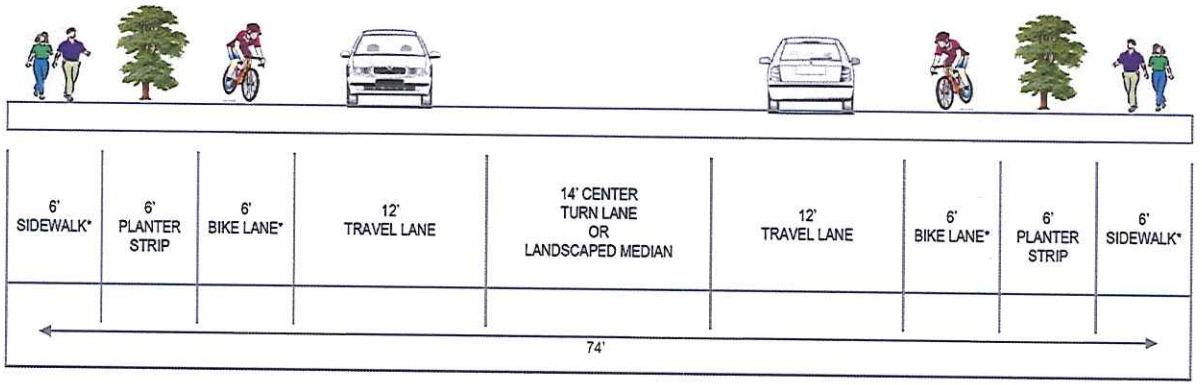
Figure 2. Street Design Standards, cont.

Minor Arterial

Minimum



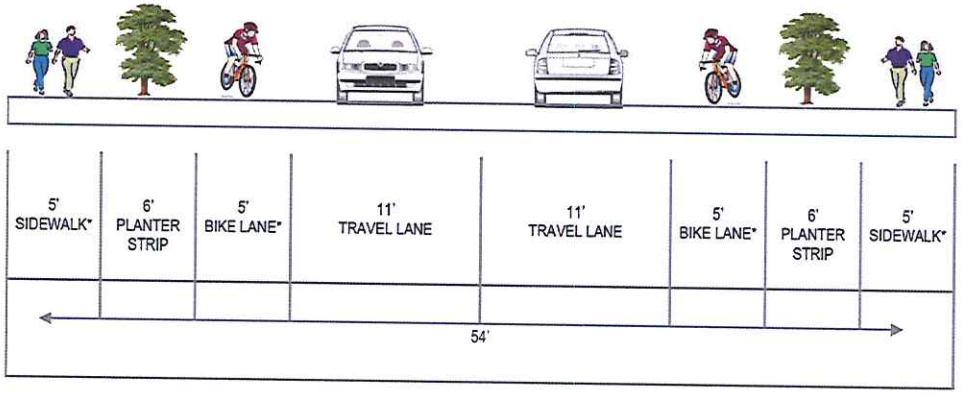
Preferred



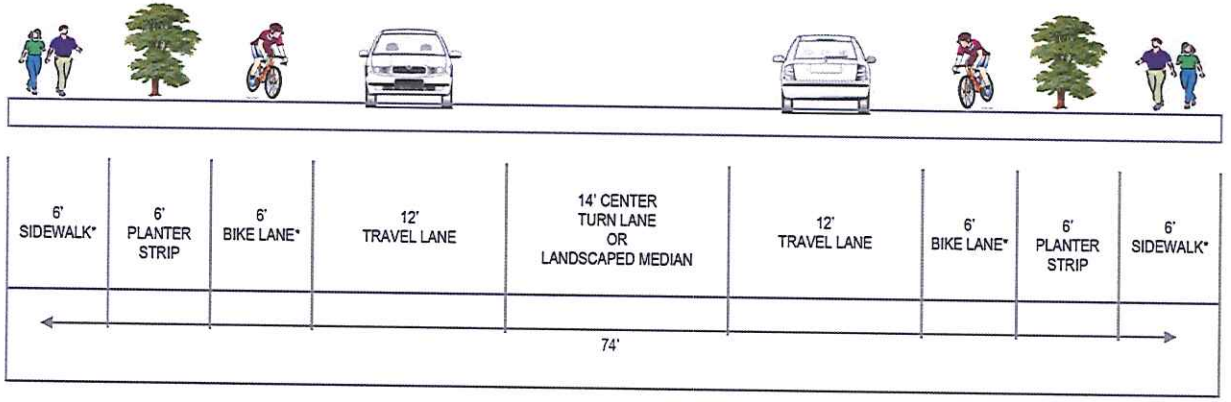
*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

Figure 2. Street Design Standards, cont.
Major Collector

Minimum



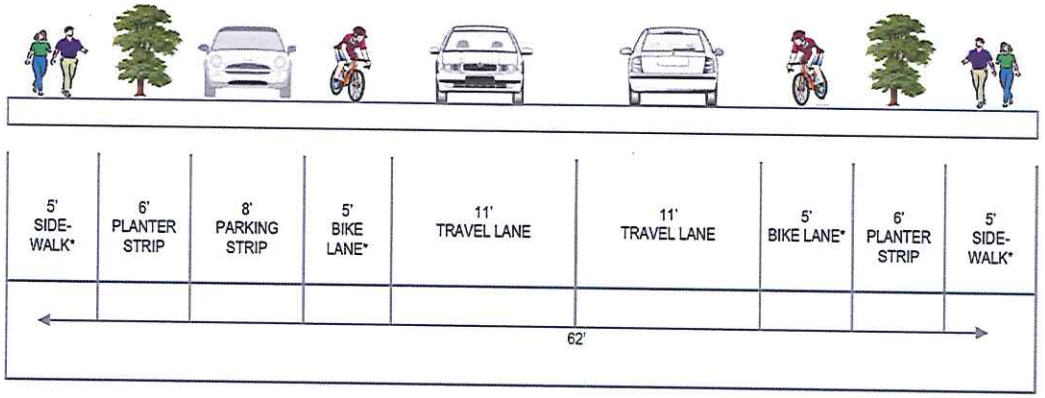
Preferred



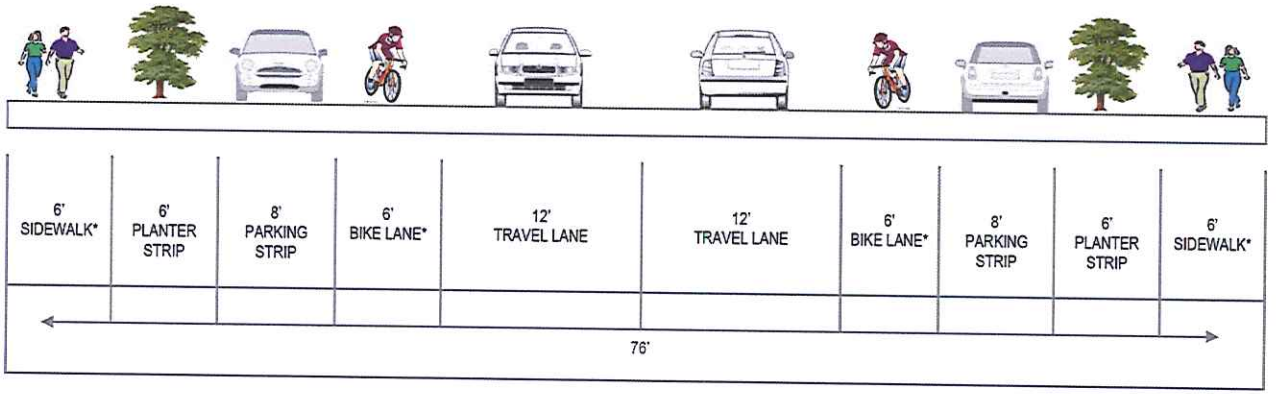
*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

Figure 2. Street Design Standards, cont.
Minor Collector

Minimum



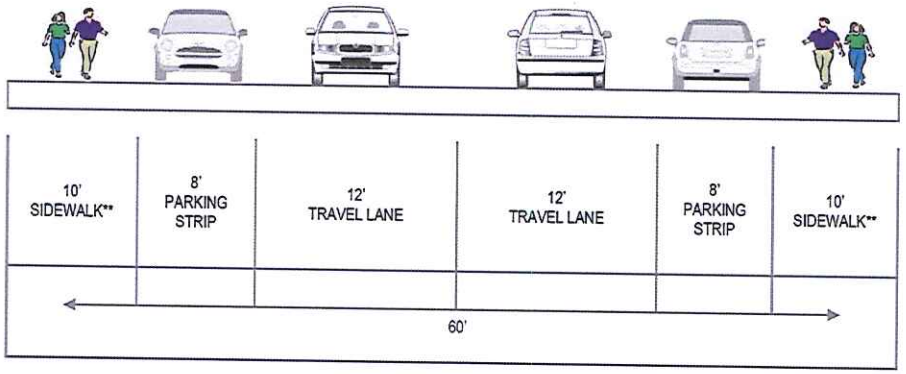
Preferred



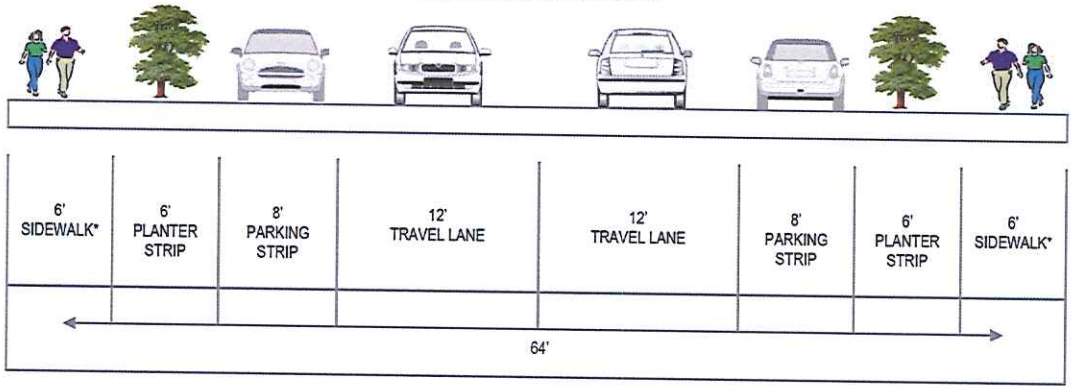
*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.

Figure 2. Street Design Standards, cont.
Connector

Downtown Core



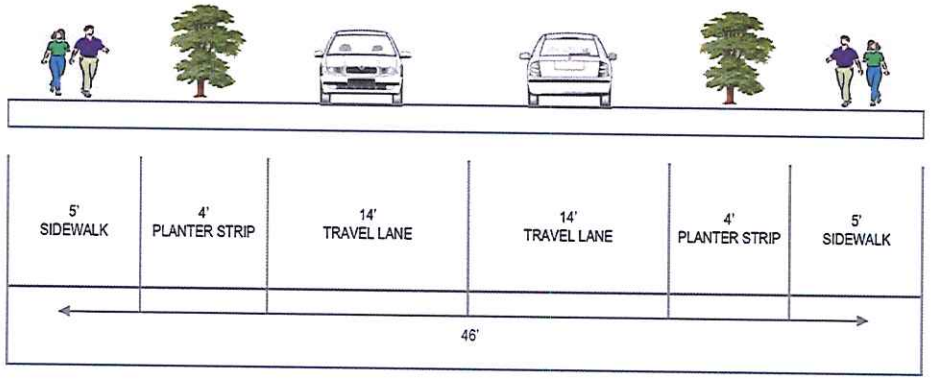
Commercial/Industrial



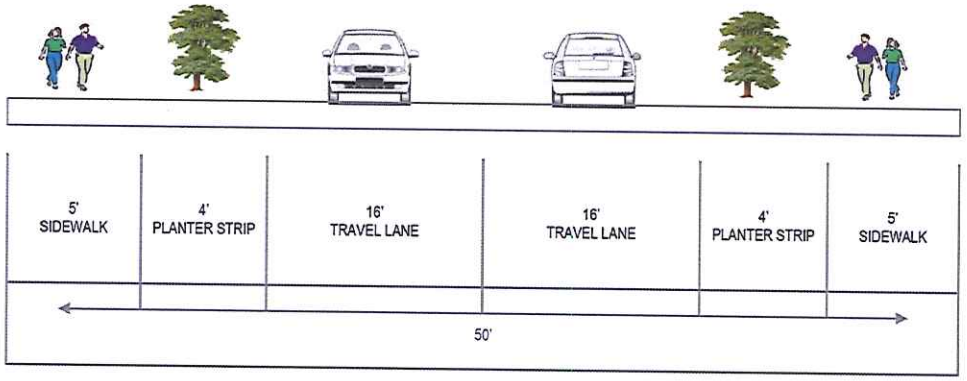
*The City of Tualatin may allow a 12' multi-use path to be substituted for the sidewalk and bicycle lane on either or both sides. If allowed, the planter strip must be installed between the travel lane and the multi-use path.
**Sidewalks on the downtown connector roads have 4' x 4' tree grates instead of planter strips.

Figure 2. Street Design Standards, cont.
Local

Minimum*



Preferred



* The City of Tualatin may consider as low as 28' curb-to-curb pavement widths and as low as 46' right-of-way when needed to address constraints.

2 Street System Modal Plan

The street system modal plan consists of several sections: a listing of street urban upgrades and new streets, other intersection-specific or non-capacity streets projects, access management policies, and traffic operation standards.

Existing and Future Roadway Conditions

Some of the existing roadways do not meet City, County, or State design standards. Further, there are a number of major roadways intersect with other roadways at a skew. This creates sight distance limitations and, thus, safety concerns.

The two most highly-traveled roadways are SW Tualatin-Sherwood Road and SW Nyberg Road with over 20,000 vehicles per day. SW Tualatin Road and SW Boones Ferry Road corridors have 10,000 vehicles daily at multiple locations. Additionally, SW Tualatin-Sherwood Road carries a large amount of heavy vehicles, around 11.5 percent, with SW Boones Ferry Road carrying 8.4 percent heavy vehicles.[2] Appendix B provides a full description of existing (2011) roadway conditions, while Appendix C provides a description of future (2035) forecasted roadway conditions.

In the existing conditions analysis only two intersections - SW Martinazzi Avenue and SW Sagert Street as well as SW Teton Avenue and SW Tualatin Road were found to have greater congestion than mobility standards allow. In the future (2035) the number of intersections not meeting operations standards grew to twelve, as listed below:

- SW Teton Avenue and SW Tualatin-Sherwood Road
- SW Boones Ferry Road and SW Tualatin-Sherwood Road
- SW Martinazzi Avenue and SW Tualatin-Sherwood Road
- SW 65th Avenue and SW Borland Road
- SW Martinazzi Avenue and SW Boones Ferry Road
- SW Boones Ferry Road and SW Lower Boones Ferry Road
- SW Boones Ferry Road and SW Avery Street
- SW Boones Ferry Road and SW Sagert Street
- SW Teton Avenue and SW Avery Street
- SW 65th Avenue and SW Sagert Street
- SW Teton Avenue and SW Tualatin Road
- SW Nyberg Street and SW 65th Avenue

The key needs identified in the existing conditions report include:

- **Improved Roadway connectivity** - new roadway connections should be explored to improve east-west connectivity south of SW Tualatin-Sherwood Road and north-south regional connectivity. Metro RTP policies related to a complete street system identify one-mile spacing between major arterial streets with collector streets or minor arterials spaced a half-mile apart.

[2] The average road in the Portland Metro area typically carries 2-4 percent heavy vehicles.

- **Improved travel time along congested corridors** – Focus on reducing vehicle delay on key corridors.
- **Intersection improvements** - address intersection delay and intersection issues in congested areas.
- **Upgrading roadway geometries** - City design standards for roadway width, sidewalks, and bicycle facilities should be followed where specific deficiencies have been identified.

Additionally, safety is a concern for the community. Safety issues were identified at the following intersections:

- SW Tualatin-Sherwood Road and SW Boones Ferry Road
- SW Nyberg Street and I-5 southbound off ramps.

Roadway Policies

The following establish the City's policies on roadways.

- **Roadway Policy 1:** Implement design standards that provide clarity to developers while maintaining flexibility for environmental constraints.
- **Roadway Policy 2:** Ensure that street designs accommodate all anticipated users including transit, freight, bicyclists and pedestrians, and those with limited mobility.
- **Roadway Policy 3:** Work with Metro and adjacent jurisdictions when extending roads or multi-use paths from Tualatin to a neighboring City.

Roadway Projects

City Street Urban Upgrades

Tualatin's TSP strives to put forward a set of complete streets that minimize delay for trucks and drivers while maintaining Tualatin's community character. The TSP's ultimate goal with its street upgrade program is to provide a safe system for those walking, driving, riding transit, operating a wheelchair, or riding a bicycle.

Several streets in Tualatin do not meet design standards outlined in the previous section, and create a safety risk. These streets are identified here for upgrades as development occurs. Many of these upgrades include adding travel lanes to address congestion, adding a center turn lane or median to help mobility and safety, widening travel lanes, and upgrading the cross section to improve a roadway from a rural two-lane facility to an urban feel with curb, gutters, and bicycle and pedestrian facilities or just adding bicycle and pedestrian facilities. For cost estimating purposes, the project team used the street standards in Figure 2 to estimate the lane and right-of-way width.

Bicycle and pedestrian upgrades are projects where only a sidewalk, bicycle lane, or multi-use path would be added to make the street more attractive to all modes. Table 4 describes a suite of local urban upgrade projects, presenting cost estimates, potential funding sources, and implementation timeframe for these upgrades. Table 5 includes the regional urban upgrades that require coordination with other agencies, including Washington and Clackamas Counties and ODOT. Figure 3 shows the projects geographically, and bicycle and pedestrian urban upgrades are also shown on the bicycle and pedestrian figure (Figure 7). The evaluation process which led to these TSP recommendations is described in Appendix D.

Projects included in the City tables over $5 million will require the City to find additional funding sources (i.e. potential transportation bonds, regional flex funds, and transportation enhancements) beyond funding currently available to the City. Most of these projects are long-term priorities.

TABLE 4

City Urban Upgrade Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate (in 2012 dollars)*	Champion	Funding Source	Priority**
R1	Widen SW Herman Road to a three-lane cross-section between SW 124th Avenue and SW Cipole Road	$2,574,000	City	TDT, LID, gas tax, Bike/Ped funds	As development occurs
R2	Upgrade SW Hazelbrook Road to roadway standards between 99W and just east of SW Jurgens Avenue	$3,543,000	City	TDT, LID, gas tax, Bike/Ped funds	As development occurs
R3	Upgrade SW Herman Road as an urban two-lane cross-section between SW Tualatin Road and SW Teton Road	$2,390,000	City	TDT, LID, gas tax, Bike/Ped funds	As development occurs
R4	Widen SW Teton Avenue between SW Herman Road and SW Tualatin-Sherwood Road to a complete three-lane cross-section including bike lanes for its entire length	$2,464,000	City	TDT, LID, gas tax, Bike/Ped funds	As development occurs
R5	Upgrade SW Myslony Street to roadway standards for its entire length	$11,437,000[3]	City	TDT, LID, gas tax, Bike/Ped funds, Regional flex funds, bonds, TE	Short-term
R6	Widen SW Avery Street to a three lane cross-section between SW Teton Avenue and SW Tualatin-Sherwood Road	$3,600,000	City	TDT, gas tax, Bike/Ped funds	Long-term
R7	Upgrade SW 105th Avenue/SW Blake Street/SW 108th Avenue to roadway standards between SW Avery Street and SW Willow Street	$5,086,000	City	TDT, gas tax, Bike/Ped funds	Short-term
R8	Upgrade SW Boones Ferry Road to roadway standards between SW Ibach Road and SW Norwood Road	$660,000	City	TDT, gas tax, Bike/Ped funds	Long-term
R9	Upgrade SW Helenius Road to roadway standards between SW 109th Terrace and SW Grahams Ferry Road	$1,403,000	City	TDT, gas tax, Bike/Ped funds	Long-term
R10	Upgrade SW Norwood Road to roadway standards between SW Boones Ferry Road and the eastern City limits.	$2,824,000	City	TDT, gas tax, Bike/Ped funds	Long-term
R11	Add sidewalks or a multi-use path on SW Sagert Street bridge over I-5 – assume widening on either side of the bridge	$3,282,000	City, ODOT	TDT, Bike/Ped funds, Travel Options	Long-term
R12	Fill sidewalk gaps on SW Boones Ferry Road between Tualatin High School and the southern City limits	$315,000	City	TDT, Bike/Ped funds, Travel Options	Short-term

[3] From Metro's *Regional Transportation Plan (RTP)* 2007. Estimate grown to 2012 dollars.

TABLE 4

City Urban Upgrade Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate (in 2012 dollars)*	Champion	Funding Source	Priority**
R13	Fill sidewalk gaps on SW Herman Road between SW Tualatin Road and the western City limits	Included in cost estimates for Projects R1 and R3	City	TDT, Bike/Ped funds, Travel Options	As development occurs
R14	Add bicycle lane on SW Martinazzi Avenue between SW Warm Springs Road and SW Boones Ferry Road	$2,403,000[4]	City	TDT, Bike/Ped funds, Travel Options, LID	Medium-term
R15	Add bicycle facilities on SW 95th Avenue between SW Avery Street and SW Tualatin-Sherwood Road	$2,920,000[5]	City, school	TDT, Bike/Ped funds	Medium-term
R16	Add a multi-use path along SW 65th Avenue from the Tualatin River to I-205	$9,734,000[6]	City	TDT, Bike/Ped funds, Travel Options	Long-term
R17	Add sidewalks and bicycle lanes (or a multi-use path) on SW Norwood Road from SW Boones Ferry Road to the eastern City limits	$305,000	City	TDT, Bike/Ped funds, Travel Options	Medium-term

* Costs are rounded to the nearest $1,000
** Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
LID – Local Improvement District
TDT – Transportation Development Tax
TE – Transportation Enhancement

[4] From the *East Commons Enhancement Plan* 2010. Estimate grown to 2012 dollars.

[5] From Metro's *Regional Transportation Plan (RTP)* 2007. Estimate grown to 2012 dollars.

[6] From Metro's *Regional Transportation Plan (RTP)* 2007. Estimate grown to 2012 dollars.

Regional Street Urban Upgrades

Regional street upgrades serve regional travel needs, and are more expensive than what the City is anticipated to be able to fund by itself. These projects will rely on regional and State funding sources for implementation.

TABLE 5

Regional Urban Upgrade Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate (in 2012 dollars)	Champion	Funding Source	Priority*
R18	Upgrade SW Cipole Road to roadway standards between 99W and SW Tualatin-Sherwood Road, include a multi-use path on one side as part of the Ice Age Tonquin Trail	$20,030,000[7]	Washington County, City	Washington County MSTIP, TDT, LID, Bike/Ped funds	As development occurs, or when the Ice Age Tonquin Trail project is constructed
R19	Widen SW Boones Ferry Road to 5-lanes north of SW Martinazzi Avenue	$17,818,000	City, ODOT, Washington County	Washington County MSTIP, TDT, gas tax, STIP	Long-term
R20	Widen SW Tualatin-Sherwood Road to five lanes between SW Teton Avenue and SW Cipole Road†	$10,883,000	Washington County, City	TDT, Washington County MSTIP, gas tax	Medium-term
R21	Upgrade SW Borland Road to roadway standards between SW 65th Ave. and the eastern City limits	$9,646,000	Clackamas County, City	TDT, gas tax, Clackamas County	Medium-term
R22	Upgrade SW Grahams Ferry Road to roadway standards between SW Ibach Road and SW Helenius Road	$3,300,000	Washington County	TDT, gas tax, Washington County MSTIP,	Long-term
R23	Upgrade SW Tonquin Road to roadway standards between SW Waldo Way and SW Grahams Ferry Road	$11,193,000[8]	Washington County	TDT, gas tax, Washington County MSTIP	Medium-term
R24	Fill sidewalk gap and add a colored bicycle lane at SW Boones Ferry Road and SW Lower Boones Ferry Road Intersection	$10,000	City, ODOT, Washington County, City of Durham	Bike/Ped funds, Travel Options	Short-term
R25	Fill sidewalk gaps on SW Grahams Ferry Road between SW Ibach Road and southern City limits	$1,680,000[9]	Washington County	TDT, Bike/Ped funds, Travel Options, MBP	Short-term
R26	Fill sidewalk gaps on SW Borland Road from SW 65th Avenue to the eastern City limits	$2,603,000	Clackamas County, City	TDT, Bike/Ped funds, Travel Options	Short-term

[7] From Metro's *Regional Transportation Plan (RTP)* 2007. Estimate grown to 2012 dollars.

[8] From the *SW Tualatin Concept Plan* 2010. Estimate grown to 2012 dollars.

[9] From the *Tualatin Bikeway Plan* 1993. Estimate grown to 2012 dollars.

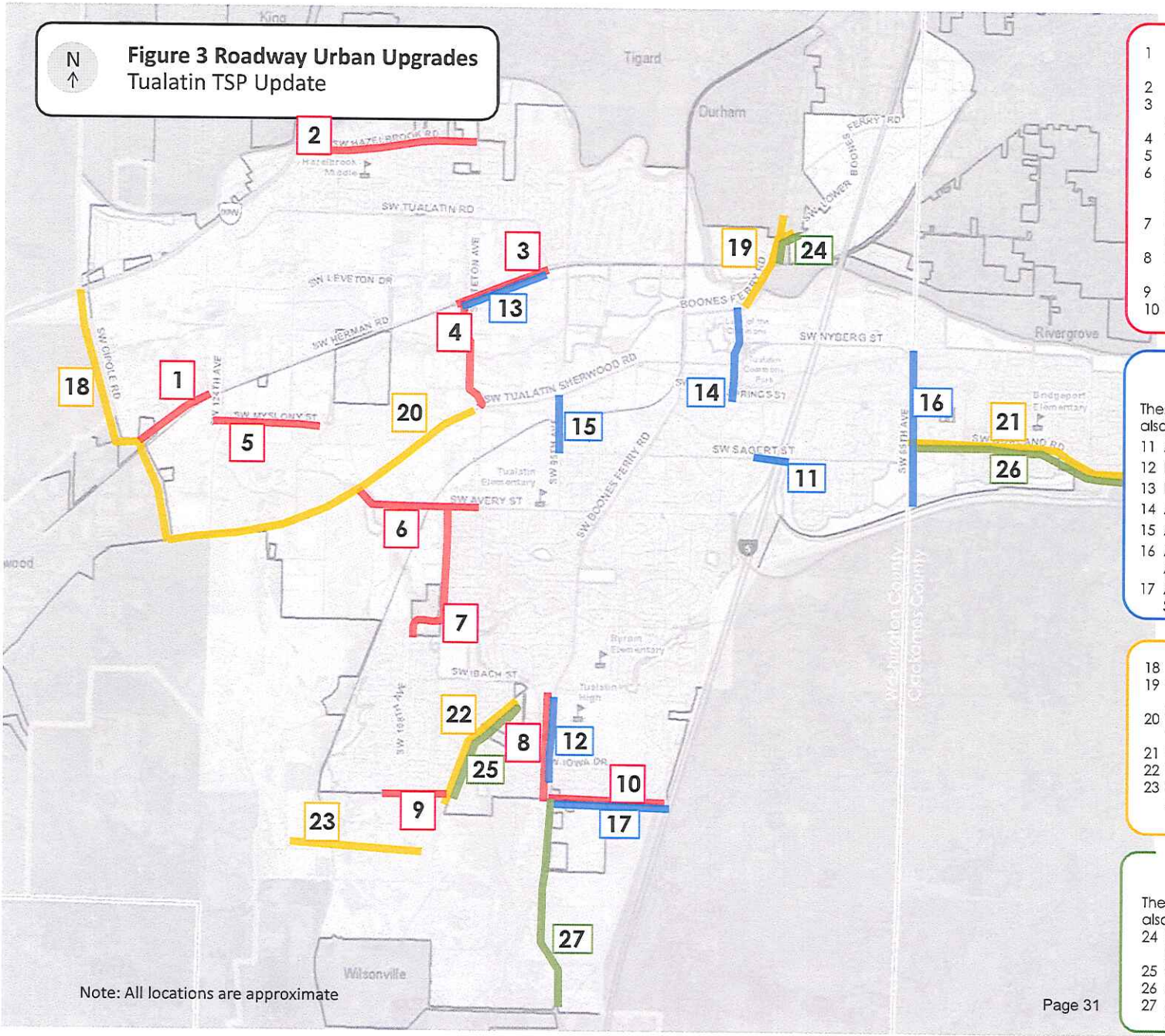
TABLE 5

Regional Urban Upgrade Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate (in 2012 dollars)	Champion	Funding Source	Priority*
R27	Add bicycle lanes on SW Boones Ferry Road from SW Norwood Road south to SW Day Road. Project will realign horizontal curves, add an intermittent center turn lane, pedestrian facilities on the west side of the road.	$10,000,000[10]	Washington County	Washington County MSTIP	Short-term (underway)

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
† Metro's *Regional Transportation Plan (RTP)* includes SW Tualatin-Sherwood Road as a 5 lane cross section west of the City limits to 99W
LID – Local Improvement District
MBP – Minor Betterment Program (Washington County)
MSTIP – Major Streets Transportation Improvement Program
STIP – Statewide Transportation Improvement Program
TDT – Transportation Development Tax

[10] From Washington County's ongoing Boones Ferry Road improvement project.



Note: All locations are approximate

City Street Urban Upgrades

1. Upgrade SW Herman Road to a 3-lane cross section between SW 124th Avenue and SW Cipole Road
2. Upgrade SW Hazelbrook Road to roadway standards
3. Upgrade SW Herman Road to a 2-lane urban cross section between SW Tualatin Road and SW Teton Avenue
4. Widen SW Teton Avenue to a 3-lane cross section
5. Upgrade SW Myslony Street to roadway standards
6. Add a center turn lane or median on SW Avery Street between SW Teton Avenue and SW Tualatin-Sherwood Road
7. Upgrade SW 105th/Blake Street/108th Avenues to roadway standards
8. Upgrade SW Boones Ferry Road to a 3 lane cross section throughout
9. Upgrade SW Helenius Road to roadway standards
10. Upgrade SW Norwood Road to roadway standards

Bicycle and Pedestrian-Specific Urban Upgrades

These projects are bicycle and pedestrian specific, and are also included on the Bicycle and Pedestrian Plan Figure:

11. Add sidewalks to the SW Sagert Street bridge
12. Fill sidewalk gaps on SW Boones Ferry Road
13. Fill sidewalk gaps on SW Herman Road
14. Add bicycle lanes on Martinazzi Avenue
15. Add bicycle lanes on SW 95th Avenue
16. Add a multi-use path along SW 65th Avenue between Atfalati Park and Nyberg Street
17. Add a multi-use path (or sidewalks and bicycle lanes) on SW Norwood Road

Regional Urban Upgrades

18. Upgrade SW Cipole Road to roadway standards
19. Widen SW Boones Ferry Road to 5 lanes north of SW Martinazzi Avenue
20. Widen SW Tualatin-Sherwood Rd to 5 lanes between SW Teton Avenue and SW Cipole Road
21. Upgrade SW Borland Road to roadway standards
22. Upgrade Grahams Ferry Road to roadway standards
23. Upgrade SW Tonquin Road between SW Waldo Way and SW Grahams Ferry Road

Regional Bicycle and Pedestrian-Specific Urban Upgrades

These projects are bicycle and pedestrian specific, and are also included on the Bicycle and Pedestrian Plan Figure:

24. Fill sidewalk gaps and add colored bicycle lanes at SW Boones Ferry and SW Lower Boones Ferry Roads
25. Fill sidewalk gaps on SW Grahams Ferry Road,
26. Fill sidewalk gaps on SW Borland Road,
27. Add bicycle lanes on Boones Ferry Rd from Norwood to Day Rd

Figure 3 continued

New City Street Extensions

Tualatin's residential areas are largely established; most of the recommended new streets occur as extensions in the industrial and manufacturing areas and in conjunction with other planning processes. The extension of SW 124th Avenue and the east-west connection south of the City addresses the need for additional access to the regional transportation network including the OR 99W and I-5 corridors. The Basalt Creek planning area anticipates additional residential and commercial development, creating more demand, and future industrial and manufacturing development in the western part of the City will need additional access. Table 6 presents cost estimates and priorities for the City street extensions, and Table 7 presents cost estimates for the regional street extensions.

TABLE 6
City Street Extension Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
R28	Build a bridge over Hedges Creek and extend SW Myslony Street to connect with SW 112th Avenue	$2,593,000	City	TDT, LID, bonds, gas tax	Medium-term
R29	Build the Roadways from the SW Concept Plan: Extend SW 115th Avenue south to connect with the SW 124th Avenue, create an east-west connection between SW 115th and SW 124th Avenues.	$31,446,000[11]	City	TDT, LID, gas tax, Oregon Immediate Opportunity Fund	Long-term

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
LID – local improvement district
TDT – Transportation Development Tax

[11] From the *SW Tualatin Concept Plan* 2010. Estimate grown to 2012 dollars.

Regional Street Extensions

TABLE 7
Regional Street Extension Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
R30	Extend SW 124th Avenue south – include a multi-use path on one or both sides per street standards	$15,000,000[12]	City, City of Wilsonville, Washington County	Washington County MSTIP, TDT, LID	Short-term

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
LID – local improvement district
MSTIP – Major Streets Transportation Improvement Program
TDT – Transportation Development Tax

Please note: the City considered possible north-south crossings of the Tualatin River both east and west of I-5 in its TSP development. In the end, the City decided that the impacts of these crossings to Tualatin and/or to its neighboring communities outweighed the forecasted benefits and therefore no new river crossings are recommended in this TSP.

Additional City Roadway Projects

Table 8 presents cost estimates and priorities for City roadway projects designed to address transportation deficiencies. Table 9 presents cost estimates for Regional roadway projects. These deficiencies include safety, congestion, and other community concerns. These projects are focused on improving localized issues, and intersection-specific upgrades to address safety and congestion concerns. Where traffic signals are recommended, traffic signal warrants would be conducted and the intersection would need to meet warrants before a signal is installed. Traffic warrant requirements are based on traffic volumes, pedestrian volumes, safety, and operation analyses. Figure 4 shows the projects geographically.

TABLE 8
City Roadway Project Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
R31	Add a traffic signal at SW Tualatin Road and SW 115th Avenue	$609,000[13]	City	TDT, LID, gas tax	Medium-term
R32	Remove some trees in the southwest corner of the intersection of SW Tualatin Road and SW 108th Avenue to improve sight distance	$8,000	City	TDT, LID, gas tax	Short-term
R33	Add a traffic signal at SW Tualatin Road and SW Teton Avenue	$609,000[14]	City	TDT, LID, gas tax	Short-term
R34	Eliminate the free right turn at SW Tualatin Road at the intersection with SW Herman Road, and consider a roundabout at this location. (cost estimate is for roundabout as assumed to	$1,631,000	City	TDT, LID, gas tax	Long-term

[12] From Washington County's ongoing 124th Avenue extension project.

[13] See Project R33 for the cost estimate to a similar project.

[14] See Project R33 for the cost estimate to a similar project.

TABLE 8
City Roadway Project Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
	be higher cost of the two options)				
R35	Add a traffic signal or roundabout at SW Sagert Street and SW Martinazzi Avenue	$2,069,000[15]	City	TDT, LID, gas tax	Medium-term
R36	Add a southbound turn pocket from SW Teton Avenue to Avery Street	$274,000	City	TDT, LID, gas tax	Medium-term
R37	Add a traffic signal at SW Avery Street and SW Teton Avenue	$609,000	City	TDT, LID, gas tax	Medium-term
R38	Add signage to indicate that SW Tualatin Road is for local traffic, both along SW Tualatin Road and at either end (SW 124th Avenue and SW Boones Ferry Road)	$20,000	City	TDT, LID, gas tax	Short-term
R39	Add truck information signs along SW 105th and 108th Avenues. Install signs for no through trucks on SW 105th and SW 108th Avenues. Also places signs on SW Avery Street east and west of SW 105th.	$12,000	City	TDT, gas tax	Short-term
R40	Create a local street grid system on Urban Renewal Block 2 upon redevelopment with a connection opposite SW Seneca Street	$2,307,000	City	TDT, gas tax, LID	Short-term
R41	Add bus pullouts on SW Boones Ferry Road at existing bus stops– 10 assumed at $20,000 each	$20,000 each	City	TDT, LID, gas tax, Travel Options	Medium-term

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
LID – local improvement district
TDT – Transportation Development Tax

[15] From Metro's *Regional Transportation Plan (RTP)* 2007. Estimate grown to 2012 dollars.

Regional Roadway Projects

TABLE 9

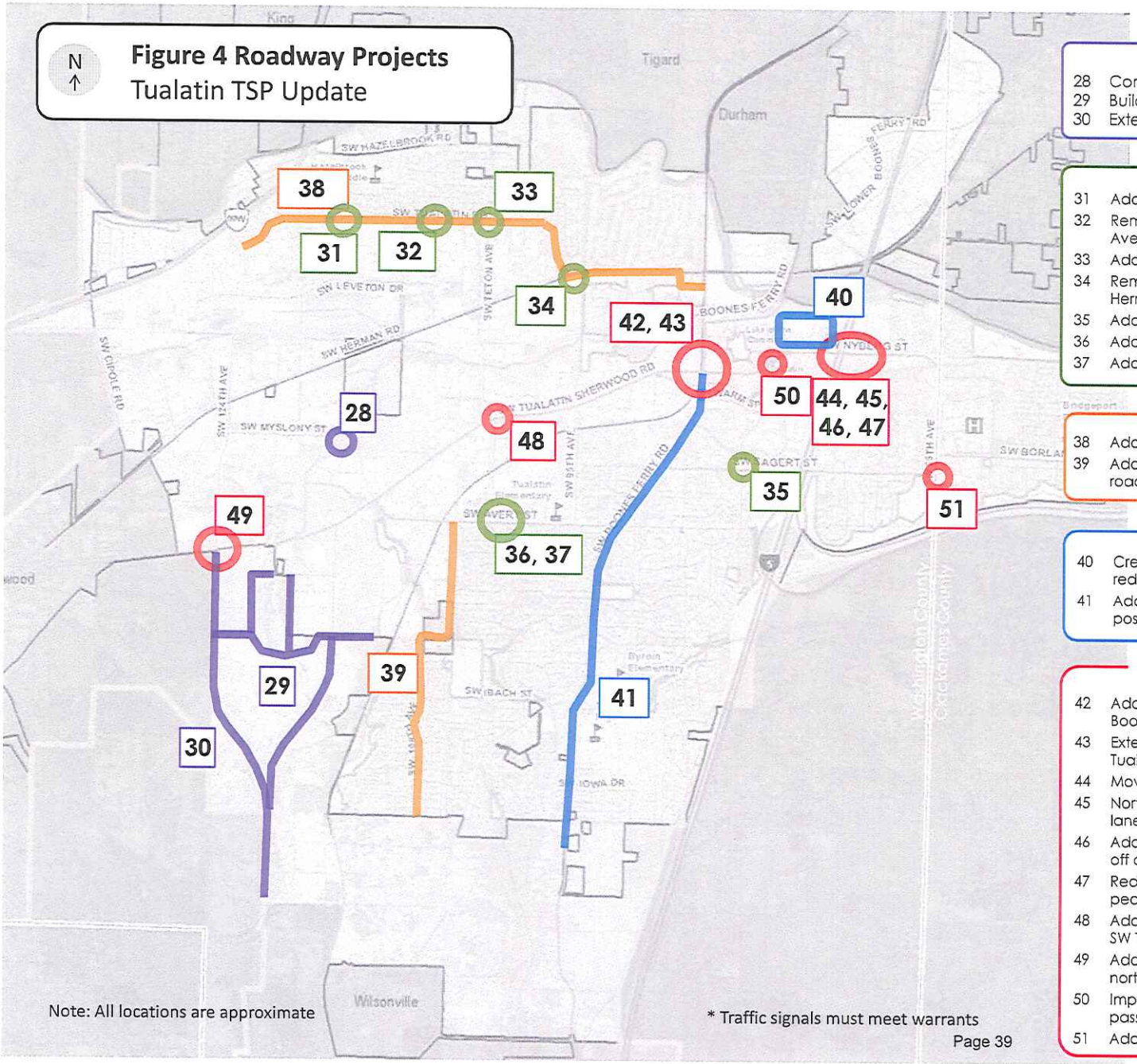
Regional Roadway Project Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
R42	Add an eastbound right-turn lane on SW Tualatin-Sherwood Road at SW Boones Ferry Road	$792,000	City	TDT, gas tax	Medium-term
R43	Restripe the turn lanes to extend the southbound left turn pocket on SW Boones Ferry Road at SW Tualatin-Sherwood Road to accommodate more vehicles	$8,000	City	TDT, LID, gas tax	Short-term
R44	Move the guardrail directly east of the I-5 southbound off-ramp to the north to improve sight distance for vehicles turning west off of I-5.	$32,000	City, ODOT	TDT, gas tax	Short-term
R45	Add an additional on-ramp lane for vehicles traveling westbound on SW Nyberg Street to I-5 northbound (northeast quadrant of the Nyberg Interchange). Reduce the pedestrian island and improve illumination to enhance safety	$1,071,000	City, ODOT	STIP: TE, TDT	Medium-term
R46	Add signage on the northbound off-ramp at Nyberg Interchange to discourage traffic getting off and then right back onto I-5	$2,000	City, ODOT	STIP: TE, TDT	Medium-term
R47	Redesign SW Nyberg Street and Fred Meyer intersection and improve pedestrian crossing. Add pedestrian warning signs, and a concrete z-crossing on SW Nyberg Street with a pedestrian island. Optimize signal timing so it allows adequate time for pedestrian crossing while minimizing impacts on auto traffic.	$156,000	City, ODOT, Washington County	TDT, LID, STIP: TE, Bicycle and Pedestrian Program	Medium-term
R48	Add a dedicated right-turn lane on SW Teton Avenue southbound onto SW Tualatin-Sherwood Road westbound	$890,000	City, Washington County	TDT, LID, gas tax	Medium-term
R49	Add a right turn lane from westbound SW Tualatin-Sherwood Road to northbound SW 124th Avenue	$320,000	City, Washington County	Washington County MSTIP, TDT, LID	Medium-term
R50	Improve lane signage on SW Tualatin Sherwood Road west of the Nyberg interchange to help vehicles be in the correct lane before entering the interchange area	$345,000	City, Washington County, ODOT	TDT, gas tax, STIP: TE	Short-term
R51	Add a signal at SW 65th Avenue and SW Sagert Street	$681,000	City, Washington County	TDT, LID, gas tax	Medium-term

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
LID – local improvement district
MSTIP – Major Streets Transportation Improvement Program
STIP – Statewide Transportation Improvement Program
TDT – Transportation Development Tax
TE – Transportation Enhancement

Tualatin/I-5 Nyberg Interchange: I-5 Northbound Off-ramp At the Tualatin/I-5 Nyberg Interchange Northbound off-ramp, future traffic growth (2035) indicates a potential for backups into the deceleration portion of the ramp due to lack of storage space. The existing off-ramp structure has a horizontal curve which limits the ability to modify striping on the ramp in an effort to extend the deceleration section, especially in light of exiting freight vehicles. In addition, the off-ramp is adjacent to the I-205 interchange which limits the ability to extend the off-ramp length for additional storage. It is likely that a solution to this issue would require widening of the existing structure to provide safe and sufficient vehicle storage. This project is not included in the TSP at this time, However, ODOT will coordinate with the City of Tualatin to explore this project and the City will consider adding it to the TSP at a future date.

This page left blank intentionally.



New Streets and Street Extensions

28 Connect SW Myslony Street to SW 112th Avenue
29 Build the roadways from the SW Concept Plan
30 Extend SW 124th Avenue south (Regional Project)

City Intersection Improvements

31 Add signal* at SW Tualatin Road and SW 115th Avenue
32 Remove some trees at intersection of SW Tualatin Road and SW 108th Avenue to improve sight distance
33 Add signal* at SW Tualatin Road and SW Teton Avenue
34 Remove the free right turn at SW Tualatin Road at the intersection of SW Herman Road, consider a roundabout
35 Add a signal* or roundabout at SW Sagert St and SW Martinazzi Ave
36 Add a southbound turn pocket from SW Teton Avenue to Avery Street
37 Add a signal* at SW Avery Street and SW Teton Avenue

City Roadway Signs

38 Add signage indicating that Tualatin Road is for local traffic
39 Add truck info signs along 108th/105th Avenues to indicate that these roads are for local traffic

City Roadway Changes

40 Create a local street grid system on Urban Renewal Block 2 upon redevelopment with a connection to SW Seneca Street
41 Add bus pullouts on SW Boones Ferry Road at existing bus stops where possible (this project is also shown on the transit figure)

Regional Intersection Improvements

42 Add an eastbound right turn lane on SW Tualatin-Sherwood Road at SW Boones Ferry Road
43 Extend the southbound left turn pocket on SW Boones Ferry Road at SW Tualatin-Sherwood Road
44 Move guardrail on southbound off ramp to improve sight distance
45 Northbound I-5 on- ramp: reduce pedestrian island, add an additional lane
46 Add signage at the northbound off ramp to discourage traffic getting off and then back onto I-5
47 Redesign SW Nyberg Street and Fred Meyer intersection and improve pedestrian crossing, add striping and a pedestrian island
48 Add a dedicated right turn lane on southbound SW Teton Avenue and SW Tualatin-Sherwood Road
49 Add a right turn lane from westbound SW Tualatin-Sherwood Road to northbound SW 124th Avenue
50 Improve lane signage west of the Nyberg interchange to indicate lanes passing through the interchange area
51 Add signal* at SW 65th Avenue and SW Sagert Street

Figure 4 continued

Access Management

Access management is important to maintain traffic flow and ensure safety on the City's arterial street network, including SW Tualatin-Sherwood Road, Oregon Highway 99W (OR 99W), and other high-traffic routes. Limiting the number of points where traffic can enter and exit reduces potential conflict points, improves roadway performance, and reduces the need for capacity expansion. The City manages access through Chapter 75 of the Tualatin Development Code (TDC); that chapter details where access is permitted on arterial and collector roads within the City. Tualatin must coordinate with Washington and Clackamas Counties and ODOT to manage access on roads the City does not own, including SW Tualatin-Sherwood Road, SW Cipole Road, SW 65th Avenue, SW Borland Road, and sections of SW Boones Ferry Road.

Access management policies are:

- **Access Management Policy 1:** No new driveways or streets on arterial roadways within the City, except where noted in the TDC, Chapter 75, usually when no alternative access is available
- **Access Management Policy 2:** Where a property abuts an arterial and another roadway, the access for the property shall be located on the other roadway, not the arterial
- **Access Management Policy 3:** Adhere to intersection spacing included in Chapter 75 of the TDC
- **Access Management Policy 4:** Limit driveways to right-in, right-out (where appropriate) through raised medians or other barriers to restrict left turns
- **Access Management Policy 5:** Look for opportunities to create joint accesses for multiple properties, where possible, to reduce the number of driveways on arterials
- **Access Management Policy 6:** No new single-family home, duplex or triplex driveways on major collector roadways within the City, unless no alternative access is available
- **Access Management Policy 7:** On collector roadways, residential, commercial and industrial driveways where the frontage is greater or equal to 70 feet are permitted. Minimum spacing at 100 feet. Uses with less than 50 feet of frontage shall use a common (joint) access where available

Chapter 75 of the TDC, most recently updated in 2012, has specific access standards for each arterial road within Tualatin. It provides recommendations for future changes on specific roads, as well as potential solutions for access issues. Generally, all new intersections with arterials must have a minimum spacing of 0.5 mile. On Washington County roads, the access spacing on arterials is 600 feet from any intersection or other access. The City Engineer is responsible for reviewing all requests for access to arterial streets, and will be consistent with County and ODOT standards on facilities owned by those agencies. Exceptions to these standards may be allowed, but only under special circumstances and with conditions.

Traffic Operations Standards

This section includes a discussion of standards included in the OHP, ODOT's *Highway Design Manual* (HDM), and the TPR and City documents for local roadways. Based on the preferred system for operational analysis, there are four intersections that do not meet jurisdictional standards after mitigation strategies are included. These intersections that experience operational constraints are in the SW Lower Boones Ferry Road/I-5 interchange area, and are due to the additional motor vehicle trips associated with the widening of SW Boones Ferry Road from SW Martinazzi Avenue to SW Lower Boones Ferry Road. The results of the traffic operations for the 2035 PM peak with the preferred system are shown in Table 10.

The first mitigation strategies explored transportation system management techniques (maximizing operations at intersections through signal timing adjustments and/or phasing adjustments). If system management techniques did not achieve acceptable jurisdictional operations, localized capacity improvements were explored (for example, a new turn pocket). Generally these improvements allowed for adequate signal operations under a mitigated scenario.

TABLE 10
2035 PM Peak Hour Preferred System Intersection Operations

Intersection	Jurisdiction	Minimum Standard	Preferred System	
Signalized Intersections				
SW 124th Ave/Hwy 99W	ODOT	0.99	D	0.97
SW 124th Ave/SW Tualatin Rd	Tualatin	D	C	0.88
SW 124th Ave/SW Herman Rd	Tualatin	D	C	0.77
SW 124th Ave/SW Tualatin-Sherwood Rd	Washington County	0.99	C	0.92
SW Avery St/SW Tualatin-Sherwood Rd	Washington County	0.99	D	0.98
SW Teton Ave/SW Tualatin-Sherwood Rd	Washington County	0.99	E	0.92
SW 90th Ave/SW Tualatin-Sherwood Rd	Washington County	0.99	C	0.80
SW Boones Ferry Rd/SW Tualatin-Sherwood Rd	Washington County	0.99	E	1.00
SW Martinazzi Ave/SW Tualatin-Sherwood Rd	Washington County	0.99	F	1.08
I-5 SB Ramps/SW Nyberg Rd	ODOT	0.99	D	0.86
I-5 NB Ramps/SW Nyberg Rd	ODOT	0.99	C	0.85
SW 65th Ave/SW Borland Rd	Washington County	0.99	D	0.99
SW Teton Ave/SW Herman Rd	Tualatin	D	C	0.67
SW Tualatin Rd/SW Herman Rd	Tualatin	D	B	0.77
SW 90th Ave/SW Tualatin Rd	Tualatin	D	C	0.94
SW Tualatin Rd/SW Boones Ferry Rd	Washington County	0.99	C	0.89
SW Martinazzi Ave/SW Boones Ferry Rd	Tualatin	D	E	1.08
SW Boones Ferry Rd/SW Lower Boones Ferry Rd	ODOT	0.99	D	1.02
SW 72nd Ave/SW Lower Boones Ferry Rd/SW Bridgeport Rd	Washington County	0.99	D	0.89
I-5 SB Ramps/SW Lower Boones Ferry Rd	ODOT	0.99	D	0.98
I-5 NB Ramps/SW Lower Boones Ferry Rd	ODOT	0.99	D	0.96
SW Boones Ferry Rd/SW Avery St	Washington County	0.99	D	0.94
SW Boones Ferry Rd/SW Sagert St	Washington County	0.99	D	0.93
SW Boones Ferry Rd/SW Ibach St	Washington County	0.99	D	0.98
SW 105th Ave/SW Avery St[16]	Tualatin	E	C	0.94
SW Martinazzi Ave/SW Sagert St[17]	Tualatin	E	D	0.92

[16] Operations evaluated with minor street stop control.

TABLE 10
2035 PM Peak Hour Preferred System Intersection Operations

Intersection	Jurisdiction	Minimum Standard	Preferred System	
SW 65th Ave & SW Nyberg Rd	Washington County	0.99	C	0.92
Unsignalized Intersections				
SW Martinazzi Ave & SW Avery St*	Tualatin	E	D	0.83
SW Teton Ave & SW Avery St*	Tualatin	E	B**	0.62**
SW 65th Ave & SW Sagert St*[18]	Washington County	0.99	D**	0.97**
SW Teton Ave & SW Tualatin Rd	Tualatin	E	B**	0.70**

* LOS and V/C reported for the highest delay movement
** Evaluated as a traffic signal. Assumes construction of traffic signal

There were some intersections located in the downtown core area that were not able to meet jurisdictional standards without the implementation of significant capacity and/or roadway widening improvements. These types of major infrastructure improvements were deemed to be too impactful to the downtown core and were not included in the final preferred system improvements. The downtown Tualatin area is designated a Town Center by Metro, and using that designation, Town Centers are allowed to not meet jurisdictional standards. Alternate standards for Town Centers in the RTP are based on a two-hour peak hour. The standard v/c for the first peak hour is 1.1, and for the second peak hour is 0.99. These intersections meet the RTP standards, and there is no need for additional alternate mobility standards.

[17] Operations evaluated with minor street stop control. HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the three lanes (one dedicated to each movement) are combined into two: through-right and through-left lanes. Because of this approximation, actual performance may be slightly better than reported above.

[18] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the dedicated southbound left turn lane and through lane are combined, due to the relatively small volume on the left turn movement. Because of this approximation, actual performance may be slightly better than reported above.

This page left blank intentionally.

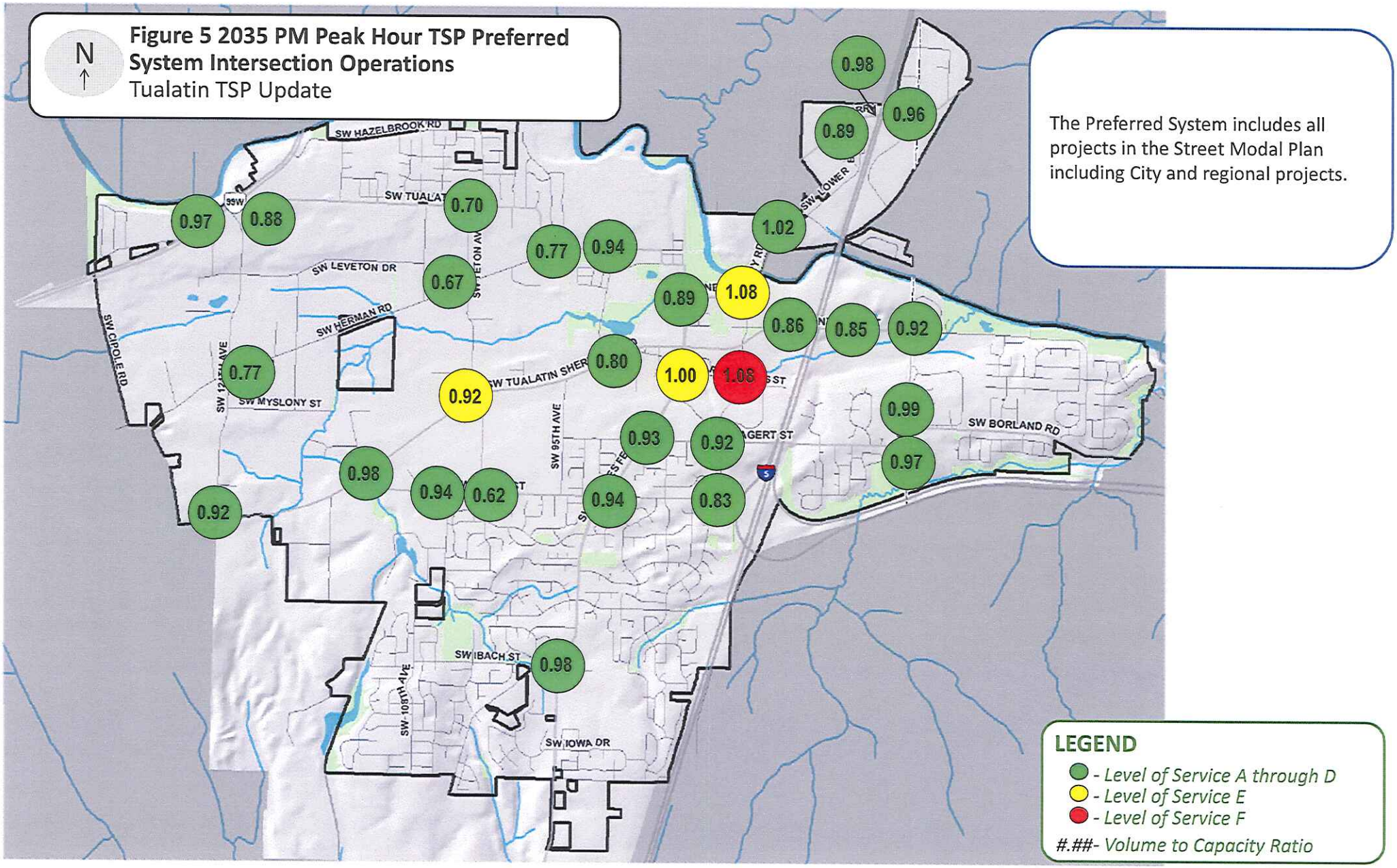

N
Figure 5 2035 PM Peak Hour TSP Preferred System Intersection Operations
Tualatin TSP Update
The Preferred System includes all projects in the Street Modal Plan including City and regional projects.
SW HAZELBROOK RD
SW TUALATIN
SW LEVETON DR
SW HERMAN RD
SW CIPOLE RD
SW MYSLONY ST
SW TUALATIN SHER
SW 95TH AVE
SW BORLAND RD
SW IBACH ST
SW IOWA DR
0.97
0.88
0.70
0.67
0.77
0.94
0.89
1.08
1.02
0.86
0.85
0.92
0.80
1.00
0.92
0.99
0.97
0.93
0.92
0.98
0.94
0.62
0.94
0.83
0.92
0.98
0.89
0.96
LEGEND
- Level of Service A through D
- Level of Service E
- Level of Service F
#.##- Volume to Capacity Ratio

Figure 5 continued

3 Transit Modal Plan

This chapter describes the City of Tualatin's public transit modal plan. Public transit in Tualatin is envisioned to be multi-faceted by including local and express bus service, commuter rail, potential high capacity transit, and local transit shuttle services. In addition, the community's vision for public transit includes improvements in the quality of transit service, as well as land uses that better complement and encourage use of transit in downtown Tualatin. This section provides a brief overview of existing conditions and needs for public transit, provides a list of policies relating to transit that will guide the City's implementation of this plan, and provides a list of key projects identified by the community that would improve public transit. This chapter concludes by providing cost estimates for each project and a description of each project's relative priority.

Tualatin WES Station

Existing Conditions for Public Transit

Transit Service

Public transit in Tualatin currently consists of TriMet bus lines, one South Metro Area Regional Transit district (SMART) bus line, Westside Express Service (WES) commuter rail, LIFT paratransit service, and the Tualatin Shuttle.

Five TriMet bus lines currently serve Tualatin:

- Line 36 (South Shore) connecting Lake Oswego to Tualatin and downtown Portland
- Line 37 (Lake Grove) connecting Lake Oswego to Tualatin
- Line 38 (Boones Ferry Road) connecting Tualatin to Portland City center
- Line 76 (Beaverton/Tualatin) connecting Beaverton and Tualatin
- Line 96 (Tualatin/I-5) express route from Tualatin to downtown Portland via I-5

WES commuter rail service connects Beaverton to Wilsonville via Tualatin. LIFT paratransit service is available for qualified persons with disabilities within Tualatin and the greater Portland metropolitan region. SMART serves Tualatin with its bus line No. 2X service, connecting Wilsonville to the Barbur Transit Center. The Tualatin Shuttle operates on weekdays in the morning and afternoon rush hours, connecting passengers from TriMet bus stops, WES, and downtown Portland to businesses in Tualatin.

Park-and-Rides

There are four park-and-ride lots within the City of Tualatin, all of which are served by TriMet:

- The Tualatin Park-and-Ride is the largest park-and-ride lot within the City of Tualatin. It is located at SW 72nd Avenue and SW Bridgeport Road in the northern part of the City, north of the Tualatin River and downtown. It has 466 total vehicle spaces and is open all days. It is a major transfer station with five separate bus lines stopping at this location.

- The Mohawk Park-and-Ride is located at SW Mohawk Street and SW Martinazzi Avenue about 0.5 miles south of the Tualatin Commons and downtown Tualatin. It has 232 total vehicle spaces and is open all days. Two bus lines stop at this park and ride, providing an opportunity to transfer.
- The Tualatin South Park-and-Ride is the newest park-and-ride in the City. It is located at 18955 SW Boones Ferry Road just west of the Tualatin Commons and downtown. It is open all days and provides bike parking with lockers and covered racks. It has 147 total vehicle spaces. This park and ride is the only transfer station between the WES commuter rail and a bus line.
- The Boones Ferry Community Church Park-and-Ride is the smallest park-and-ride in the City of Tualatin and is located at 20500 SW Boones Ferry Road. It is open Monday through Friday only, and provides 20 vehicle spaces. This park and ride only serves one bus line, and is not a transfer station.

Bus stop for TriMet line Nos. 76 and 96

More information on existing transit service, transit amenities, fares, and ridership is provided in Appendix B, Existing Conditions and Deficiencies.

Summary of Limitations and Needs for Transit

It is likely that most residents of Tualatin do not currently rely solely on transit service to meet their transportation needs. One reason may be because most residents do not live within walking distance (0.25 mile) of a transit stop, and because transit is not provided at frequent intervals during all hours of the day. In addition, only 8 percent of households in the city of Tualatin do not have access to a vehicle.[19] According to the *Conceptual Linking Tualatin Plan*, over 11,000 workers and over 5,000 households (over half of the people living and working in the city) lack regular transit service within a quarter mile of where they live or work.[20]

TriMet does not provide transit service within all areas of the City or on all major corridors. No transit service is provided on SW Tualatin-Sherwood Road or SW Tualatin Road, and many residents in the western portion of the City live more than a mile from the nearest transit line. Many residents who do live near a bus line are not served by transit at regular intervals during the day. Because of the limitations of service during off-peak hours, noncommuting trips may be more difficult to complete using transit in Tualatin. Community feedback indicated the following specific needs for transit:

- Service connecting the west side of Tualatin to the downtown core
- Park-and-rides in the west and south areas of Tualatin
- Extended service hours, including weekend service
- More direct connections to places other than downtown Portland

Additional needs for transit stops include direct and safe access to transit stops and bicyclist and pedestrian amenities at stops, especially where transit riders are able to transfer lines or modes.

[19] U.S. Census Bureau, 2009-2011 American Community Survey, Table B08201

[20] *Conceptual Linking Tualatin Plan Draft*, 2012.

Transit Policies

The City of Tualatin's policies on public transit are as follows:

- **Transit Policy 1:** Partner with TriMet to jointly develop and implement a strategy to improve existing transit service in Tualatin.
- **Transit Policy 2:** Partner with the Tualatin Chamber of Commerce to support grant requests that would expand the Tualatin Shuttle services.
- **Transit Policy 3:** Partner with TriMet, Metro, and neighboring communities to plan the development of high-capacity transit in the Southwest Corridor, as adopted in the Metro High Capacity Transit System Plan.
- **Transit Policy 4:** Partner with TriMet, Metro, and neighboring communities to plan development of high-capacity transit connecting Tualatin and Oregon City, as adopted in the Metro High Capacity Transit System Plan.
- **Transit Policy 5:** Coordinate with ODOT and neighboring communities on conversations related to Oregon Passenger Rail between Portland and Eugene.
- **Transit Policy 6:** Develop and improve pedestrian and bicycle connections and access to transit stops.
- **Transit Policy 7:** Encourage higher-density development near high-capacity transit service.
- **Transit Policy 8:** Metro in the RTP calls for increased WES service frequency. The City will coordinate with TriMet, Metro, and ODOT to explore service frequency improvements and the possible inclusion of a second WES station in south Tualatin.

In addition to the transit policies included here, there is also a bicycle and pedestrian policy applicable to transit:

- **Bicycle and Pedestrian Policy 7:** Implement bicycle and pedestrian projects to provide pedestrian and bicycle access to transit and essential destinations for all mobility levels, including direct, comfortable, and safe pedestrian and bicycle routes
- **Bicycle and Pedestrian Policy 8:** Ensure that there are bicycle and pedestrian facilities at transit stations

Regional Coordination

The City of Tualatin will participate fully in the development of regional transit projects through partnering with other agencies. Regional projects currently under development include the following:

- **Southwest Corridor Project**. The purpose of the Southwest Corridor project is to extend high-capacity transit from downtown Portland into the southwest part of the region. Doing so will help to fulfill the vision of the Metro *High Capacity Transit System Plan*. The City of Tualatin is partnering with Metro and TriMet to bring regional high-capacity transit to Tualatin and neighboring communities.
- **Linking Tualatin Project.** The purpose of the Linking Tualatin project is to better link people to the places they need to go via transit, particularly linking employees to their jobs, and creating linkages between Tualatin and the rest of the region. It addresses one of the community's biggest concerns, which is the lack of east-west transit connections. The Linking Tualatin Plan presents the community's vision, developed through working groups and an intensive workshop, of land use and transportation options for the city's major employment areas intended to improve local and regional transit service. These options include suggested changes to future land uses, bicycle and pedestrian connections, road connections, and transit facilities to make Tualatin more "transit ready." It is a work in progress, and will continue to be reviewed by the community and refined through early 2013 to incorporate property owner and employer input and address future high capacity transit options being studied in the Southwest Corridor Project. The project goal is to complete the planning process by June 2013.

The community's vision for "transit ready places" in the Linking Tualatin Plan includes potential transit and other transportation improvements to increase access to and use of transit. Public and private projects focus on improved bicycle and pedestrian connections and road crossings, new local street connections, and new transit services or facilities. Some public projects are unique to the Linking Tualatin Plan and will be studied further through that planning process. These projects include:

1. Bridgeport Village Area: **Provide a new pedestrian crossing** on SW Lower Boones Ferry Road at entrance to the south lot of the Tualatin Park-and-Ride.
2. Bridgeport Village Area: **Provide new local street connections** north of the proposed Bridgeport Apartments development, west, and north of the Grand Hotel.
3. Downtown Area: **Improve pedestrian crossing** on SW Boones Ferry Road at SW Nyberg Street near the WES station.
4. Meridian Park/Nyberg Woods Area: **Provide a new pedestrian crossing** on SW 65th Avenue near the north entrance to Meridian Park Hospital.
5. Leveton Area: **Provide a new pedestrian crossing** on SW Herman Road west of SW 108th Avenue to access a future bus stop, improve bicycle/pedestrian connectivity, and possibly provide a link to the Ice Age Tonquin Trail.
6. Teton Area: **Provide a new WES stop** near SW Tualatin-Sherwood Road, west of the intersection of SW Avery Street and SW 105th Avenue.
7. Teton Area: **Improve pedestrian crossing** at the SW Teton Avenue and SW Tualatin-Sherwood Road intersection.
8. Southwest Industrial Area: **Consider providing parkway treatment** along SW Tualatin-Sherwood Road between SW 124th Avenue and SW Avery Street.
9. Pacific Financial/SW 124th Avenue Area: **Provide new trails** parallel to OR 99W between SW Hazelbrook Road and the north side of the Tualatin River to connect with the Tualatin River Greenway Trail.
10. Pacific Financial/SW 124th Avenue Area: **Connect the Tualatin River Greenway trail** under the OR 99W bridge on both side of the river.

Other public projects in the Linking Tualatin Plan are included in the Transit Modal Plan of this Transportation System Plan. The focus of these projects is on providing east-west connectivity between OR 99W and downtown Tualatin via local bus transit, anchored by park-and-ride facilities in west, east and south Tualatin, and a transit hub at the downtown Tualatin WES station. These projects are shown in Figure 4 and more detail is provided later in this section.

- **Oregon Passenger Rail**. The purpose of the Oregon Passenger Rail project is to improve passenger rail service between Portland and Eugene. Along the way, the rail service is expected to serve the south Metro area via an alignment either east or west of the Willamette River. The City of Tualatin intends to coordinate with ODOT to help determine an appropriate corridor that would improve intercity passenger rail service in Oregon.
- **WES Extension**. TriMet and ODOT may consider the feasibility of extending WES commuter rail from Wilsonville to Salem. The City of Tualatin is supportive of the WES extension and intends to partner with ODOT and TriMet in facilitating this project.

Transit Projects

The following proposed projects represent the community's desires for future improvements to transit service. Figure 4 depicts the projects geographically. These projects can be grouped into the following categories: fixed-route bus service, shuttle service, WES, and park-and-rides.

Expansions of Fixed-route Bus Transit Service

1. **Provide transit service on SW Herman Road.** SW Herman Road connects to several centers of employment. Bus transit service along SW Herman Road would allow workers to travel more easily from the center of Tualatin to their work sites.
2. **Provide transit service on SW 124th Avenue.** SW 124th Avenue is a key north-south connection on the west side of Tualatin, connecting OR 99W with SW Tualatin-Sherwood Road. Adding transit service on SW 124th Avenue would improve access to the frequent transit service already provided on OR 99W.
3. **Provide transit service on SW Avery Street.** SW Avery Street connects SW Tualatin-Sherwood Road to the City's central residential areas. Providing bus transit service along SW Avery Street would provide an important connection to residential areas in the central part of Tualatin and provide an opportunity to connect with the existing transit service on SW Boones Ferry Road.
4. **Provide transit service on SW Tualatin Road between downtown and OR 99W**. SW Tualatin Road is an important connection to both residential areas in northwest Tualatin and to employment between SW Tualatin Road and SW Herman Road.
5. **Provide transit service on Tualatin-Sherwood Road.** . Tualatin-Sherwood Road is Tualatin's major east-west roadway, connecting it to 99W and Sherwood to the west and to Boones Ferry Road and I-5 on the east. It serves the greatest number of people in Tualatin and major activity centers including the WES station, retail shopping, and businesses are located along it. Transit service along Tualatin-Sherwood Road would provide an alternative to driving for Tualatin's residents as well as its employees and visitors.
6. **Extend transit service to the east in Tualatin.** The area of Tualatin east of I-5 is served only by TriMet's No. 76 bus line, which extends to Meridian Park Hospital at SW 65th Avenue and SW Borland Road. East of the hospital are several residential developments, as well as the Rolling Hills Community Church, which houses the Tualatin Food Pantry, and two schools.
7. **Extend service hours for transit.** Most of the bus service provided in Tualatin operates primarily during commuting hours on weekdays. WES also operates only on weekdays during peak hours. TriMet's line No. 76 operates with limited frequency on Saturday and Sunday. Extending service hours for transit lines would allow citizens to use transit as a viable transportation option for more of their needs.
8. **Explore a shuttle or trolley service between Bridgeport Village and the Tualatin Commons area, especially on weekends**. Both Bridgeport Village and the Tualatin commons near the City-owned parking lots are destinations for local and regional residents. Providing a shuttle service between the two areas would potentially reduce traffic in central Tualatin and would help foster activity in downtown Tualatin. Residents would be able to park at the Commons and take the Shuttle into Bridgeport Village.
9. **Expand the Tualatin Shuttle and Consider a Deviated Fixed Route**. The Tualatin Shuttle currently operates during a.m. and p.m. peak hours only. There are two vehicles, a larger van and a smaller van. Both currently operate on a demand-responsive basis and do not have fixed routes. The City should partner with the Chamber of Commerce to explore a deviated fixed route for the larger van that would serve as a city-wide transit circulator serving existing and future major employment markets in Tualatin. The route would connect to the Tualatin Park and Ride and travel south via SW Lower Boones Ferry Road and SW Boones Ferry Road. It would then connect three major employment districts in the city in this order:
   - ✓ **Southwest and near west of downtown Tualatin** via SW Boones Ferry Road, SW Avery Street, and SW Teton Ave
   - ✓ **West Tualatin** via SW Tualatin-Sherwood Road, SW 124th Ave, and SW Herman Road

- ✓ **Northwest Tualatin** via SW Cipole Road, OR 99W, and SW 115th and SW 118th Aves
  - The route would complete by returning east on SW Herman Road and SW Tualatin Road.
  - In the future, the route could be extended to include a fourth major employment district as demand is created with future development:
- ✓ **East Tualatin** via SW Nyberg Street, SW 65th Ave, and SW Sagert Street

The smaller van that currently operates as the Tualatin Chamber of Commerce Shuttle would continue to be run on a demand-responsive basis and would serve key residential areas throughout the city. In addition, expanding the service hours of the Tualatin Chamber of Commerce Shuttle would allow more employees to use it. Funding for these service expansions should be sought, and used for the following purposes, in order of priority:

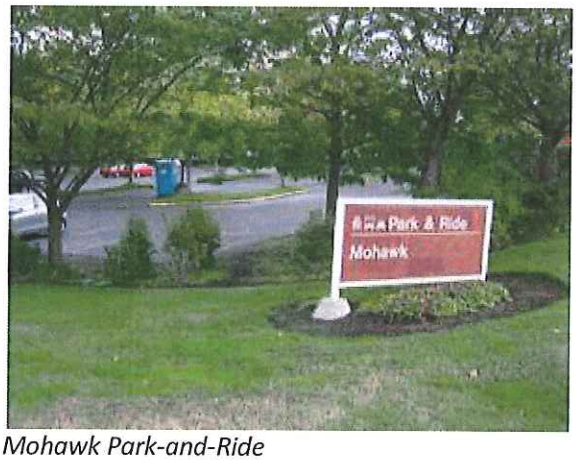
- ✓ Additional van for the afternoon peak
- ✓ Broader service hours (still within an AM and PM peak period)
- ✓ Provision of mid-day service

WES

10. **Make the WES station a central focus of downtown and the main transit center**. The WES station is located in central Tualatin and three actions would make it more of a central focus of downtown: (1) Transit-oriented development that over time would refocus activity towards the train station; (2) Improving pedestrian activity and connectivity to both these future transit-oriented uses but also to existing uses, including Haggen's and development east of Boones Ferry Road and south of Tualatin-Sherwood Road; and (3) Add local transit connections to the WES station over time, including the Routes 96 and the 38, as well as potential future fixed-route service.

Expansions of the Park-and-Ride System

11. **Improve transit service on OR 99W and look for potential shared use park-and-ride locations in west Tualatin**. There are few park-and-ride options on or near OR 99W for Tualatin residents. The closest are in Sherwood (shared use with Regal cinemas) to the south or Tigard to the north (shared use with Christ the King Lutheran Church). Further, the Route 12 discontinued service in 2012 to Sherwood, terminating at the Tigard Transit Center to the north. The one route along OR 99W through Tualatin is the Route 94 which does not stop between Sherwood and Tigard. This limits the ability of Tualatin residents to access transit along OR 99W. Add a transit stop in the vicinity of Tualatin Road for the 94 and future fixed route transit, and look for potential shared use park-and-ride locations in this vicinity that would serve Tualatin residents.



Mohawk Park-and-Ride

12. **Look for potential, shared use park-and-ride locations in south Tualatin**. Bus line No. 96 travels through south Tualatin via SW Boones Ferry Road. However, there is no park-and-ride currently serving this area south of the Boones Ferry Community Church Park-and-Ride. Adding a park-and-ride in the south part of Tualatin or south of Tualatin near the terminus of bus No. 96 would improve access to transit for residents of that area.

13. **Add bus pullouts on SW Boones Ferry Road at existing bus stops where possible.** The streets modal plan describes a preferred cross section on SW Boones Ferry Road that retains one travel lane in each direction with a center-turn lane, bicycle lanes and sidewalks throughout. This cross section was selected over a wider, five-lane cross section for reasons of neighborhood livability, however it means that buses traveling on SW Boones Ferry Road can create congestion by blocking the travel lane when stopping to pick up or drop off passengers. This project constructs bus pullouts where buses could pull out of the travel lane at existing stops.

Cost Estimates and Prioritization

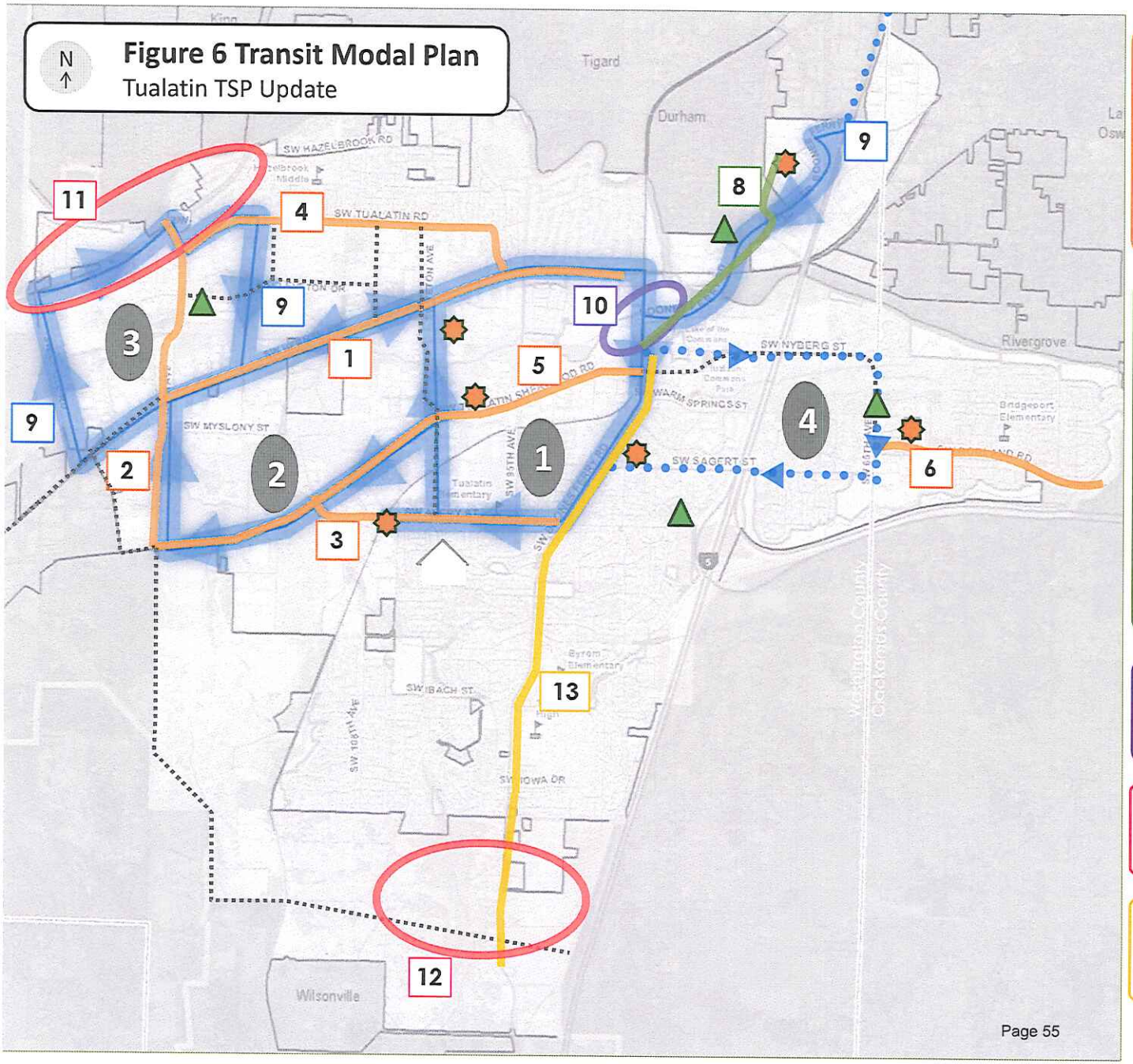
Table 11 provides cost estimates and priorities for each of these proposed transit projects.

TABLE 11
Transit Project Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate		Champion	Funding Source	Priority*
		Capital	Operating			
T1	Provide transit service on SW Herman Road	$466,000	$168,000	TriMet, City	TriMet	Medium-term
T2	Provide transit service on SW 124th Avenue	$462,000	$114,000	TriMet, City	TriMet	Medium-term
T3	Provide transit service on SW Avery Street	$460,000	$97,000	TriMet, City	TriMet	Medium-term
T4	Provide transit service on SW Tualatin Road between downtown and OR 99W	$471,000	$184,000	TriMet, City	TriMet	Short-term
T5	Provide transit service on SW Tualatin-Sherwood Road	$473,000	$218,000	TriMet, City	TriMet	Medium-term
T6	Extend transit service to east Tualatin	$466,000	$97,000	TriMet, City	TriMet	Medium-term
T7	Extend service hours for all transit, with a focus on the No. 96 bus line	N/A	$1,083,000	TriMet, City	TriMet	Medium-term
T8	Trolley service between Bridgeport Village and the Tualatin Commons	$50,000	$308,000	Chamber of Commerce, City, Metro	Fares, Chamber of Commerce	Medium-term
T9	Expand the Tualatin Shuttle for industrial and manufacturing workers during the day	N/A	$58,000	Chamber of Commerce, City, Metro	Chamber of Commerce, Metro (JARC)	Short-term
T10	Make the WES station a central focus of downtown and the main transit center; improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections	N/A	N/A	City	TriMet, City	Long-term
T11	Look for potential shared use park-and-ride locations in west Tualatin	N/A	$51,000	City, TriMet	TriMet, City	Medium-term
T12	Look for potential shared use park-and-ride locations in south Tualatin	N/A	$51,000	City, TriMet	TriMet, City	Medium-term

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
JARC – Jobs Access Reverse Commute

This page left blank intentionally.



Expansions of Fixed-Route Bus Transit Service

1 Provide bus transit service on Herman Rd
2 Provide bus transit service on 124th St
3 Provide bus transit service on Avery St
4 Provide bus transit service on Tualatin Rd between downtown Tualatin and 99W
5 Provide transit service on Tualatin-Sherwood Rd
6 Extend bus service further east in Tualatin
7 Throughout – quality of service improvements (not shown on map)

Expansions of the Shuttle Service

8 Provide a trolley service between Bridgeport Village and Commons area
9 Create an on-call shuttle for industrial & manufacturing workers during the day:

- Partial fixed route for Van 1
- Potential future route as demand grows
- Employment centers served by shuttle (existing, potential)
- Residential centers served by shuttle
- 1 Directional for partial fixed routes

Note: Shuttle Van 2 would retain a flexible, on-call route connecting residential areas with employment

WES

10 Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Park-and-ride System Expansion

11 Look for potential park-and-ride locations in west Tualatin
12 Look for potential park-and-ride locations south of Bridgeport Village (Wilsonville area)

Bus Pull-outs

Note: this project is also included on the Roadway improvements figure

13 Add bus pullouts on SW Boones Ferry Road at existing bus stops where possible

.... Additional Transit Route Recommendations from Linking Tualatin

Figure 6 continued

4 Pedestrian, Bicycle, and Multi-Use Path Modal Plan

This chapter describes the pedestrian and bicycle improvement projects to comfortably and safely accommodate bicyclists and pedestrians within the City. These projects include multi-use paths, specific bicycle and pedestrian improvements, and street upgrades. There is a stand-alone bicycle and pedestrian plan in Appendix H.

Example of a bike lane on SW Martinazzi Avenue

Existing Conditions for Bicyclists and Pedestrians

Existing On-Street Bicycle Facilities

Tualatin streets provide a variety of bicycle facilities, including bike lanes, shared roadways, and multi-use paths. There are a few facility gaps for both bicyclists and pedestrians throughout the City, generally on roadways that are planned for urban upgrades.

The bicycle network in Tualatin consists of on-street bike lanes ranging in width from 4 to 6 feet. There are buffered bike lanes[21] along SW Tualatin-Sherwood Road between Sherwood and SW Teton Avenue. Additionally, there are a number of shared roadway facilities, usually on lower volume streets within and around residential neighborhoods.

Traffic counts collected in October 2011 did not reflect a high degree of bicycle usage. The intersections with the most bicyclists were located along SW Tualatin-Sherwood Road in the core of downtown Tualatin, near SW Martinazzi Avenue and SW Boones Ferry Road.

There appears to be adequate bicycle parking at transit centers and park-and-rides to accommodate the bicycle demand. The TDC includes language requiring developments that are zoned multi-family, commercial, or industrial to provide for bicycle parking when developing land.

Existing Pedestrian Facilities

Pedestrian facilities include sidewalks, multi-use paths, crosswalks, and pedestrian signals. The most prevalent pedestrian facility in the City is the sidewalk. All City street standards include a sidewalk requirement, with a minimum width of 5 feet. Most of the collector and arterial streets in Tualatin have sidewalks, and many neighborhoods and local streets include pedestrian sidewalks. A few locations throughout the City lack sidewalks— mainly areas with narrow roadways, some older neighborhoods, and sections on larger roads, especially towards the City limits where the roadway character transitions from urban to rural.

Concrete path in Tualatin Community Park

[21] Buffered bike lanes are bike lanes with extra striping allowing for a buffer between the travel lane and the bike lane. The striping provides extra separation between vehicles and bicyclists.

There are a number of high-pedestrian-use areas, including near Tualatin High School at SW Boones Ferry Road and SW Ibach Street, and at two intersections near the Tualatin Commons: (1) SW Martinazzi Avenue and SW Boones Ferry Road and (2) SW Martinazzi Avenue and SW Tualatin-Sherwood Road.

Existing Multi-use Paths

The City has a number of multi-use paths[22], including paths that run through City-owned parks and identified greenways and extend into residential areas. Multi-use paths in Tualatin are built from a variety of materials, including pavement, concrete, gravel, or—in the case of the Tualatin River greenway boardwalk—wood. Most multi-use path users walk or bicycle along the paths for recreation or exercise[23]; some use them for commuting or running errands. The City has a comprehensive planned multi-use path network, though about only half of the multi-use path system has been built.

Summary of Limitations and Needs for Bicycle and Pedestrian Facilities

Bicycle Facility Needs

Existing bicycle facilities in Tualatin have a few gaps and challenging connections:

- Difficult left-turn maneuvers
- Constrained environment
- Difficult areas with low bike visibility
- Bike lanes outside of turn lanes
- Obstacles within the bike lanes
- Gaps in the network

Unsignalized crosswalk on SW 108th Avenue

In addition to these needs, there are a number of high-crash locations. Most crashes result in an injury to the bicyclist, and most occur on a dry roadway surface in daylight conditions. High-crash locations include SW Boones Ferry Road and SW Tualatin-Sherwood Road, as well as the SW Nyberg Road interchange ramps at I-5.

Pedestrian Facility Needs

The community and the existing conditions report identified a number of pedestrian facility needs:

- Fill sidewalk gaps on arterials and collector streets
  - Sections of SW Herman Road
  - Sections of SW Grahams Ferry Road
  - Sections of SW Boones Ferry Road
  - SW Blake Street between SW 105th and SW 108th Avenues

[22] A multi-use path is a shared-use trail or other path, physically separated from motorized vehicular traffic by an open space or barrier, either within a roadway right-of-way or within an independent right-of-way, and usable for transportation purposes. Shared use paths may be used by pedestrians, bicyclists, skaters, equestrians, and other nonmotorized users. Definition from FHWA: www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/freeways.cfm

[23] According to the Intertwine Trail Use Snapshot: An Analysis of National Bicycle and Pedestrian Documentation Data from 2008 to 2010 (available at http://library.oregonmetro.gov/files/intertwine_trail_use_snapshot_2008-2010.pdf, last accessed December 26, 2012), page 181, only 20 percent of bicyclists use the Tualatin River Greenway multi-use path to commute to work or school. This was the only multi-use trail in Tualatin for which these usage numbers were available.

  - SW Sagert Street overpass over I-5
  - SW 105th Avenue between SW Paulina Drive and SW Blake Street
- Narrow or obstructed sidewalks
- Wide or angled crosswalks at intersections
- Difficult crossing on major roadways (SW Boones Ferry Road, SW Tualatin-Sherwood Road, and roadways in the downtown core)

Most of the pedestrian crashes reported in the 5-year crash study timeframe occurred on SW Boones Ferry Road, generally when a vehicle failed to yield for pedestrians. Most crashes occurred when a vehicle was turning.

Multi-use Path Needs

Additional bicycle and pedestrian connections over the Tualatin River are needed to connect with existing regional paths, as well as to provide alternate routes to the one existing Ki-a-Kuts bridge that is exclusively for bicycles and pedestrians (from Tualatin Community Park to Durham City Park in Durham). Additionally, many of the existing multi-use paths are fragmented and do not connect; signs and other wayfinding guides are needed to inform bicyclists or pedestrians how to move among the various pathways, and from the pathways to on-street facilities. The planned multi-use path network is only half constructed, once the system is complete, the multi-use path network will be more comprehensive.

A full description of existing conditions and deficiencies for the bicycle, pedestrian, and pathway system can be found in Appendix B.

Bicycle and Pedestrian Policies

The City of Tualatin's policies on bicycle and pedestrian facilities are as follows:

- **Bicycle and Pedestrian Policy 1:** Support Safe Routes to Schools (SRTS) for all Tualatin schools
- **Bicycle and Pedestrian Policy 2:** Work with partner agencies to support and build the Ice Age Tonquin Trail
- **Bicycle and Pedestrian Policy 3:** Allow wider sidewalks downtown for strolling and outdoor cafes
- **Bicycle and Pedestrian Policy 4:** Add benches along multi-use paths for walkers throughout the City (especially in the downtown core)
- **Bicycle and Pedestrian Policy 5:** Develop and implement a toolbox, consistent with Washington County, for mid-block pedestrian crossings
- **Bicycle and Pedestrian Policy 6:** Implement bicycle and pedestrian projects to help the City achieve the regional non-single-occupancy vehicle modal targets in Table 16 (later in this chapter; its source is the RTFP)
- **Bicycle and Pedestrian Policy 7:** Implement bicycle and pedestrian projects to provide pedestrian and bicycle access to transit and essential destinations for all mobility levels, including direct, comfortable, and safe pedestrian and bicycle routes
- **Bicycle and Pedestrian Policy 8:** Ensure that there are bicycle and pedestrian facilities at transit stations
- **Bicycle and Pedestrian Policy 9:** Create on- and off-street bicycle and pedestrian facilities connecting residential, commercial, industrial, and public facilities such as parks, the library, and schools
- **Bicycle and Pedestrian Policy 10:** Create obvious and easy to use connections between on- and off-street bicycle and pedestrian facilities, and integrate off-street paths with on-street facilities

Bicycle and Pedestrian Projects

The following projects were developed by the project team in concert with the community, Working Groups, TPARK, and Transportation Task Force to improve the facilities and networks for bicyclists and pedestrians. These projects can be grouped into the following categories: bicycle and pedestrian projects, multi-use path projects, urban upgrades. Figure 5 shows the projects geographically, and Table 12 lists the projects, cost estimates, champion, potential funding source, and priority for each project. Figure 5 shows all bicycle and pedestrian projects geographically.

Bicycle and pedestrian specific urban upgrades (sidewalk gaps, adding bicycle lanes and sidewalks) are included in section 2 Street System Modal Plan (Tables 4 and 5). They are shown on the bicycle and pedestrian modal plan map but the tables are not in this section.

TABLE 12
Bicycle and Pedestrian Project Cost Estimate and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
BP1	Provide wayfinding signs for Safe Routes to School	$73,000	City, School District	Bike/Ped Funds	Short-term
BP2	Add a colored bicycle lane on SW Bridgeport Road and SW 72nd Avenue near Bridgeport Village to make the bicycle lane more visible	$10,000	City, Washington County	TDT, Bike/Ped funds, Washington County MSTIP	Medium/Long-term
BP3	Add a crosswalk at Tualatin View Apartments on SW Boones Ferry Road north of the Tualatin River	$59,000†	City, ODOT	Bike/Ped Funds	Medium-term
BP4	Add new signs and re-stripe crosswalk at SW Siletz Drive and SW Boones Ferry Road	$24,000	City	Bike/Ped Funds	Short-term
BP5	Add dedicated bike lane through the intersection of SW Avery Street and SW Boones Ferry Road	$117,000	City	Bike/Ped funds, Travel Options	Short-term

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
† This cost estimate is based on the conceptual layout from a 2008 study and does not include railroad crossing or signal upgrades. Estimate may increase based on ODOT rail requirements for additional study.
MSTIP – Major Streets Transportation Improvement Program
TDT – Transportation Development Tax

Multi-Use Path Projects

Multi-use paths are paths set back from a roadway that are reserved exclusively for bicyclists and pedestrians. The majority of TSP recommendations are multi-use paths, as they provide the greatest potential for safe and enjoyable travel to and from homes, businesses, and services throughout the community.

City standards for multi-use paths are 12 feet with a minimum of 1 foot shoulders. All cost assumptions include this width.

Table 13 presents cost estimates and priorities for these projects.

TABLE 13
Multi-Use Path Project Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
BP6	Upgrade bridge surface along the path behind the Haggens shopping center to make it less slippery for pedestrians	$100,000	City	Parks SDC, Bike/Ped funds	Short-term
BP7	Build multi-use paths from the previously adopted Tualatin Pedestrian, Bikeway, and Greenway Plans	$24,445,000[24]	City	Parks SDC or bond, Bike/Ped funds, Travel Options, ODOT Bike/Ped grants	Long-term
	Tualatin River Greenway from west UGB to east UGB	$6,641,000			
	Connections to the Tualatin River Greenway	$1,810,000			
	I-5 Path: Bridgeport Village to SW Nyberg Street to SW Sagert Street to SW Avery Street, and SW 80th Avenue to SW Blake Street to SW Norwood Road	$3,245,000			
	Connections to the I-5 Path: SW Martinazzi Avenue to I-5 path	$209,000			
	Saum Creek Greenway: SW Sagert Street to SW Delaware Circle to SW 65th Avenue to Tualatin River	$2,135,000			
	Norwood Road Path: SW Boones Ferry Road to I-5	$3,757,000			
	Connections to the Saum Creek Greenway: SW Sagert Street to Saum Creek Greenway	$30,000			
	Hedges Creek Greenway Connections: SW Myslony to SW Tualatin-Sherwood Road to SW 105th Avenue	$199,000			
	Helenius Greenway Trail Porous Concrete Trail Aggregate (Gravel) Surface Trail	$236,000 $179,000			
BP8	Build the section of the Tualatin River Greenway from SW Boones Ferry Road along the Tualatin River, extend to existing Tualatin River Greenway east of I-5	$2,135,000[25]	City	Parks SDC or bond, Bike/Ped funds, Travel Options	Short-term
BP9	Fill gaps in the multi-use path as part of the Tualatin River Greenway on the east side of the City	$123,000[26]	City	Parks SDC or bond, Bike/Ped funds, Travel Options	Long-term

[24] Cost estimates for all BP7 projects are from the *Tualatin Bikeway Plan* 1993. Estimates grown to 2012 dollars.

[25] From the *Tualatin Bikeway Plan* 1993. Estimate grown to 2012 dollars.

[26] From the *Tualatin Bikeway Plan* 1993. Estimate grown to 2012 dollars.

TABLE 13
Multi-Use Path Project Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
BP10	Add trail on the east side of SW 105th Avenue, SW Blake Street, and SW 108th Avenue through Ibach Park to accommodate bicyclists and pedestrians	$810,000	City, Ibach CIO	Parks SDC or bond, Bike/Ped funds, Travel Options	Medium-term
BP11	Add a multi-use path undercrossing of I-5 near Fred Meyer as part of the Nyberg Creek Greenway—connect to planned and existing multi-use paths	$1,947,000[27]	City	Bike/Ped funds, Travel Options, ODOT Bike/Ped grants	Medium-term
BP12	Connect the Ice Age Tonquin Trail with neighborhoods (three connections assumed with a preference for at least one connection with Ibach CIO, exact location to be determined based on additional engineering)	$7,626,000	City, Metro	Bike/Ped funds, Travel Options	Long-term

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
CIO – Citizen Involvement Organization
ODOT – Oregon Department of Transportation
SDC – System Development Charges

Regional Coordination

A number of bicycle and pedestrian projects will require coordination with regional agencies such as Washington and Clackamas Counties, Metro, or ODOT. The City of Tualatin will participate fully in the development of regional multi-use trail projects through partnering with neighboring cities and lead agencies. Regional projects currently under development include the Ice Age Tonquin Trail project, intersection and bike lane projects on facilities owned by Washington or Clackamas Counties, or ODOT these projects are included in Tables 14 and 15.

[27] From Metro's *Regional Transportation Plan (RTP)* 2007. Estimate grown to 2012 dollars.

Regional Bicycle and Pedestrian Projects

TABLE 14

Regional Bicycle and Pedestrian Project Cost Estimates and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
BP13	Add a colored bike lane through Nyberg Interchange to make the bicycle lane more visible and distinct from travel lanes	$24,000	City, ODOT	Bike/Ped funds, Travel Options	Short-term
BP14	Add skip striping for the bicycle lane across the I-5 southbound off-ramp on the west end of the interchange	$2,000	City, ODOT	Bike/Ped funds, Travel Options	Short-term
BP15	Redesign bike lane on the east side of the Nyberg interchange by modifying where bicyclists cross the northbound on ramps and creating a 90 degree angle	$62,000	City, ODOT	Bike/Ped funds, Travel Options	Medium-term
BP16	Improve the condition of bicycle and pedestrian railroad crossing panels on SW Boones Ferry Road and SW Lower Boones Ferry Road by adding new panels	$310,000	City, ODOT Rail, Portland and Western Railroad	STIP: TE, Bike/Ped funds	Medium-term

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
STIP – Statewide Transportation Improvement Program
TE – Transportation Enhancement

Regional Multi-Use Path Projects

TABLE 15
Regional Multi-Use Path Project Cost Estimate and Prioritization

Project ID	Project Description	Cost Estimate	Champion	Funding Source	Priority*
BP17	Build pedestrian and bicycle bridges over the Tualatin River: North of SW Cipole Road in conjunction with the Westside Trail Near SW 108th Avenue	$2,434,000[28] $2,434,000[29]	City, Metro	Parks SDC or bond, Bike/Ped funds, Travel Options	Long-term
BP18	Build the segments of the Ice Age Tonquin Trail in the City[30] Western segment near SW Cipole Road (includes an overcrossing of OR 99W) Eastern segment – along Hedges Creek, and the west side of the WES Tracks in southeast Tualatin	$14,615,000 $22,705,000	Metro, City, Washington County	Federal, State, and Metro funds, Bike/Ped funds, Park grants	Medium/Long-term
	Ice Age Tonquin Trail Total	**$37,320,000[31]**			

* Short term = within 5 years, medium term = 5–10 years, long-term = 10 years or more
SDC – System Development Charges

[28] From Metro's *Regional Transportation Plan (RTP)* 2007. Estimate grown to 2012 dollars.

[29] From Metro's *Regional Transportation Plan (RTP)* 2007. Estimate grown to 2012 dollars.

[30] The goal of the Ice Age Tonquin Trail is to have a north/south orientation through and adjacent to the areas of highest desirability for interpretation of the Ice Age Floods and the remaining natural and geological features. The exact alignment through or near the property held by the Tonquin Industrial Group land owners in the SW Concept Plan area has not been determined. The final trail alignment and design and construction details will all be developed in the undetermined future and the processes will be conducted with the participation of land owners, adjacent property owners, the general public and other stakeholders at such time that the area annexes.

[31] From Metro's ongoing Ice Age Tonquin Trail plan.

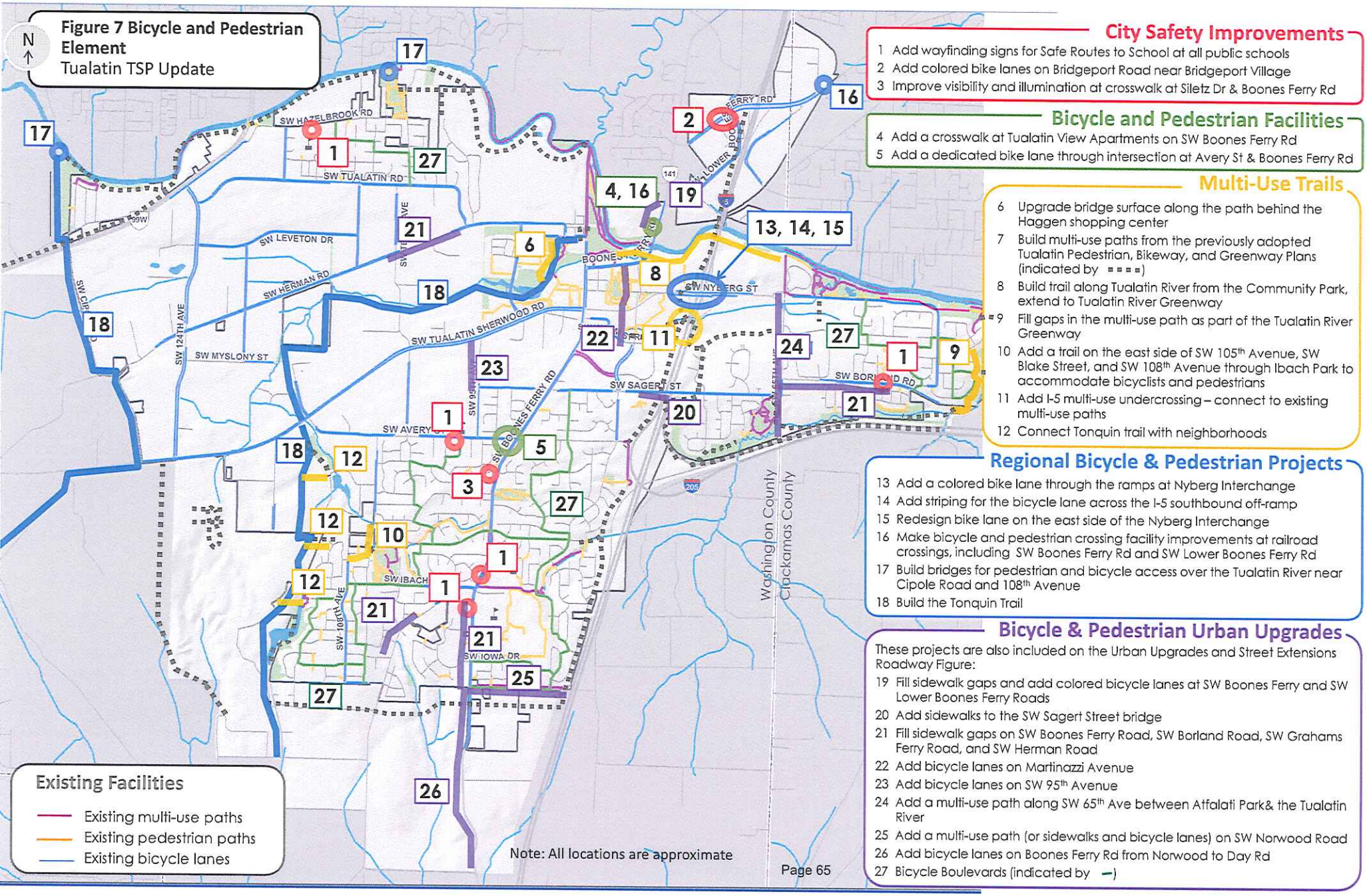


Figure 7 Bicycle and Pedestrian Element
Tualatin TSP Update
N
SW HAZELBROOK RD
SW TUALATIN RD
SW LEVETON DR
SW HERMAN RD
SW TUALATIN SHERWOOD RD
SW MYSLONY ST
SW 124TH AVE
SW AVERY ST
SW BOONES FERRY RD
SW LOWER BOONES FERRY RD
SW NYBERG ST
SW SAGERT ST
SW BORLAND RD
SW IBACH
SW IOWA DR
SW 106TH AVE
Washington County
Clackamas County
Existing Facilities
Existing multi-use paths
Existing pedestrian paths
Existing bicycle lanes
Note: All locations are approximate
City Safety Improvements
1 Add wayfinding signs for Safe Routes to School at all public schools
2 Add colored bike lanes on Bridgeport Road near Bridgeport Village
3 Improve visibility and illumination at crosswalk at Siletz Dr & Boones Ferry Rd
Bicycle and Pedestrian Facilities
4 Add a crosswalk at Tualatin View Apartments on SW Boones Ferry Rd
5 Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd
Multi-Use Trails
6 Upgrade bridge surface along the path behind the Haggen shopping center
7 Build multi-use paths from the previously adopted Tualatin Pedestrian, Bikeway, and Greenway Plans (indicated by ▪▪▪▪)
8 Build trail along Tualatin River from the Community Park, extend to Tualatin River Greenway
9 Fill gaps in the multi-use path as part of the Tualatin River Greenway
10 Add a trail on the east side of SW 105th Avenue, SW Blake Street, and SW 108th Avenue through Ibach Park to accommodate bicyclists and pedestrians
11 Add I-5 multi-use undercrossing – connect to existing multi-use paths
12 Connect Tonquin trail with neighborhoods
Regional Bicycle & Pedestrian Projects
13 Add a colored bike lane through the ramps at Nyberg Interchange
14 Add striping for the bicycle lane across the I-5 southbound off-ramp
15 Redesign bike lane on the east side of the Nyberg Interchange
16 Make bicycle and pedestrian crossing facility improvements at railroad crossings, including SW Boones Ferry Rd and SW Lower Boones Ferry Rd
17 Build bridges for pedestrian and bicycle access over the Tualatin River near Cipole Road and 108th Avenue
18 Build the Tonquin Trail
Bicycle & Pedestrian Urban Upgrades
These projects are also included on the Urban Upgrades and Street Extensions Roadway Figure:
19 Fill sidewalk gaps and add colored bicycle lanes at SW Boones Ferry and SW Lower Boones Ferry Roads
20 Add sidewalks to the SW Sagert Street bridge
21 Fill sidewalk gaps on SW Boones Ferry Road, SW Borland Road, SW Grahams Ferry Road, and SW Herman Road
22 Add bicycle lanes on Martinazzi Avenue
23 Add bicycle lanes on SW 95th Avenue
24 Add a multi-use path along SW 65th Ave between Atfalati Park& the Tualatin River
25 Add a multi-use path (or sidewalks and bicycle lanes) on SW Norwood Road
26 Add bicycle lanes on Boones Ferry Rd from Norwood to Day Rd
27 Bicycle Boulevards (indicated by —)

Figure 7 continued

Bicycle Boulevards

Currently, there are no existing bicycle boulevards in the City, though the city of Portland[32], the City of Tigard, and Washington County have bicycle boulevard policies and design standards.

Bicycle boulevards are roadways that use a variety of design treatments to reduce vehicle speeds so that motorists and bicyclists generally travel at the same speed, to create a safer and more-comfortable environment for all users. Bicycle boulevards may include a variety of applications ranging from minor street signing enhancements (such as shared lane markings) to larger scale projects (for example, bike-only access at intersections, traffic diverters). Boulevards also incorporate treatments to facilitate safe and convenient crossings where bicyclists must traverse major streets. Traffic controls along a boulevard may assign priority to through cyclists while encouraging through vehicle traffic to use alternate parallel routes.

There are five different types of treatments for bicycle boulevards; the lowest cost and least impactful are wayfinding and warning signs, and shared lane markings and directional markings. Other types of treatments with higher capital investment include adding medians/islands and bicycle signals, curb extensions, and mini traffic circles, and restricting and diverting traffic at intersections. The basic bicycle boulevard uses the lower cost elements such as signage and lane markings, and is recommended as the first step to creating and maintaining bicycle boulevards in the City.

Bicycle boulevards work best in well-connected street grids, where riders can follow intuitive and reasonably direct routes. Boulevards also work best when higher-order parallel streets exist to serve through vehicle traffic. Hilly areas and twisting locations where speed or visibility can create safety issues should be avoided. Bicycle boulevards are generally located on streets with lower traffic volumes and vehicle speeds, such as Minor Collectors or Local Streets passing through residential neighborhoods. Typically a bicycle boulevard would be located on a street where vehicles travel less than 30 miles per hour and average daily traffic volume is less than 3,000 vehicles (in both directions). Additionally, the recommended bicycle boulevards for the City include consideration of topography—where possible, areas with steep hills were not recommended for bicycle boulevards.

Proposed bicycle boulevards in Tualatin are shown on Figure 7. These are all low volume, low speed streets that connect neighborhoods with roadways and trails where bicycle infrastructure investments have been made. As a short-term action, the City should consider signing these roadways as bicycle routes, and monitor usage on an annual basis. As bicycle usage increases, and bicyclists and drivers become more used to sharing travel lanes, further investments could be considered as described in the paragraphs above to enhance safety for bicyclists.

[32] The City of Portland refers to its bicycle boulevards as "Neighborhood Greenways"

This page left blank intentionally.

5 Freight Plan

Efficient truck movement plays a critical role in the economic well-being and development of Tualatin. Trucks must be able to access commercial, industrial, manufacturing, distribution, and other employment areas both in Tualatin and connecting to the regional system. Future commercial/industrial uses are expected to be located consistent with the land uses identified in the Comprehensive Plan, which matches the current zoning designations, as codified in the TDC.

The freight network described in this plan and illustrated in Figure 6 is largely consistent with the functional classification plan, which strives to connect industrial and manufacturing uses to the regional and state transportation network via a series of major and minor arterial roadways. The movement of raw materials and finished products via designated truck routes provides for efficient movement of goods while maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. Federally and state designated truck routes, part of the National Highway System (NHS), have been identified on I-5 and OR 99W. Metro identifies "road connectors" in the RTP freight network on SW 124th Avenue, SW Tualatin-Sherwood Road, SW Lower Boones Ferry Road, and SW Boones Ferry Road. The City of Tualatin designates additional truck routes on roadway facilities that connect commercial/industrial districts within the City to major arterials and, ultimately, to OR 99W, I-5, and I-205. The following facilities are currently identified as City of Tualatin truck routes:

- I-5 (north to south City limits)
- I-205 (east to west City Limits)
- OR 99W (west to north City limits)
- SW Tualatin-Sherwood Road (west City limits to the Nyberg Street Interchange)
- SW 124th Avenue (OR 99W to SW Tualatin-Sherwood Road)
- SW Boones Ferry Road (south City Limits to SW Lower Boones Ferry Road)
- SW Lower Boones Ferry Road (SW Boones Ferry Road to the northeast City limits)
- SW Herman Road (SW 90th Avenue to SW Cipole Road)
- SW 108th Avenue (SW Tualatin Road to SW Herman Road)
- SW Teton Avenue (SW Tualatin Road to SW Avery Street)
- SW Cipole Road (OR 99W to SW Tualatin-Sherwood Road)
- SW Avery Street (SW Tualatin-Sherwood Road to SW 95th Avenue)
- SW Leveton Drive (SW 124th Avenue to SW 108th Avenue)
- SW 105th Avenue (SW Avery Street to SW Moratoc Drive)

One existing truck route (SW Tualatin Road – SW 124th Avenue to SW Teton Avenue) was removed as a recommendation from the truck network based on discussions with the team, City Staff, the TTF and policy makers feedback. This change is consistent with the low volume of trucks currently using the road.

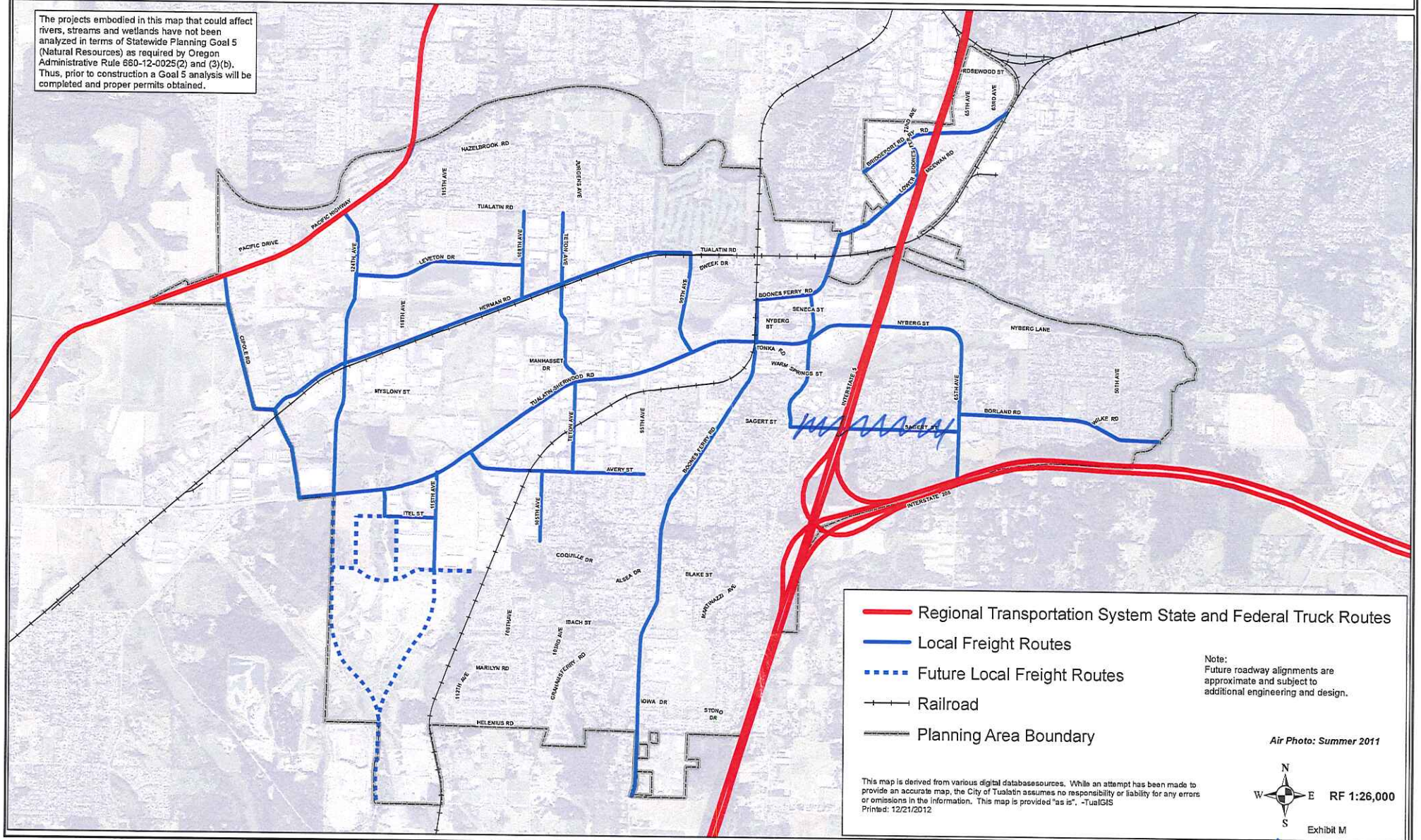
Updated truck route designations have been identified for existing roadways to match major arterial and minor arterial functional classifications. In addition, new roadway (or roadway extension) projects are recognized as truck routes when they provide connections to future commercial/industrial land uses. New truck route designations will include the following:

- SW 124th Avenue Extension (SW Tualatin-Sherwood Road to south City limits)
- SW 65th Avenue
- SW Bridgeport Road
- SW Borland Road
- ~~SW Sagert Street (east of SW Martinazzi Avenue)~~

Figure 11-6: Freight Routes

TUALGIS

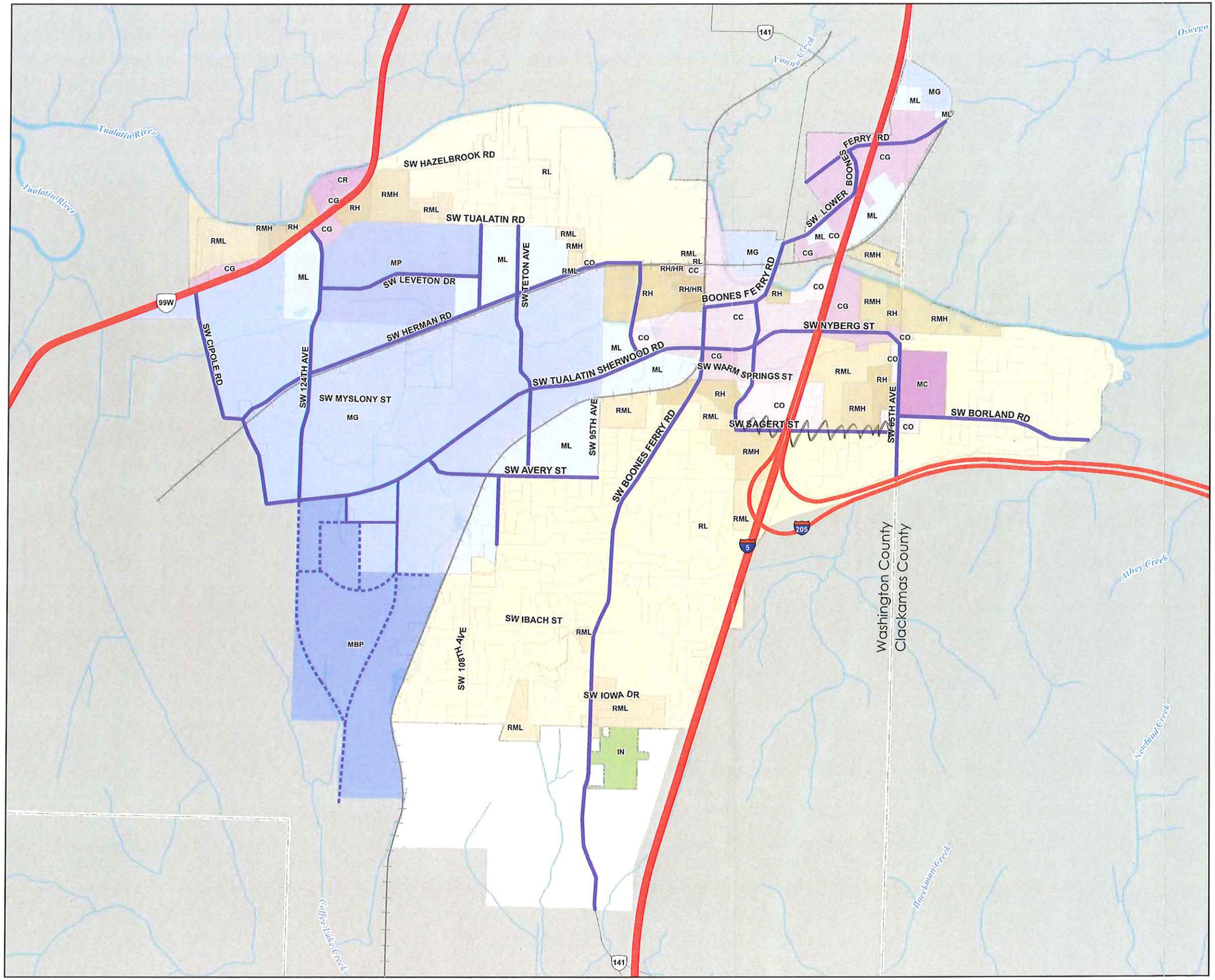
The projects embodied in this map that could affect rivers, streams and wetlands have not been analyzed in terms of Statewide Planning Goal 5 (Natural Resources) as required by Oregon Administrative Rule 660-12-0025(2) and (3)(b). Thus, prior to construction a Goal 5 analysis will be completed and proper permits obtained.

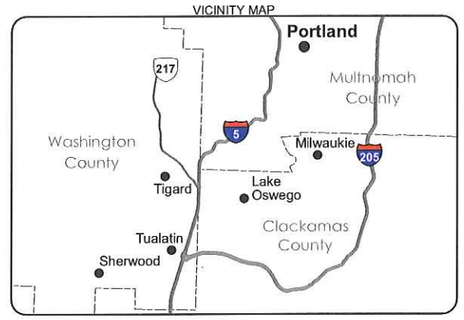


This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS
Printed: 12/21/2012

Exhibit M

sagert removed





LEGEND

Study Area

N

0 0.5 1 Miles

Regional Transportation System
State and Federal Truck Routes

Local Freight Routes
- Existing Roadways
- Future Roadways

City Boundaries

County Boundaries

Railroad

Institutional
- IN - Institutional

Commercial
- CO - Office
- CC - Central
- CG - General
- CR - Recreational
- MC - Medical

Manufacturing
- ML - Light
- MG - General
- MP - Park
- MBP - Business Park

Residential
- RL - Low Density
- RML - Medium Low Density
- RMH - Medium High Density
- RH - High Density
- RH/HR - High Density High Rise

FIGURE 8
Freight Routes
Street Element
City of Tualatin Transportation System Plan

- SW Martinazzi Avenue (SW Sagert Street to SW Boones Ferry Road)
- SW 90th Avenue
- SW Nyberg Street (SW 65th Avenue to SW Martinazzi Avenue)

The needs of the freight system are consistent with those identified in the Street System Plan for the truck routes listed above. Projects that address needs related to truck routes, either directly or by providing alternate routes that improve traffic operations along truck routes, serve the needs of the freight system. All new roadways should be built to current City design standards to meet the operational needs of trucks on designated truck routes. Existing geometric deficiencies are identified in Appendix B.

Figure 8 Freight Element (11 x 17)

Figure 8 continued

6 Rail Plan

Portland and Western Railroad (PNWR) owns and operates two freight rail lines within the City. One track (running north-south) accommodates both freight and the WES commuter rail, and an east-west line runs along the south side of SW Herman Road. As of November 2012 the east-west line carries one train daily in each direction, and the north south has two freight trains daily in addition to the WES trains described in the Transit section.

There are 13 gated public railroad crossings in Tualatin and a number of additional driveways or private roads that cross the railroad. The private crossings are stop controlled, but not signalized. Freight trains have the right of way at all intersections. The low number of trains does not present a large safety concern in the City, and recent Quiet Zone work done in conjunction with the north-south WES rail line opening added gates at all public crossings.

PNWR has no current plans to increase freight service through Tualatin. Although the east-west track runs adjacent to manufacturing areas, no rail sidings or other access to businesses are planned.

Freight Rail Policies

- **Freight Policy 1:** Continue to coordinate with PNWR and TriMet to ensure that railroad crossings are safe and have few noise impacts on adjacent neighborhoods
- **Freight Policy 2:** Look for opportunities to shift goods shipments to rail to help reduce the demand for freight on Tualatin's roads.
- **Freight Policy 3:** Look for opportunities to create multi-modal hubs to take advantage of the freight rail lines

Freight Rail Projects

Only one freight rail project was identified for the Tualatin TSP to support freight traffic within the City. The project would add a rail station with easy offload and access for industrial and manufacturing businesses in the west part of town. This project would need a high degree of coordination between PNWR and the City to ensure it is located appropriately for both the railroad and potential facility users.

Passenger Rail Policies

The City of Tualatin's policies on public transit are described more fully in the Transit Modal Plan, but some policies apply to rail and are pulled from that section here. Policies that may relate to the existing heavy rail lines in Tualatin include:

- **Transit Policy 3**: Partner with TriMet, Metro, and neighboring communities to plan the development of high-capacity transit in the Southwest Corridor, as adopted in the Metro High Capacity Transit System Plan.
- **Transit Policy 4:** Partner with TriMet, Metro, and neighboring communities to plan development of high-capacity transit connecting Tualatin and Oregon City, as adopted in the Metro High Capacity Transit System Plan.
- **Transit Policy 5:** Coordinate with ODOT and neighboring communities on conversations related to Oregon Passenger Rail between Portland and Eugene.
- **Transit Policy 8:** Metro in the RTP calls for increased WES service frequency. The City will coordinate with TriMet, Metro, and ODOT to explore service frequency improvements and the possible inclusion of a second WES station in south Tualatin.

Regional Coordination

The City of Tualatin will participate fully in the development of regional transit projects through partnering with lead agencies. Regional projects currently under development include the following:

- **The Southwest Corridor Project**. The purpose of the Southwest Corridor Project is to extend high-capacity transit from downtown Portland into the southwest part of the region. Doing so will help to fulfill the vision of the Metro *High Capacity Transit System Plan*. The City of Tualatin is partnering with Metro and TriMet to bring high-capacity regional transit to Tualatin and neighboring communities.
- **Oregon Passenger Rail**. The purpose of the Oregon Passenger Rail project is to improve intercity passenger rail service along the Oregon section of the Pacific Northwest high speed rail corridor between Portland and Eugene. Along the way, the rail service is expected to serve the south Metro area via an alignment either east or west of the Willamette River. The City of Tualatin intends to coordinate with ODOT and to explore an appropriate corridor that would best improve intercity passenger rail service in the Willamette Valley.
- **WES Extension**. TriMet and ODOT will study the feasibility of extending WES commuter rail from Wilsonville to Salem. The City of Tualatin is supportive of the WES extension and intends to partner with ODOT and TriMet in facilitating this project.
- **WES Service Enhancements.** Metro in the RTP calls for increased WES service frequency. The conceptual Linking Tualatin study recommended adding an additional WES station in the south part of Tualatin. The City will coordinate with TriMet, Metro, and ODOT to explore service frequency improvements and the possible inclusion of a second WES station in south Tualatin.

7 Water, Pipeline, and Air Plan

Water

The Tualatin River is the only large waterway within the City of Tualatin. The river is not navigable from the Willamette River due to impassable areas and a diversion dam downstream. The river is used primarily for recreation and is open for canoeing and kayaking. Therefore, the TSP does not include any specific policies, programs, or projects for the Tualatin River as part of the transportation network. However, several projects are proposed in other sections of this chapter to increase access to the river for recreation purposes.

Pipeline

A natural gas transmission pipeline and a gasoline pipeline cross through the City. There is no anticipated need to increase pipeline capacity or construct new pipelines through the City, and therefore no such improvements are proposed in the TSP.

Air

There are no airports within the City of Tualatin, although several airports are located within 30 miles of the City: the Aurora State Airport, Hillsboro Municipal Airport, and Portland International Airport. These airports meet the commercial, freight, and business aviation needs of Tualatin residents. No plans are proposed to construct airport facilities within the City of Tualatin; existing airports are anticipated to continue serving the citizens of Tualatin adequately.

This page left blank intentionally.

8 Transportation Demand Management

The TPR requires all cities with populations greater than 25,000 people to develop a TDM Plan. The RTP also requires that TDM strategies be used to encourage alternative transportation modes and achieve higher vehicle occupancy targets. TDM measures are designed to change travel behavior in order to reduce the need for more road capacity and improve performance of the road system. Typical TDM projects include encouraging use of travel modes other than the auto, ride sharing, and measures to reduce the need for travel—such as telecommuting policies.

TDM policies and projects can be cost-effective ways to reduce congestion by encouraging the use of other modes, reducing the need for travel or reducing the number of vehicle-miles driven. The City of Tualatin can implement a range of TDM measures to manage travel demand, in conjunction with partner organizations in many cases. Providing bicycle, pedestrian, and transit infrastructure can be effective means to encourage drivers to switch to other modes. Many of the pedestrian, bicycle, and transit improvements proposed in other sections of the TSP can be considered TDM measures as they encourage use of travel modes other than the auto. In addition to these infrastructure projects, a number of strategies are applicable to Tualatin, as discussed in the following subsections.

Transportation Demand Management Policies

The following policies support other modal plans in the TSP and help Tualatin meet its mode-share targets, as required by the RTP and presented in Table 16:

- **TDM Policy 1:** Support demand reduction strategies, such as ride sharing, preferential parking, and flextime programs[33]
- **TDM Policy 2:** Partner with the Tualatin Chamber of Commerce, the Westside Transportation Alliance, major employers, and business groups to implement TDM programs
- **TDM Policy 3:** Explore the use of new TDM strategies to realize more efficient use of the City's transportation system
- **TDM Policy 4:** Support Washington County's regional TDM programs and policies to reduce the number of single-occupancy vehicle (SOV) trips
- **TDM Policy 5:** Promote the use and expansion of the Tualatin Shuttle program

Metro in its RTP established modal targets for how residents in the region will make trips in 2040. These are separated out by regional designations. Tualatin has a number of designations within the City limits:

- Town Center – this designation is consistent with the Town Center Plan study area, centered on the Lake of the Commons and includes land south of the Tualatin River and west of I-5, including the Tualatin Community Park. The western Boundary is SW 95th Avenue south to SW Tualatin-Sherwood Road, and then east near SW Warm Springs Street.
- Corridors – there are a number of corridors in Tualatin: SW Tualatin-Sherwood Road is a regional street, along with 99W, SW 124th Avenue, and SW Tualatin Road. SW Boones Ferry Road is a community street, and SW Tualatin-Sherwood Road/SW Nyberg Street in downtown are community boulevards. Regional arterials

[33] Ride sharing is defined as carpools and vanpools that increase the number of occupants in a vehicle. Preferential parking is for carpools and vanpools, and is closer than regular parking to a building or office. It provides an incentive to carpool by providing designated parking closer to destinations. Flextime programs allow employees to work hours other than a typical 8 am- 5 pm workday, and can include four 10-hour days with Fridays off, a two-week rotation of nine 9-hour days with every other Friday off, etc.

include 99W, SW 124th Avenue, SW Boones Ferry Road, SW Tualatin-Sherwood Road, SW Herman Road, SW Nyberg Street, SW Sagert Street, SW Borland Road, and SW 65th Avenue.

- Employment Land – most of western Tualatin is employment land south of SW Tualatin Road and west of the railroad tracks.
- Parks and Natural Areas – Hedges Creek is designated a park and natural area, along with many of the other greenway areas including Nyberg Creek Greenway, Saum Creek, and other City parks.
- Neighborhoods – neighborhood areas include southern Tualatin near SW Boones Ferry Road, northern Tualatin north of SW Tualatin Road, and eastern Tualatin excluding the hospital area and the greenways and parks.

These designations have modal targets associated with them, as seen in Table 16 below, and the non-drive-alone modal target for Tualatin is 45-55 percent in the Town Center and Station Community, and 40-45 percent for the employment land, parks and natural areas, and neighborhoods.

TABLE 16
Metro Modal Targets

2040 Regional Designation	Non-drive-alone Modal Target
Regional Centers Town Centers Main Streets Station Communities Corridors Passenger Intermodal Facilities	**45–55%**
Industrial Areas Freight Intermodal Facilities Employment Areas Inner Neighborhoods Outer Neighborhoods	**40–45%**

Source: Metro's RTP

TDM Programs

Constructing bicycle lanes, sidewalks, and other facilities greatly increases the ability of people to get around by walking and biking. These efforts are made even more effective when education and encouragement programs are developed. These programs help address barriers to walking and biking, such as where and how to ride safely.

Individualized Marketing

Individualized marketing programs offer customized packets of information about transit, car/vanpool, bicycling, and walking options to target populations at events and through various venues. Such a program in Tualatin would build on and support both new and existing TDM strategies by providing a tailored framework that consisted of the following: (1) information about resources, such as transit maps and schedules, local walking and bicycling maps, safety information, discounts at local shops, and other locally available material; (2) encouragement events, such as employment fairs, guided walks and rides, guided transit trips, personalized trip planning assistance, and trainings; and (3) encouraging communications through social media, virtual or physical bulletin boards, and newsletters. Individualized marketing programs could be implemented by the City directly, or by a Transportation Management Association (TMA). A TMA is an independent entity dedicated to solving transportation problems in a particular geographic area through actively managing transportation demand and encouraging alternate travel modes. Currently, the Westside

Transportation Alliance provides TMA services to the Tualatin Chamber of Commerce, and the Cities of Hillsboro, Beaverton, and Tigard.

Bicycle and Pedestrian Education and Encouragement Programs

Constructing bicycle lanes, sidewalks, and other facilities greatly increases the ability of people to get around by walking and biking. These efforts are made even more effective when education and encouragement programs are developed. These programs help address barriers to walking and biking, such as where and how to ride safely. It should be noted that all programs listed below can be implemented in coordination with an individualized marketing program, as described above.

Employer Bicycle and Pedestrian Programs

Employers, especially larger employers, should implement a number of low-cost measures to encourage walking and biking to and from work. Example incentives include giving gift cards or discounts at local restaurants to those who choose to walk or bike. Parking "cash outs" are another incentive: If workers have free or subsidized parking, employers offer employees a choice to keep a parking space at work, or to accept a cash payment and give up the parking space.

Improve "End of Trip" Facilities

Workers often cite a lack of secure bike storage areas and showering and changing facilities as reasons they do not bike to work. If providing these amenities is cost prohibitive, employers could direct employees to nearby gyms or community centers where these facilities already exist and subsidize membership to them.

Safe Routes to School Programs (SRTS)

Nationally, the number of children walking and biking to school has declined greatly over the last several decades. SRTS programs currently existing in Tualatin. They are designed to educate parents and schoolchildren about safe walking and biking and encourage students to walk or bike to school. Typical measures include distributing safety information to parents and kids, prizes for kids who walk and bike to school, month-long walk-and-bike challenges, and bicycle rodeos. Bicycle and pedestrian infrastructure improvements, such as improving crosswalks or striping bike lanes, are usually done in conjunction with these efforts.

Community Bicycle Education, Encouragement, and Commuter Challenges

Many cities in Oregon participate in sponsored commuter challenge events, such as the national bike to work day in May and the month-long bike commute challenge in September. The month-long event is a friendly competition among employers. Awards and local bike shop discounts are offered throughout the month. Participants log their daily travel by bike on a website, track others' progress, and access free commuting resources.

Bicycle Route Maps

One of the major reasons many people do not bike to their destinations is a lack of knowledge about where to safely ride. The Washington County Visitors Association currently produces a countywide cycling map that includes major routes in Tualatin. A link to this map should be placed prominently on the City of Tualatin's webpage, and paper copies of the map made available at City Hall and other civic locations. However, the

Visitors Association's map does not include the portions of Tualatin that are north of the Tualatin River or east of I-5. The City should consider developing a comprehensive bicycle map for Tualatin that includes current and planned bicycle facilities. A locally produced map can be updated more frequently as bicycle infrastructure projects in the Pedestrian and Bicycle Plan are constructed.

Transit Strategies

Transit projects in the Transit Plan can be supplemented with other programs that make using transit easier for residents and provide incentives for its use. It should be noted that all programs listed below are most effectively implemented in coordination with a TMA and individualized marketing programs as described above.

Employee Shuttle Service

The Tualatin Chamber of Commerce operates a free shuttle service from TriMet bus stops, the WES station, and downtown Portland to employers within Tualatin. This free service enhances transit by bridging the final distance between transit stops and the work site, which can often be too far to walk or bike.

Employer-Subsidized Transit Pass Programs

Transit passes increase ridership because they are simple and easier to use than single ticket purchases. However, annual transit passes can be prohibitively expensive (as of September 2012 the annual TriMet pass is $1,100) and out of line with driving costs such as gasoline and parking where purchases are made on a more incremental basis (weekly, monthly). To encourage more transit ridership, and in coordination with implementation of transit service recommendations outlined in the Transit Modal Plan, employers could subsidize the cost of transit passes either: (a) directly through bearing some of the cost of the pass as an employer-provided benefit; (b) indirectly through being a pass-through purchasing the annual passes from TriMet and allowing employees to pay on a monthly basis; or (c) indirectly through taking advantage of pre-tax transportation fringe benefits under Title 26 section 132(f) of the US tax code. This program allows employers to offer a tax-free benefit to employees that commute to work by transit and allow employees to purchase transit passes on a pre-tax basis through payroll deduction.

Other Strategies

Rental or Car-share Services

The ability to make midday trips with personal vehicles is cited as an important reason that employees drive to work. By providing car-sharing or rental service, such as Zipcar (www.zipcar.com) and Car2Go (www.car2go.com), workers can make short trips at low cost during the workday and leave their personal vehicles at home. Zipcar and Car2Go are not currently available in Tualatin. The City could partner with Metro to discuss expanding these services to the suburbs and for major employers to explore maintaining a small fleet of bicycles and/or vehicles for midday trips.

Ride Sharing

Carpooling and vanpooling can be very cost effective by filling empty seats in vehicles that would otherwise be unoccupied. Ride-sharing strategies are most effective for trips with predictable schedules, like commuting or special events. Ride sharing is accomplished through ride matching, or matching commuters with carpools and vanpools that meet their travel needs. Matching is accomplished through websites like Oregon's "Drive Less. Connect" program (www.drivelessconnect.com/) or through bulletin boards and employer-organized services.

Telecommuting and Flexible Work Schedules

Telecommuting (working from home instead of traveling to the workplace every day) reduces the need for travel and can have beneficial effects on traffic congestion. Many employers in Tualatin have employees who travel to work from outside the City, and many Tualatin residents travel outside the City to go to work. Supporting telecommuting could reduce peak-hour congestion on roadways in Tualatin. Support for telecommuting includes providing information to employers within the City and providing resources for citizens who commute out of Tualatin.

Employers can also allow employees to adopt work schedules different from the typical 8 to 5 schedule, or allow employees to compress regularly scheduled hours into fewer workdays per week (four 10-hour shifts, for instance). Allowing work schedule flexibility shifts travel out of the peak morning and evening travel hours, reducing congestion.

Location-specific TDM Programs

Throughout the TSP development a few programmatic ideas arose that were specific to locations within Tualatin. These programs are listed here, separate from the city-wide ideas, though implementation could be accomplished through many of the programs listed above.

Encourage Off-peak Use of SW Herman and SW Tualatin-Sherwood Roads

SW Tualatin-Sherwood Road is congested during peak hours, and freight vehicles use both SW Herman and SW Tualatin-Sherwood Roads to access regional transportation facilities (OR 99W and I-5). Policies encouraging drivers and freight haulers to use these routes outside of peak hours would help alleviate peak-hour congestion.

Reduce Congestion near Tualatin High School

Tualatin High School generates a significant number of trips just before the school day starts and when classes let out in the afternoon. Projects and policies that discourage the use of personal automobiles to get to and from the high school could be effective at reducing congestion in the vicinity of the school. SRTS projects, such as adding wayfinding signage for pedestrians and bicycles, encouraging cycling and walking, and improving the walking and cycling environment in the vicinity of the school can be very effective at encouraging students to use alternative modes of travel. A number of pedestrian and bicycle improvement projects are proposed near the high school; refer to the Pedestrian and Bicycle Plan earlier in this chapter for a complete list of projects.

Provide Wayfinding Signs to Encourage Walking and Bicycling

Providing wayfinding signage near popular destinations such as schools, commercial areas, parks, and city services allows residents to use non-motorized modes. Wayfinding signs will also allow users on multi-use paths to determine their location and how to get to various destinations. Providing wayfinding signs can improve user comfort with different modes and may encourage travelers to switch transportation modes as they become as comfortable with these modes as with driving.

Metro Transportation Demand Management Projects

Metro's 2035 Regional Transportation System Management and Operations Plan (TSMO Plan) also includes TDM projects and policies within Tualatin. These relatively low-cost projects (Table 17) will be implemented by a variety of local and regional organizations and with a variety of funding sources.

TABLE 17
Planned Metro TDM Projects in Tualatin

Project or Policy	Description
Individualized Marketing for Tualatin Transit Center and adjacent neighborhoods	Implement outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents
Location-efficient Living	Support programs and strategies that promote location-efficient living strategies in industrial employment and residential areas west of I-5. The goal of location efficient living is to provide affordable housing near employment centers to reduce travel distances for employees. Location-efficient living strategies also market employment opportunities to nearby residents.
Transportation Management Associations	Support the activities of organizations, such as the Tualatin Chamber of Commerce, that help employees and/or residents increase use of non-single-occupant vehicle travel options

Source: Metro's TSMO Plan

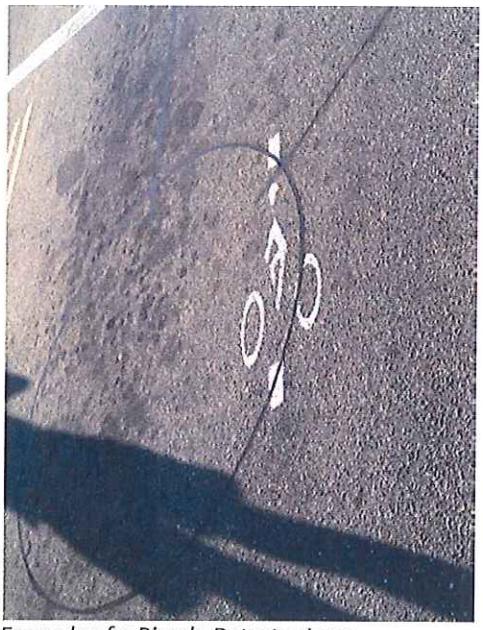
9 Transportation System Management

Transportation System Management (TSM) measures are designed to increase the efficiency, safety, capacity, and level of service of the transportation system without physically increasing roadway capacity. Typical TSM projects include traffic light synchronization, traffic calming, travel information systems, access management, and parking management strategies. Many of the projects listed in the other modal plans—including the Transit, Pedestrian and Bicycle, and Access Management plans—qualify as TSM measures.

Many TSM tools can be implemented inexpensively to help make the existing system work more efficiently. A wide range of TSM strategies are applicable to Tualatin.

Signal Timing and Optimization

Traffic congestion is caused in part by poorly timed traffic signals, especially on longer arterial corridors with many signalized intersections. The City will continue to review and update signal timing on streets in order to maximize signal efficiency. Many strategies can be implemented to improve coordination of signals and optimize signal timing. Advanced signal systems can detect vehicles approaching intersections, reducing the number of stops vehicles make and reducing delay. With good traffic data, signal timing can be adjusted throughout the day to reflect traffic patterns. Adaptive signal controls actively change signal timing based on real-time traffic information, further optimizing traffic flow.



Example of a Bicycle Detector Loop

Adding bicycle detector loops or sensor cameras are effective methods for optimizing signal timing for cyclists, who often must wait long periods before crossing an intersection if they are not detected by the signal system. Adding bike detection loops or sensor cameras would eliminate this problem, ensuring cyclists can get through major intersections without delay and without having to activate pedestrian crossing signals. ODOT recently put in a bike detection loop at the SW 72nd Avenue, SW Bridgeport Road, and SW Lower Boones Ferry Road intersection for the northbound bike lane.

Real-time Traveler Information Systems

Real-time travel information on traffic congestion, roadway incidents, road hazards, weather conditions and construction delays can help drivers make better travel decisions. This information can be provided through electronic signs, or websites and applications available on computers and mobile devices, to help travelers avoid delay by changing their route, starting their trip at another time, or changing which mode they use to get to their destinations.

Traffic Calming

Traffic-calming measures can improve neighborhood livability, slow traffic, and reduce undesirable cut-through traffic on local streets. Typical traffic-calming measures include speed humps, medians, street trees, narrower streets, traffic circles, and speed reader boards that display vehicle speeds to drivers. These strategies are effective at encouraging vehicle traffic to make their through trips on more appropriate collector and arterial

streets, and help calm traffic in neighborhoods where slow speeds and low traffic volumes are desirable. Table 18 summarizes common traffic-calming strategies.

TABLE 18
Potential Traffic-Calming Strategies

Traffic-calming Strategy	Goal	Description
Speed Tables	Speed reduction	Speed tables are flat-topped speed humps constructed from asphalt, brick, or other materials. They allow higher speed travel then speed bumps. Speed tables are effective at reducing vehicle speeds, and are most applicable on residential streets or other streets where a smooth ride is needed for larger vehicles.
Roundabouts and Traffic Circles	Speed reduction, reduce through traffic	These force drivers to slow at intersections and may encourage through traffic to use other routes. They are typically constructed of concrete, brick or other materials and often have center landscaping that additionally improves street aesthetics.
Chicanes, Curb Extensions	Speed reduction, improve walking environment	Chicanes are bulb-outs that physically narrow the roadway. Chicanes create S-shaped curves that force drivers to slow and can also be designed so that drivers have to yield to oncoming traffic. Curb extensions at intersections physically narrow the roadway and reduce vehicle speed, but they also reduce intersection crossing distance for pedestrians.
Median Barriers	Reduce through traffic	Median barriers prevent vehicle traffic from turning into or out of streets in a certain direction, reducing through traffic.
Road Diets	Speed reduction, reduce through traffic, improve walking & biking environment	Road diets reduce the number of automobile travel lanes, freeing road space for bicycle lanes, sidewalks, paths, or landscaping. A typical road diet may reduce a four-lane road to three lanes (two travel lanes and a center turn lane) and add bicycle lanes or parking.
Street Trees	Speed reduction, improve walking & biking environment	Street trees visually narrow streets, forcing drivers to slow down. Trees placed between sidewalks and the street improves street aesthetics and provides a buffer between pedestrians and traffic.
Pavement Treatments	Speed reduction	Pavement treatments include colored and textured paving materials, rumble strips and other pavement markings. These treatments provide visual and auditory cues to drivers that they should be more alert, causing drivers to slow. Typical application includes paving a residential intersection with bricks, or adding rumble strips to an intersection approach.
Tighten Corner Radii	Improve walking and biking environment, speed reduction	Large intersection corner radii allow vehicles to make higher speed turns, increasing risk for pedestrians. Reducing curb radii forces traffic to slow when making turns and reduces crossing distance for pedestrians.
Roadway Striping	Speed reduction	Adding roadway striping, especially on unstriped residential streets, can visually narrow the street and causes drivers to slow down. Roadway edge lines, striped medians, etc., can all help achieve speed reductions at relatively low cost.

Source: Metro's *Transportation System Management and Operations (TSMO) Plan*

Metro's *Transportation System Management and Operations (TSMO) Plan* includes projects on regionally significant routes within Tualatin. It also includes arterial corridor management strategies and other improvements to facilities within Tualatin (Table 19). Most of these projects are currently underway or are planned to start within the next 5 to 10 years and will be funded through a combination of regional and local sources.

TABLE 19
Planned Metro TSMO Projects in Tualatin

Facility Name	TSM Strategy	Description
SW Boones Ferry Road, SW Upper Boones Ferry Road, SW 65th Avenue, and SW Borland Road	Arterial Corridor Management	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate), and routinely update signal timings. Provide real-time and forecasted traveler information, including current roadway conditions and weather conditions, on arterial roadways.
OR 99W, from SW 124th Avenue to SW Tualatin-Sherwood Road	Real-time Traveler Information	Provide real-time and forecasted traveler information on arterial roadways, including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions, and other events that may affect traffic conditions.
SW Tualatin-Sherwood Road	Arterial Corridor Management with Adaptive Signal Timing	Signal systems that automatically adapt to current roadway conditions, in addition to arterial corridor management strategies listed above.

This page left blank intentionally.

10 Parking Plan

The City owns several public parking lots in downtown Tualatin to support denser development in the City's core area. A separate taxing district has been created to support ongoing maintenance and operations of these parking lots. The city completed a study in 2011 which identified that the existing parking supply is sufficient to meet the parking demand in downtown Tualatin.

The RTFP requires parking policies and a parking plan in a TSP or other planning document. The current TDC includes parking minimums and is compliant with this requirement.

This page left blank intentionally.

Chapter 3. Implementation

Implementation of TSP projects will depend on funding and community priorities. There are a variety of funding sources available at the City, County, Region, and State level, and each project table includes recommendations for applicable funding sources. Additionally, the relative importance of TSP projects are identified in the project tables, based on community goals, the magnitude of the deficiency or issue that the project addresses, and the ability to secure funding, conduct engineering, and build a project. Appendix E provides a detailed description of transportation funding and improvement costs for all of the TSP's recommendations.

Funding Sources

Established Funding Sources for Future Projects

A variety of established federal, state and local funding sources are available to fund future transportation projects in the Tualatin TSP, depending on the eligibility requirements.

Federal Funding Sources

Federal funding currently accounts for approximately 20 percent of total funding for transportation projects in Oregon. Allocation of federal funds is managed through Metro, Tualatin's Metropolitan Planning Organization (MPO). Metro generally programs federal funding for regional and local projects that affect the state transportation system, though some funds are made available directly for local projects. All projects utilizing federal funds must be programmed through Metro's 20-year RTP and the Metropolitan Transportation Improvement Program (MTIP), as well as the STIP.

Most federal funding is available through the federal surface transportation program, supported by tax revenue to the Highway Trust Fund.

Federal Highway Trust Fund (HTF)

Revenues to the HTF are comprised of motor vehicle fuel taxes, sales taxes on heavy trucks and trailers, tire taxes, and annual heavy truck use fees. The fund is split into two accounts – the highway account and transit account. Funds are appropriated to individual states on an annual basis. The 2005 legislation for the federal surface transportation program (Safe, Accountable, Flexible and Efficient Transportation Equity Act – A Legacy for Users, referred to as SAFETEA-LU) was replaced with Moving Ahead for Progress in the 21st Century (MAP-21), effective October 1st, 2012. This new 2-year program keeps total federal funding at the SAFETEA-LU rate, consolidates the 90 current programs under SAFETEA-LU into 30, eliminates transportation earmarks, and increases funding for the Transportation Infrastructure Finance and Innovation Program (TIFIA). The TIFIA program provides loans to finance transportation projects of regional or national significance, and seeks to leverage federal transportation dollars with local funds and private investment. Tualatin may be eligible to receive funding under the expanded TIFIA program.

Most federal funds must be matched with state or local funds; the current matching ratio for most projects is 10.27 percent.

Federal Transit Administration grants

The Federal Transit Administration (FTA) manages a number of grants available to transit agencies nationwide. The city of Tualatin could work with TriMet to fund transit projects serving the City.

Transit Expansion and Livable Communities Grants

Approximately $2.4 billion in funds was appropriated for this program in the current budget year (2012). The goal of this initiative from the FTA is to advocate for and support projects and programs that improve the link between public transit and communities. Several formula and competitive grant programs are available through this initiative. Policy goals include better integrating transportation and land use planning, fostering multimodal systems, providing transportation options and improving access, reducing emissions, and increasing public participation in transportation decision-making. Tualatin and TriMet may be eligible for grant funding under this program.

Transportation for Elderly Persons and Persons with Disabilities (MAP-21 §20009, former SAFETEA-LU §5310)

This formula grant program is managed by the state, with funds provided for capital projects that enhance the accessibility of older adults and those with disabilities.

Job Access Reserve Commute (JARC) program (MAP-21 §20010, former SAFETEA-LU §5316)

Activities funded by the JARC program (formerly Section 5316 of SAFETEA-LU) have been preserved in MAP-21. The JARC program was established to address the transportation needs of welfare recipients and other low-income persons seeking to obtain or maintain employment. This program helps provide mobility to those whose work hours may fall outside traditional transit service hours and service areas. Under MAP-21, JARC activities have been integrated into the urban and rural formula grant programs. Financial assistance will be available for capital, planning and operations projects. In addition to local government and transit operators, private non-profits are eligible to receive funds. In 2012, as in past years, the Chamber of Commerce received JARC monies that funded the Tualatin Shuttle service. The Chamber of Commerce is an ongoing recipient of JARC funds, and annually recompletes for funds.

TriMet is the current recipient of all JARC funds which are distributed to regional agencies through a competitive application process. Under MAP-21, the competitive application requirement has been removed. TriMet is currently developing its new JARC program in response to MAP-21; it is presently unclear how much funding will be available, or how agencies will apply for funding from the program. Approximately $600,000 has been available regionally under the program in recent funding cycles.

Other Federal Sources

Section 319 Non-Point Source Implementation Grants

Transportation projects that integrate stormwater treatment may be eligible to receive federal funding through Section 319 grants. This program, administered by the Oregon Department of Environmental Quality (DEQ), provides federal funds to address non-point pollution, including stormwater improvement projects. Funding is very competitive, with less than $500,000 available statewide in the most recent grant cycle. Projects that could be eligible for funding include applications of pervious pavements, stormwater detention and retention, and other low impact stormwater development tactics. Funds can be used for all or a portion of a project, but require a minimum 40 percent match. The Tualatin River and several of its tributaries are on the Clean Water Act 303(d) list for a number of pollutants, and projects within the river basin may be attractive for funding.

State Funding Sources

State funds are distributed via the Oregon Transportation Commission (OTC). The State Highway Fund is the most significant source of funding for the programs described below. To be eligible for funding, projects must be programmed through the STIP.

State Highway Fund

State Highway Fund Revenues are received from a combination of fuel taxes, vehicle registration and title fees, driver's license fees, the truck weight-mile tax and federal monies. Fund revenues may only be used for construction and maintenance of state and local highways, bridges, and roadside rest areas. State law (ORS 366.514) specifies that a reasonable amount of highway funds must be spent on walkways and bikeways, and that in any given fiscal year, a minimum of 1 percent of State Highway Funds must be spent on these projects by funding recipients. However, cities and counties receiving may allocate these funds to a reserve fund, which they must expend within a period not to exceed 10 years. All funds must be expended on projects within road, street, or highway rights-of-way.

State Highway Funds are appropriated by the OTC on an annual basis. Sixty percent of fund revenues are kept at the state level, 24 percent is distributed to counties based on the number of vehicles registered in each county, and 16 percent is distributed to cities based on population.

Statewide Transportation Improvement Program (STIP)

The STIP is the 4-year capital improvement program for the state of Oregon. It provides a schedule and identifies funding for projects throughout the state. Projects included in the STIP are generally "regionally significant" and have been given a high priority through planning efforts and by the relevant area commission on transportation (ACT) or MPO. For Tualatin, the relevant MPO is Metro.

All regionally significant state and local projects, as well as all federally-funded projects and programs, must be included in the STIP. The 2010-2013 STIP includes projects totaling $1.25 billion and covers the period from October 2009 to the end of September 2013. The 2012-2015 STIP was recently approved. About 80 percent of projects are expected to use federal funds. Federal funding levels projected for the 2010-2013 and draft 2012-2015 STIP are assumed to be at the same annual level distributed under SAFETEA-LU from 2005 to 2009.

ODOT has started the planning process for the 2015-2018 STIP. The STIP will be reorganized into two broad categories: "Fix-it" and "Enhance" that encompass the previous funding categories detailed in the 2012-2015 STIP. "Fix-it" projects are those that fix or preserve the current transportation system; "Enhance" projects are those that enhance, expand or improve the transportation system. The main purpose of this reorganization is to allow maximum flexibility to fund projects that reflect community and state values, rather than those that fit best into prescriptive programs.

"Fix-it" activities will include:

- Bicycle and pedestrian facilities on state routes only
- Bridges (state owned)
- Culverts
- High Risk Rural Roads
- Illumination, signs and signals
- Landslides and Rockfalls
- Operations (includes ITS)
- Pavement Preservation
- Rail-Highway Crossings
- Safety

- Salmon (Fish Passage)
- Site Mitigation and Repair
- Stormwater Retrofit
- Transportation Demand Management (part of Operations)
- Work zone Safety (Project specific)

"Enhance" activities will include:

- Bicycle and/or Pedestrian facilities on or off the highway right-of-way
- Development STIP (D-STIP) projects (development work for projects that will not be ready for construction or implementation within the four years of the STIP)
- Modernization (projects that add capacity to the system, in accordance with ORS 366.507)
- Most projects previously eligible for Transportation Enhancement funds
- Projects eligible for Flex Funds (the Flexible Funds program funded Bicycle, Pedestrian, Transit and Transportation Demand Management (TDM) projects, plans, programs, and services)
- Protective Right-of-Way purchases
- Public Transportation (capital projects only, not operations)
- Safe Routes to School (infrastructure projects)
- Scenic Byways (construction projects)
- Transportation Alternatives (new with MAP-21, the federal transportation authorization)
- Transportation Demand Management

Under this new STIP organization, there will be one application for all projects eligible under the "Enhance" program. Communities will apply for the "Enhance" projects that best serve their community and ODOT will determine the appropriate funding mechanism. "Fix-it" projects will be selected through a collaborative process between ODOT and MPOs. This new organization is primarily intended to increase funding flexibility and does not represent a fundamental change in the type of projects that will be funded through the STIP. The current "Enhance" application process for the 2015-2018 STIP will close at the end of November, 2012.

- ***Connect*Oregon**: *Connect*Oregon funds are lottery-backed bonds distributed to air, marine, rail, transit and other multimodal projects statewide. No less than 10 percent of *Connect*Oregon IV funds must be distributed to each of the five regions of the state, provided that there are qualified projects in the region. The objective is to improve the connections between the highway system and other modes of transportation.

Oregon Parks and Recreation Local Government Grants

The Oregon Parks and Recreation Department (OPRD) administers this program using Oregon Lottery revenues. These grants can fund acquisition, development and major rehabilitation of public outdoor parks and recreation facilities. OPRD has distributed $4 million annually under this program through a competitive grant process. A match of at least 20 percent is required.

Oregon Transportation Infrastructure Bank (OTIB)

The OTIB is a statewide revolving loan fund available to local governments for many transportation infrastructure improvements, including highway, transit and non-motorized projects. Most funds made available through this program are federal, and roads must be functionally classified as a major collector or higher to be eligible for loan funding.

Oregon Parks and Recreation Department: Recreational Trails Grant[34]

These grants from the Oregon Parks and Recreation Department provide funding for recreational trail projects to build new recreation trails, including trail bridges and installing wayfinding signs, restoring existing trails, developing and rehabilitating trailhead facilities, and acquiring land and permanent easements for trails. Cities are eligible to apply, and must provide at least a 20 percent match of total project cost. Recent grants (2011) ranged from $10,000 to $130,000.

Oregon Immediate Opportunity Fund

The Oregon immediate opportunity fund supports primary economic development in Oregon through construction and improvements of streets and roads. Funds are discretionary and may only be used when other sources of financial support are unavailable or insufficient. The objectives of the Opportunity Fund are providing street or road improvements to influence the location, relocation, or retention of a firm in Oregon, providing procedures and funds for the OTC to respond quickly to economic development opportunities, and providing criteria and procedures for the Oregon Economic and Community Development Department (OECDD), other agencies, local government and the private sector to work with ODOT in providing road improvements needed to ensure specific job development opportunities for Oregon, or to revitalize business or industrial centers.

Regional Funding Sources

Metro coordinates two transportation grant programs relevant to Tualatin. As the regional government and MPO, Metro is responsible for distributing federal monies in a variety of programs.

Flexible Funds

Metro manages the allocation of regional federal flexible funds. These funds come from two federal funding sources: the Surface Transportation program (STP) and the Congestion Mitigation/Air Quality program (CMAQ). These funds can be spent on a wide variety of projects. In the most recent funding round, $24 million was made available to Metro jurisdictions for various projects, including transit oriented development, high capacity transit, transportation system management, and regional planning projects. Funding is allocated through a competitive process.

Regional Travel Options grants

Metro also manages this federal grant source, distributing over $500,000 to several projects in the Metro region in the most recent round of funding. Projects are selected through a competitive process. Projects that improve air quality, address community health, reduce auto traffic or create more opportunities for walking and biking are all eligible for funding.

Nature in Neighborhoods Grants

Metro provides funds to communities to add vegetation and natural features in neighborhoods. Funds for Nature in Neighborhoods come from the voter-approved 2007 natural areas bond measure. Projects awarded grants

[34] From www.oregon.gov/oprd/GRANTS/Pages/index.aspx

involve the community, foster diverse partnerships and innovate, leading to bigger social and economic benefits, from jobs and economic development to livable neighborhoods and clean air. Metro has awarded $6.6 million to 23 projects. Up to $2.25 million is available annually, with $15 million available through the life of the program.

County Funding Sources

Washington County Gas Tax

Tualatin receives approximately $90,000 per year currently in county gas tax revenue. These funds can be spent on a wide variety of transportation projects, though are currently only spent on construction and maintenance of City streets.

Washington County Major Streets Transportation Improvement Program (MSTIP)

Washington County's MSTIP program provides funding for major transportation improvements on roads throughout the county. The program is funded through property taxes with approximately $35 million available each year. MSTIP has funded a wide variety of projects, including expansion of Highway 26, Intelligent Transportation System (ITS) and signal upgrades to Tualatin-Sherwood Road and numerous bicycle and pedestrian improvements. Only roads classified in the Washington County Functional Classification system are eligible for funding from MSTIP. Roads that would be eligible under this program include Tualatin-Sherwood Road, Boones Ferry Road, Nyberg Road, 65th Avenue, Sagert Street, and several others. Tualatin does not have any projects identified for funding in the current 5 year MSTIP program (MSTIP 3d), but several projects just outside the city, including the extension of 124th Avenue south to Tonquin Road, are funded. The city can continue to pursue funding for major improvements on these streets through this dedicated funding source.

Washington County Minor Betterment Program

Washington County administers the Minor Betterment Program (MBP), funded by an allocation from the County Road Fund (County Gas Tax). The Program funds small-scale interim improvements beyond routine maintenance but not large enough to be programmed as capital improvements. MBP projects are site-specific enhancements to the county's transportation system, projects are typically interim and intended to supplement routine maintenance and capital improvements. Eligible projects need to be on a county road, improve or resolve a specific situation, and address safety, capacity, environmental and/or connectivity issues. In fiscal year 2013/14 the County is funding sidewalk completing along SW Grahams Ferry Road with this funding source.

Local Funding Sources

Major local funding sources include general fund revenues, road utility fees, system development charges, and the City's share of State Highway Fund revenue.

Road Utility Fees

This fee is assessed to all residential and non-residential properties in the city of Tualatin to fund upkeep of the City's road system. Approximately $650,000 in fee revenue was forecast for FY 2011. These revenues are made available exclusively for road maintenance. These fees represent a significant source of funding for maintenance of existing roads. Per city code (TMC 3-4), these funds may be spent on pavement rehabilitation, sidewalk maintenance, landscaping enhancements, replacing street trees and street lighting.

Transportation Development Taxes (TDT)

Transportation Development Taxes (TDT) are one-time fees on new development that compensate for the increased traffic associated with new development, and are system development charges or impact fees for transportation. The City has authorized the collection of transportation system development charges since 1991. The former county-managed Transportation Impact Fee (TIF) program has been replaced with the Transportation Development Tax (TDT), approved by voters in 2008. TDTs cannot be expended on transportation operations or maintenance projects, and may be used exclusively for capital improvement projects. These taxes are payable to the City when a building or other development permit is issued. The outlook for TDT revenue is very uncertain, given limited development during the current economic downturn.

Potential Other Funding Sources for Future Projects

The following funding sources and strategies may be available to the City in addition to the established programs listed above.

Department of Energy: Energy Efficiency and Conservation Block Grants (EECBG)

This program was initially funded through the American Recovery and Reinvestment Act of 2009. The current funding authorization expired in April 2012. Future funding for this program is currently uncertain. The program provided formula grants to states and competitive grants for projects that reduce fossil fuel emissions, reduce total energy use of eligible grantees, and improve energy efficiency of transportation and other sectors. Tualatin may be eligible for competitive grants if this program is funded in future federal budgets.

Local Improvement Districts (LID)

LIDs are created by property owners within a district of a city to raise revenues for constructing improvements within the district boundaries. LIDs may be used to assess property owners for improvements that benefit properties and are secured by property liens. Property owners typically enter into LIDs because of the economic or personal advantages of the improvements. The City would work with property owners to acquire financing at lower interest rates than under typical financing methods. The formation of LIDs is governed by state law and local jurisdictional development codes. LID revenues can only be used on capital projects. LID revenues can be combined with other revenue sources to fully fund projects.

Transit Utility Fee

A number of jurisdictions in Oregon have implemented transportation utility fees that fund road system maintenance, transportation improvements, and transit service. The city of Corvallis, Oregon recently enacted a Transit Utility Fee in 2011 to support transit operations. These fees are typically collected on monthly residential and business utility bills and assessed on a per-housing unit basis, with businesses and industry charged rates based on the type of business or number of employees. A modest monthly transit utility fee could fund capital improvements and transit operations in Tualatin. Fee revenue can also be used to support or improve existing transit services in Tualatin, like the Tualatin Chamber of Commerce Shuttle service. A transit utility fee would provide dedicated and reliable funding for transit projects identified in the Transit Plan.

Urban Renewal Areas

The City of Tualatin has successfully implemented two urban renewal areas over the past 25 years in the central area and Leveton. Both Urban renewal areas have expired and are no longer collecting revenue. Urban Renewal Areas (URA) remain an option for the City in the future whereby tax increment financing (TIF) can be used for a variety of improvements within the URA. With TIF, the county assessor "freezes" the assessed value of properties within the URA and the property taxes collected above those that were collected when the property values were frozen are used to pay for improvements within the URA. This financing method assumes that property values within the urban renewal area will increase over time. URA designations are primarily used as an economic development tool, but may be useful for targeting areas in the City with serious improvement needs.

Revenue and General Obligation Bonds

Bonding allows municipal and county government to finance construction projects by borrowing money and paying it back over time, with interest. Financing requires smaller regular payments over time compared to paying the full cost at once, but financing increases the total cost of the project by adding interest. General Obligation Bonds are often used to pay for construction of large capital improvements and must be approved by a vote of the public. These bonds add the cost of the improvement to property taxes over a period of time. Tualatin could consider issuing a General Obligation Bond to pay for significant transportation improvement projects identified within the City.

Parking Fees

The City does not currently charge for parking, but does charge an annual fee to business owners in the "core area parking district" that funds parking maintenance in the immediate core area. Income generated by charging parking fees could be used to implement a variety of transportation projects. The collection system would require purchase of parking meter infrastructure, careful study of where to install meters, and analysis of the appropriate fee amount to charge drivers.

Prioritization

Prioritization of projects within this TSP is separated into three categories: short-term, medium-term, and long-term. Short term projects are expected to be built within 0-5 years, while medium-term are 5-10 years, and long-term projects are expected to be built in the 10-20 year time frame. Prioritization is determined based on a combination of the most important projects to implement first, the ease of implementation, and the potential cost – some projects will take a number of years to identify and secure funding. Some projects will also need regional coordination and support, which may take time to secure an agreement. Prioritization is an estimate: long-term projects may be implemented sooner than 10-20 years due to funding becoming available, a high degree of community support or other factors. The suggested priority for projects in this TSP is a general guide, and not a required timeframe.

Fiscally Constrained TSP Project List

Based on an analysis of existing and likely future funding sources, the Project Team assumed the City of Tualatin will have around $16 million in funds for transportation over the next 20 years. All projects currently labeled short and medium-term projects fall within this constrained list, with the exception of upgrading SW Myslony Street (R5). The fiscally constrained list represents the likely projects that the City will be able to fund before the next TSP update. The long-term priorities (and the project on SW Myslony Street) that are more expensive and complex are the preferred transportation system in Tualatin, and the City will need to look for additional funding such as grants and potential borrowing strategies to implement these projects. These projects will also likely require a suite of funding strategies to implement.

Policy and Code Language

In preparing implementation measures for the TSP, the project team evaluated the City's TSP and development code for compliance with the TPR and the RTFP. These state and regional regulations are intended to increase the amount of coordination between public agencies, protect transportation investments, support efficient urban development, and promote the use of modes other than single-occupancy vehicles . The project team found that the TSP and development code were largely in compliance with the TPR and RTFP, but that some updates to policy and code would be needed for full compliance. The evaluation findings are included in the TSP as Appendix F.

There were limited compliance issues and needed amendments identified through the process of evaluating the City's development code against TPR and RTFP requirements. The proposed code amendments represent refinements to the code, and in most cases they are minor or administrative. The following represent the types of amendments proposed to implement the TSP and comply with state and regional regulations:

- Supporting more communication between the City and transportation-related agencies on applications for architectural review and proposed plan amendments
- Extending requirements for short and direct pedestrian and bicycle routes to general multi-family housing, commercial, industrial, public, and semi-public development
- Treating long and wide driveways more like streets in terms of lining up and connecting with other streets
- Setting up conditions when crossings on transit streets need to be provided
- Allowing on-street parking to count toward off-street parking requirements
- Differentiating existing bicycle parking requirements into long-term and short-term bicycle parking
- Permitting on-street freight loading under certain conditions

These proposed amendments will be carried through the hearings and adoption process concurrently with the TSP document itself. Language for proposed code changes can be requested from City Staff.

Tualatin TSP Policies

The following TSP policies were included in each of the modal plans, and repeated here for quick reference.

Functional Classification

- **Functional Classification Policy 1:** Major and minor arterials will comprise the main backbone of the freight system, ensuring that freight trucks are able to easily move within, in, and out of the City
- **Functional Classification Policy 2:** Continue to construct existing and future roadways to standard when possible for the applicable functional classification to serve transportation needs within the City

Roadway

- **Roadway Policy 1:** Implement design standards that provide clarity to developers while maintaining flexibility for environmental constraints.
- **Roadway Policy 2:** Ensure that street designs accommodate all anticipated users including transit, freight, bicyclists and pedestrians, and those with limited mobility.
- **Roadway Policy 3:** Work with Metro and adjacent jurisdictions when extending roads or multi-use paths from Tualatin to a neighboring City.

Access Management

- **Access Management Policy 1:** No new driveways or streets on arterial roadways within the City, except where noted in the TDC, Chapter 75, usually when no alternative access is available
- **Access Management Policy 2:** Where a property abuts an arterial and another roadway, the access for the property shall be located on the other roadway, not the arterial
- **Access Management Policy 3:** Adhere to intersection spacing included in Chapter 75 of the TDC
- **Access Management Policy 4:** Limit driveways to right-in, right-out (where appropriate) through raised medians or other barriers to restrict left turns
- **Access Management Policy 5:** Look for opportunities to create joint accesses for multiple properties, where possible, to reduce the number of driveways on arterials
- **Access Management Policy 6:** No new single-family home, duplex or triplex driveways on major collector roadways within the City, unless no alternative access is available
- **Access Management Policy 7:** On collector roadways, residential, commercial and industrial driveways where the frontage is greater or equal to 70 feet are permitted. Minimum spacing at 100 feet. Uses with less than 50 feet of frontage shall use a common (joint) access where available

Transit

- **Transit Policy 1:** Partner with TriMet to jointly develop and implement a strategy to improve existing transit service in Tualatin.
- **Transit Policy 2:** Partner with the Tualatin Chamber of Commerce to support grant requests that would expand the Tualatin Shuttle services.
- **Transit Policy 3:** Partner with TriMet, Metro, and neighboring communities to plan the development of high-capacity transit in the Southwest Corridor, as adopted in the Metro High Capacity Transit System Plan.
- **Transit Policy 4:** Partner with TriMet, Metro, and neighboring communities to plan development of high-capacity transit connecting Tualatin and Oregon City, as adopted in the Metro High Capacity Transit System Plan.
- **Transit Policy 5:** Coordinate with ODOT and neighboring communities on conversations related to Oregon Passenger Rail between Portland and Eugene.

- **Transit Policy 6:** Develop and improve pedestrian and bicycle connections and access to transit stops.
- **Transit Policy 7:** Encourage higher-densities near high-capacity transit service.
- **Transit Policy 8:** Metro in the RTP calls for increased WES service frequency. The City will coordinate with TriMet, Metro, and ODOT to explore service frequency improvements and the possible inclusion of a second WES station in south Tualatin.

Bicycle and Pedestrian

- **Bicycle and Pedestrian Policy 1:** Support Safe Routes to Schools (SRTS) for all Tualatin schools
- **Bicycle and Pedestrian Policy 2:** Work with partner agencies to support and build the Ice Age Tonquin Trail
- **Bicycle and Pedestrian Policy 3:** Allow wider sidewalks downtown for strolling and outdoor cafes
- **Bicycle and Pedestrian Policy 4:** Add benches along multi-use paths for walkers throughout the City (especially in the downtown core)
- **Bicycle and Pedestrian Policy 5:** Develop and implement a toolbox, consistent with Washington County, for mid-block pedestrian crossings
- **Bicycle and Pedestrian Policy 6:** Implement bicycle and pedestrian projects to help the City achieve the regional non-single-occupancy vehicle modal targets in Table 16 (earlier in this chapter; its source is the RTFP)
- **Bicycle and Pedestrian Policy 7:** Implement bicycle and pedestrian projects to provide pedestrian and bicycle access to transit and essential destinations for all mobility levels, including direct, comfortable, and safe pedestrian and bicycle routes
- **Bicycle and Pedestrian Policy 8:** Ensure that there are bicycle and pedestrian facilities at transit stations
- **Bicycle and Pedestrian Policy 9:** Create on- and off-street bicycle and pedestrian facilities connecting residential, commercial, industrial, and public facilities such as parks, the library, and school
- **Bicycle and Pedestrian Policy 10:** Create obvious and easy to use connections between on- and off-street bicycle and pedestrian facilities, and integrate off-street paths with on-street facilities

Freight

- **Freight Policy 1:** Continue to coordinate with PNWR and TriMet to ensure that railroad crossings are safe and have few noise impacts on adjacent neighborhoods
- **Freight Policy 2:** Look for opportunities to shift goods shipments to rail to help reduce the demand for freight on Tualatin's roads.
- **Freight Policy 3:** Look for opportunities to create multi-modal hubs to take advantage of the freight rail lines

Transportation Demand Management

- **TDM Policy 1:** Support demand reduction strategies, such as ride sharing, preferential parking, and flextime programs
- **TDM Policy 2:** Partner with the Chamber of Commerce, the Westside Transportation Alliance, major employers, and business groups to implement TDM programs
- **TDM Policy 3:** Explore the use of new TDM strategies to realize more efficient use of the City's transportation system

- **TDM Policy 4:** Support Washington County's regional TDM programs and policies to reduce the number of single-occupancy vehicle (SOV) trips
- **TDM Policy 5:** Promote the use and expansion of the Tualatin Shuttle program

Performance Measures

Metro's *Regional Transportation Plan* requires the following performance measures in a City's TSP: safety, vehicle miles traveled per capita, freight reliability, congestion, and walking, bicycling and transit mode shares to evaluate and monitor performance of the TSP. The Table below includes the measure categories, the specific performance measures for the Tualatin TSP, the applicable system deficiencies, and the associated TSP projects that help address the deficiencies, and thus, help meet the performance measures.

Category	Metro's 2035 Performance Metrics	Tualatin TSP Performance Measure	Tualatin System Deficiencies	Tualatin TSP projects that address the deficiencies
Safety	By 2035, reduce the number of pedestrian, bicyclist, and motor vehicle occupant fatalities plus serious injuries each by 50% compared to 2005.	Reduce fatalities for drivers, walkers, and bikers from existing conditions Address known deficiencies and high-accident areas as high-priority projects Reduce the number of County and State SPIS sites within the City.	The three high crash locations in Tualatin are Tualatin-Sherwood Road/ Boones Ferry, Tualatin-Sherwood Road/ Martinazzi, and SW Nyberg Street/I-5 Southbound ramps. The first two of these roads are also on the Washington County's SPIS list along with the Lower Boones Ferry and Bridgeport intersection. ODOT's nearby SPIS locations are limited to I-5 and OR 99W.	Projects at the Nyberg interchange and I-5 will improve safety for bicyclists and pedestrians. The suite of intersection upgrades at Tualatin-Sherwood Road/ Boones Ferry and Tualatin-Sherwood Road/Martinazzi will address both congestion and safety. Completing the multi-use path network and bicycle improvements near Lower Boones Ferry and Bridgeport will reduce conflicts between vehicles and bicyclists and improve safety for all users.

Category	Metro's 2035 Performance Metrics	Tualatin TSP Performance Measure	Tualatin System Deficiencies	Tualatin TSP projects that address the deficiencies
Congestion	By 2035, reduce vehicle hours of delay (VHD) per person by 10 percent compared to 2005	On Washington County and ODOT owned roads the v/c is less than or equal to 0.99 On City roads, LOS D or E depending on the road In downtown Tualatin (a Metro designated Town Center) – 2-hour peak hour standards: • First peak hour the v/c is less than or equal to 1.1 • Second peak hour the v/c is less than or equal to 0.99	Analysis shows two intersections not meeting standards (SW Teton Ave/SW Tualatin Road, and SW Martinazzi Ave/SW Sagert) which increased to 11 intersections in the future conditions analysis	Roadway capacity and intersection optimization projects improve traffic flow and help maintain future congestion within the existing standards. Additionally, the TDM/TSM programs, increased transit, and more complete bicycle and pedestrian network will help reduce vehicle demand on roads within Tualatin. The preferred system of transportation improvements meets the relevant requirements for Town Centers.

Category	Metro's 2035 Performance Metrics	Tualatin TSP Performance Measure	Tualatin System Deficiencies	Tualatin TSP projects that address the deficiencies
Freight Reliability	By 2035, reduce vehicle hours of delay truck trip by 10 percent compared to 2005	Reduce vehicle delay for truck trips on identified truck routes Improve reliability for truck trips on identified truck routes	A number of freight routes within the City experience delay currently, including the roads around the downtown core (SW Tualatin-Sherwood Road, SW Boones Ferry Road, and SW Martinazzi Avenue). Travel times during the afternoon peak hour are not predictable, and delay can vary from day to day, increasing transportation costs for businesses that rely on shipping.	Optimizing signal timing on regional roadways, encouraging off-peak travel on both SW Herman Road, and SW Tualatin-Sherwood Road help reduce truck delay. Capacity projects on Tualatin-Sherwood Road, sections of Avery, Teton, Herman, Myslony, and others, as well as turn lane, intersection configurations, and coordinated signals at specific locations help reduce vehicle hours of delay.

Category	Metro's 2035 Performance Metrics	Tualatin TSP Performance Measure	Tualatin System Deficiencies	Tualatin TSP projects that address the deficiencies
Walking, Biking, Transit, and Non-SOV	By 2035, triple walking, biking, and transit mode share compared to 2005. Town Center mode share is 45-55% non-drive alone modal target for Downtown Tualatin and 40-45 percent for other areas of the City.	Implement policies and projects to move towards the regional non-SOV mode share for the appropriate areas in the City Work toward achieving the Metro non-SOV mode share targets of 45 to 55 percent for Downtown Tualatin and 40 to 45 percent for other areas of the City.	There are a number of gaps in the sidewalk, bike lane, and multi-use path network in Tualatin. There are also few wayfinding signs to direct pedestrians and bicyclists to the existing multi-use paths. Current mode share for those traveling to work who live in Tualatin is 77.6 percent drive to work alone, 7.4 percent carpool, 4.2 percent take transit, 2.9 percent walk, and 0.4 percent bicycle.	The TDM/TSM programs, increased transit, and more complete bicycle and pedestrian network will help increase the percentage of residents in Tualatin who walk, bicycle, take transit, and carpool in the downtown core and other areas of the City.
Climate Change	By 2035 reduce transportation related carbon dioxide emissions by 40 percent below 1990 levels	Strive to reduce VMT per capita by 10 percent compared to 2010	There are more jobs in Tualatin than there are workers to fill those jobs in the City, additionally, 75 percent of residents in Tualatin work outside of the City, which increases VMT per capita.	The TDM/TSM programs, increased transit, and more complete bicycle and pedestrian network will help decrease per capita VMT and the associated transportation-related emissions to meet this performance measure.

The projects and policies included in the Tualatin TSP meaningfully contribute towards Metro achieving its performance metrics by addressing safety concerns, reducing congestion, improving freight reliability, and providing non-driving options that help affect mode split and VMT per capita. Combined with other metropolitan area cities Tualatin's TSP will help Metro reach its 2035 Performance Targets.

Appendix A
Plan and Policy Review

Appendix A: Plan and Policy Review

Appendix B
Existing Conditions and Deficiencies

Appendix B: Existing Conditions and Deficiencies

Appendix C
Future Transportation Conditions

Appendix C: Future Transportation Conditions

Appendix D
Alternatives Analysis

Appendix D: Alternatives Analysis

Appendix E
Transportation Funding and Improvement Costs

Appendix E: Transportation Funding and Improvement Costs

Appendix F
Implementing Ordinances

Appendix F: Implementing Ordinances

Appendix G
Public Involvement Process

Appendix G: Public Involvement Process

Appendix H
Bicycle and Pedestrian Plan

TUALATIN TRANSPORTATION SYSTEM PLAN

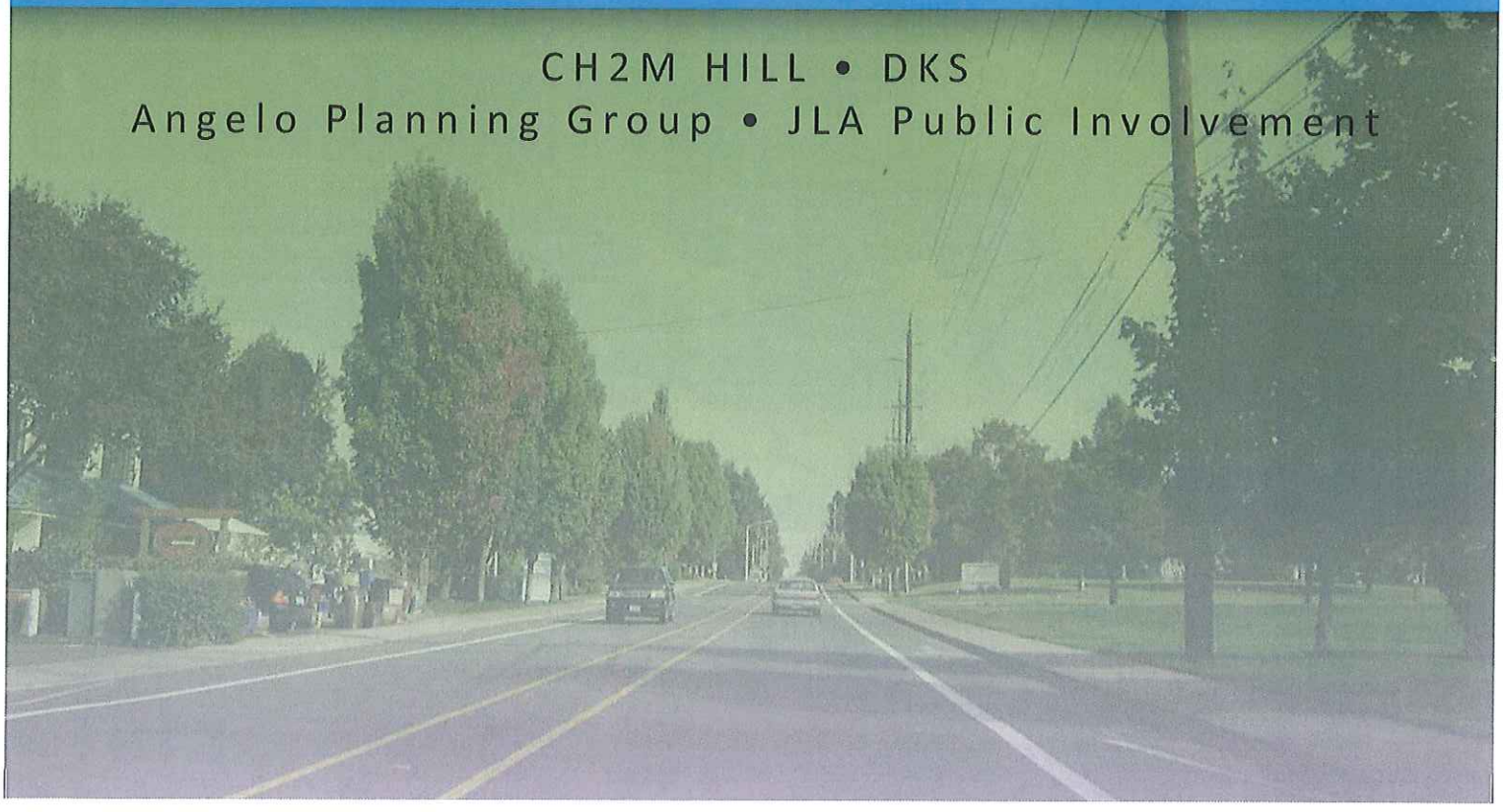
City of Tualatin

Transportation System Plan Update

Appendixes

February 2013

CH2M HILL • DKS
Angelo Planning Group • JLA Public Involvement



Revised Tualatin Transportation System Plan Update
Volume II: Appendixes

Prepared for

City of Tualatin

February 2013

CH2MHILL®

Contents

Appendixes

A Plan and Policy Review
B Existing Conditions and Deficiencies
C Future Transportation Conditions
D Alternatives Analysis
E Transportation Funding and Improvement Costs
F TPR and RTFP Compliance
G Public Involvement Process
H Bicycle and Pedestrian Plan

Appendix A
Plan and Policy Review

This Appendix provides a policy framework for the update of the City of Tualatin Transportation System Plan (TSP) using state, regional, and local policies, plans, and regulations. The City's current TSP served as the foundation for the update process. Compliance and coordination with the existing plans, policies and regulations described is required as part of the plan update process. This policy framework was used throughout the TSP update process as a decision-making tool and assisted in developing proposed amendments to local planning documents as needed and making findings of compliance with adopted plans and regulations.

Transportation system planning in Oregon is required by state law pursuant to Goal 12, "Transportation," one of the 19 statewide planning goals. Oregon Revised Statute 660-012, the Transportation Planning Rule (TPR) defines how to implement Statewide Planning Goal 12. The TPR requires that the state prepare a TSP (the Oregon Transportation Plan or "OTP"), that Metro prepare a Regional Transportation Plan (RTP), and that the city prepare a TSP that is consistent with both. Since the City's former TSP was adopted in 2001, new policies and requirements were adopted or considered for adoption, in the OTP, the Oregon Highway Plan (the roadway element of the OTP), the TPR, and the Metro RTP. In addition to State and Regional policy requirements and standards, the updated TSP must reflect, or be consistent with, the policies, objectives, recommendations and requirements of other locally adopted policy and regulatory documents. How these documents relate to transportation planning in Tualatin is explained in this Appendix.

The following matrix provides a quick reference tool that indicates how the regulatory documents in this review relate to elements of the TSP update planning process. Elements include: transportation policy, transportation design standards, pedestrian/bicycle connectivity, transportation improvement projects, and development ordinance requirements. Each document is also categorized under a heading of State, Regional, or Local Plans and Regulations.[1]

[1] Note: Highlighted documents were not available for review, but have been identified as having significance for the TSP update. Information from these documents will be considered during the planning process, as it becomes available.

Policy/Regulatory Document	Tualatin Transportation Planning Elements				
	Transportation Policy	Transportation Design Standards	Pedestrian/ Bicycle Connectivity	Transportation Improvement Project List	Development Ordinance Requirements
State Plans and Regulations					
Oregon Transportation Plan	✓				
Oregon Highway Plan	✓	✓			
Oregon Bicycle and Pedestrian Plan	✓	✓	✓		
Department of Transportation Coordination Rules (OAR 731-015)	✓				
Access Management Rules (OAR 734-051)		✓			
Transportation Planning Rule (OAR 660-012)	✓				✓
Statewide Transportation Improvement Program (STIP)				✓	
Statewide Planning Goals	✓		✓		
I-5 to 99W Connector Project	✓			✓	
State Comprehensive Outdoor Recreation Plan (2008-2012)	✓		✓		
Regional Plans and Regulations					
Metro Regional Framework Plan	✓	✓			
Metro 2035 Regional Transportation Plan (RTP)	✓	✓	✓	✓	
Metro Regional Transportation Functional Plan (RTFP)			✓		✓
Metro High Capacity Transit Plan	✓			✓	

Policy/Regulatory Document	Tualatin Transportation Planning Elements				
	Transportation Policy	Transportation Design Standards	Pedestrian/ Bicycle Connectivity	Transportation Improvement Project List	Development Ordinance Requirements
High Capacity Transit System Expansion Policy: Implementation Guidance for the Portland Metropolitan Region (2011)	✓			✓	
1992 Metro Greenspaces Master Plan			✓		
2007 Regional Trails and Greenways Map			✓		
Transportation and Land Use Implementation Guidance for the Portland Metropolitan Region	✓				✓
Southwest Corridor Plan (in progress)	✓		✓	✓	
TriMet 2011 TIP				✓	
TriMet Bike Parking Guidelines	✓				✓
Local Plans and Regulations					
City of Tualatin Comprehensive Plan	✓				
City of Tualatin Transportation System Plan (2001)	✓	✓	✓	✓	✓
City of Tualatin Bikeway Plan (1993)	✓	✓	✓	✓	
City of Tualatin Development Code (TDC)		✓	✓		✓
City of Tualatin Parks and Recreation Master Plan (1983)			✓		
City of Tualatin Greenway Development Plan (1995)			✓		
City of Tualatin Capital Improvement Plan (in progress)			✓	✓	

Policy/Regulatory Document	Tualatin Transportation Planning Elements				
	Transportation Policy	Transportation Design Standards	Pedestrian/ Bicycle Connectivity	Transportation Improvement Project List	Development Ordinance Requirements
Tualatin Tomorrow Community Vision and Strategic Action Plan (2009)	✓		✓		
Hedges Creek Wetlands Master Plan (2002)			✓		
Downtown Parking Plan (in progress)	✓				✓
Northwest Concept Plan (NWCP) (March 2005)	✓		✓	✓	
Southwest Concept Plan (SWCP) (2011)	✓				
Town Center Plan (2005)	✓		✓	✓	
Town Center Plan (update in progress)	✓		✓		
Tualatin Town charter Chapter XI	✓				
Urban and Rural Reserve Planning	✓				
Basalt Creek Intergovernmental Agreement	✓				
Clackamas County Comprehensive Plan	✓				
Clackamas County Zoning and Development Ordinance		✓	✓		✓
Clackamas County Transportation System Plan (2001)	✓	✓	✓	✓	✓
Clackamas County Capital Improvement Plan				✓	
Washington County Comprehensive Plan	✓				
Washington County Capital Improvement Program				✓	
Washington County 2020 Transportation Plan (2003)	✓	✓	✓	✓	✓

The following provides page numbers for the plans and documents reviewed in this Appendix:

State Plans and Regulations **6**
Oregon Transportation Plan 6
Oregon Highway Plan 6
Oregon Bicycle and Pedestrian Plan 10
Department of Transportation Coordination Rules (OAR 731-015) 11
Access Management Rules (OAR 734-051) 11
Transportation Planning Rule (OAR 660-012) 12
2010-2013 Statewide Transportation Improvement Program (STIP) 14
Statewide Planning Goals 15
I-5 to 99W Connector Project 17
State Comprehensive Outdoor Recreation Plan (2008-2012) 18
Regional Plans and Regulations **19**
Metro Regional Framework Plan 19
Metro 2035 Regional Transportation Plan (RTP) 19
Metro Regional Transportation Functional Plan (RTFP) 26
Metro High Capacity Transit Plan 27
High Capacity Transit System Expansion Policy: Implementation Guidance for the Portland Metropolitan Region (May 2011) 28
1992 Metro Greenspaces Master Plan 29
2007 Regional Trails and Greenways Map 31
Transportation and Land Use Implementation Guidance for the Portland Metropolitan Region (May 2011) 32
Southwest Corridor Plan (in progress) 33
TriMet 2011 TIP 34
TriMet Bike Parking Guidelines 35
Local Plans and Regulations **35**
City of Tualatin Comprehensive Plan 35
City of Tualatin Transportation System Plan (2001) 36
City of Tualatin Bikeway Plan (1993) 36
City of Tualatin Development Code (TDC) 36
City of Tualatin Parks and Recreation Master Plan (1983) 38
City of Tualatin Greenway Development Plan (1995) 38
City of Tualatin Capital Improvement Plan (in progress) 39
Tualatin Tomorrow Community Vision and Strategic Action Plan (2009) 39
Hedges Creek Wetlands Master Plan (2002) 41
Downtown Parking Plan (in progress) 42
Northwest Concept Plan (NWCP) (March 2005) 42
Southwest Concept Plan (SWCP) (Adopted April 2011) 43
Town Center Plan (Final Report, 2005) 44
Tualatin Charter Chapter XI 45
Urban and Rural Reserve Planning 45
Basalt Creek Intergovernmental Agreement 46
Clackamas County Comprehensive Plan 47
Clackamas County Zoning and Development Ordinance 47
Clackamas County Transportation System Plan (2001) 47
Clackamas County Capital Improvement Plan 48
Washington County Comprehensive Plan 48
Washington County Capital Improvement Program 49
Washington County 2020 Transportation Plan (2003) 49

State Plans and Regulations

Oregon Transportation Plan

Originally adopted in 1992, the Oregon Transportation Plan (OTP) is a policy document developed by ODOT in response to federal and state mandates for systematic planning for the future of Oregon's transportation system. The OTP is intended to meet statutory requirements (ORS 184.618(1)) to develop a state transportation policy and comprehensive long-range plan for a multi-modal transportation system that addresses economic efficiency, orderly economic development, safety, and environmental quality. The 2006 OTP expands on the policy objectives of the 1992 plan, with an emphasis on maintaining assets in place,[2] optimizing existing system performance through technology and better system integration, creating sustainable funding, and investing in strategic capacity enhancements.

The OTP's goals, policies, and strategies guide the development of state multimodal, modal/topic[3] and facility plans and regional and local transportation system plans. The OTP provides the framework for prioritizing transportation improvements and funding, but it does not identify specific projects for development.[4] As required by Oregon and federal statutes, the OTP guides development and investment in the transportation system through:

- Transportation goals and policies,
- Transportation investment scenarios and an implementation framework, and
- Key initiatives to implement the vision and policies.

Goals in the OTP include: Mobility and Accessibility; Management of the System; Economic Vitality; Sustainability; Safety and Security; Funding the Transportation System; and Coordination, Communication and Cooperation. Policies and strategies under many of these goals emphasize increasing coordination and cooperation among federal and state agencies, regional and local governments and private entities to achieve these goals.

The Implementation Framework section of the OTP describes the implementation process and clarifies that more specific plans, such as state multimodal, modal/topic plans, regional and local transportation system plans will be relied upon to further refine the OTP's broad policies and investment levels.

Oregon Highway Plan

The Oregon Highway Plan (OHP), an element and modal plan of the state's comprehensive transportation plan (OTP), guides the planning, operations, and financing of ODOT's Highway Division. The OHP defines policies and investment strategies for Oregon's state highway system. The plan contains three elements: a vision element that describes the broad goal for how the

---

[2] The OTP defines "asset management" as a "systematic process of maintaining, upgrading and operating physical assets cost-effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision-making. Asset management provides a framework for handling both short- and long-range planning."

[3] Modal or topic plans, as developed by ODOT and other state agencies, include plans for aviation, bicycle and pedestrian facilities, highways, marine ports and waterways, public transportation and rail.

[4] Projects are identified through facility plans and regional and local transportation system plans, and sometimes through modal plans.

highway system should look in 20 years; a policy element that contains goals, policies, and actions to be followed by state, regional, and local jurisdictions; and a system element that includes an analysis of needs, revenues, and performance measures.

The OHP addresses the following issues:

- Efficient management of the system to increase safety, preserve the system, and extend its capacity
- Increased partnerships, particularly with regional and local governments
- Links between land use and transportation
- Access management
- Links with other transportation modes
- Environmental and scenic resources.

Policies and actions that are particularly relevant to the Tualatin TSP are described in the following subsections.

Policy 1A: State Highway Classification System

The state highway classification system includes five classifications: Interstate, Statewide, Regional, District, and Local Interest Roads. In addition, there are four special purpose categories that overlay the basic classifications: land use, statewide freight and truck routes, scenic byways, and lifeline routes. State highways are classified for planning and management purposes.

State facilities in the city of Tualatin and their roadway classifications include:

- Pacific Highway/I-5 (No. 1), MP 287.94 to MP 290.54 – Interstate, NHS, Freight Route, Truck Route
- East Portland Freeway/I-205 (No. 64) – Interstate, NHS, Freight Route, Truck Route
- OR 99W (No. 1W (91)), MP 12.20 to MP. 13.32 – Statewide Highway, NHS, Freight Route, Truck Route
- Beaverton-Tualatin Highway (No. 141), MP 8.59 to MP 8.66 – District Highway.

I-5 and I-205 are Interstate Highways that are part of the National Highway System (NHS). As such, their main purpose is to provide mobility, safe and efficient high-speed traffic operation and connections to major cities, regions of the state, and other states while providing connections to cities and other destinations. They are also designated as state freight and truck routes.

OR 99W is a Statewide Highway that is part of the NHS. It is intended to provide mobility, safe and efficient, high-speed, continuous-flow operation, and connections between and within cities and regions in the state, including connections to larger urban areas and areas that are not directly served by Interstate Highways.

Beaverton-Tualatin Highway (Boones Ferry Road) is a District Highway. District Highways serve primarily as county and city arterials or collectors and provide connections between smaller urban areas, rural centers, and urban hubs as well as local access. They are intended for safe and efficient, moderate to high-speed continuous-flow operation in rural areas, and moderate to low-speed operation in urban and urbanizing areas particularly to accommodate pedestrian and bicycle traffic. Like statewide highways, special land use designations made along segments of district highways may give more priority to mobility or local access.

Policy 1B: Land Use and Transportation

Policy 1B recognizes the role of both the State and local governments related to the state highway system and calls for a coordinated approach to land use and transportation planning. The City is not seeking special land use designations, such as a Special Transportation Area (STA), for roadway segments along the State system, as allowed in this policy, as part of the TSP update process.

Policy 1C: State Highway Freight System

Policy 1C addresses the need to balance the movement of goods and services with other uses. Action 1C.4 states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes. In Tualatin, I-5, I-205 and OR 99W are designated freight routes.

Policy 1F: Highway Mobility Standards

Policy 1F sets mobility standards for ensuring a reliable and acceptable level of mobility on the highway system. The standards are used to assess system needs as part of long range, comprehensive planning transportation planning projects (such as this TSP update), during development review, and to demonstrate compliance with the Transportation Planning Rule (TPR). Mobility standards specifically for the Portland metropolitan region are included in Policy 1F, Table 7, as well as in the Regional Transportation Plan (RTP), which is reviewed later in this Appendix.

Policy 1F has been revised and the Oregon Transportation Commission (OTC) adopted the amendments at its December 21, 2011 hearing. These amendments occurred following development of Oregon Administrative Rule (OAR) 731-017 that implemented House Bill (HB) 3379[5]. Following adoption of OAR 731-017 there was broad recognition of the need for expanded work to address TPR and Oregon Highway Plan OHP issues.[6] The OTC and Land Conservation and Development Commission (LCDC) established the Joint Subcommittee on the TPR and OHP in response to Senate Bill 795[7] and concerns that the existing rules and plans have led to unintended consequences and inhibited economic development. The OHP Mobility Standards Technical Advisory Committee assisted in the development of potential OHP policy amendments, consistent with the direction from the Joint Subcommittee. The amended Policy 1F standardizes a policy framework for considering measures other than volume to capacity ratios. Background and actions in the revised policy language provide additional flexibility in developing and applying alternate mobility standards and generally address concerns on limitations of peak hour v/c ratio measures through new or amended policies that provide the opportunity to better balance multimodal transportation, land use, and economic development considerations.

In addition, OHP Tables 6 and 7 have been amended and the v/c ratios are referred to as "targets." The language clarifies that Policy 1F applies primarily to transportation and land use planning

---

[5] The OTC was directed to adopt an administrative rule through HB 3379 (2009) that establishes an application process local governments may use if they are not able to meet the funding requirements of the TPR. Local governments would be able to consider time extensions, alternative funding methods and transportation performance measure changes with HB 3379 applications. The legislation includes limitations on the process to be described in the administrative rule, including OTC approval of no more than four applications in each ODOT Region per calendar year. See a review of the TPR later in this document.

[6] Many of these tasks were identified during HB 3379 Stakeholder Committee discussions; other issues were raised with LCDC and formal requests were made for additional work on the TPR and OHP.

[7] SB 795 requires LCDC to adopt revisions to transportation planning rule for purposes of streamlining, simplifying and clarifying certain aspects of rule before January 1, 2012.

decisions. By defining targeted levels of highway system mobility, the policy provides direction for identifying (vehicular) highway system deficiencies, but does not prescribe what actions should be taken to address the deficiencies. With respect to plan amendments, the Highway Mobility Policy (still) establishes ODOT's mobility targets for state highways as the standards for determining compliance and compliance with the TPR (OAR 660-012-0060). The targets in Table 6, Volume to Capacity Ratios for Peak Hour Operating Conditions, have all been modified to allow for a greater level of congestion in certain circumstances and locations. Table 7, which contains the volume to capacity ratios for facilities inside the Portland metro area, has been modified only slightly.

Policy 1G: Major Improvements

Policy 1G requires maintaining performance and improving safety by improving efficiency and management before adding capacity. The intent of this policy, is to ensure that major improvement projects on state highway facilities have been through a coordinated planning process involving state, regional, and local stakeholders and the public, and that there is substantial support for the proposed improvement.

Policy 2B: Off-System Improvements

Policy 2B establishes ODOT's interest in improvements on local roads that maintain or improve safety and mobility performance on state roadways, and supports local jurisdictions in adopting land use and access management policies. This policy recognizes that the state may provide financial assistance to local jurisdictions to make improvements to local transportation systems if the improvements would provide a cost-effective means of improving the operations of the state highway system. In the case of Tualatin, this would mean local projects that significantly improve operation of I-5, I-205, OR 99W, or Beaverton-Tualatin Highway (Boones Ferry Road).

Policy 2D: Public Involvement

Public involvement in transportation and planning and project development will be a critical part of the TSP process. See the summary of the planned outreach activities under the Statewide Planning Goals heading, Goal 1 Public Involvement, later in this Appendix.

Policy 2F: Traffic Safety

Policy 2F identifies the need for projects to improve safety for all users of the state highway system through engineering, education, enforcement, and emergency services. One component of the TSP update is to identify existing crash patterns and rates and to develop strategies to address safety issues, if issues associated with state facilities within the city of Tualatin exist or are projected to exist within the TSP planning horizon.

Policy 4A: Efficiency of Freight Movement

This policy emphasizes the need to maintain and improve the efficiency of freight movement on the state highway system. I-5, I-205, and OR 99W in Tualatin are designated state highway freight routes.[8]

[8] Transportation planning elements related to freight are multi-dimensional. The combined space on either side of a vehicle plus the width of the vehicle itself – what is referred to by the trucking industry as "the hole in the air" – is important to consider where planned system improvements include or impact bridge or grade-separated interchanges. As noted during the OTIA III State Bridge Delivery Program, this is particularly important to freight haulers driving oversize vehicles, or those wider than 12 feet. With less clearance, drivers must decrease their speed, slowing all traffic moving through a constriction. (See OTIA III 2007 Web Brief, http://www.oregon.gov/ODOT/HWY/OTIA/news_windfarm.shtml.)

Policy 4B: Alternative Passenger Modes
Action 4B.4 under this policy requires that highway projects encourage the use of alternative passenger modes to reduce local trips. The TSP update process will explore ways to support and increase the use of alternative passenger modes in Tualatin to reduce motor vehicle trips on highways and other facilities. This will include bicycle and pedestrian facility improvements and consideration of transit movement along local roadways.

Policy 4D: Transportation Demand Management
This policy establishes the State's interest in supporting demand management (TDM) strategies that reduce peak period single occupant vehicle travel, thereby improving the flow of traffic on the state roadway system. The TSP update will explore TDM strategies that are feasible to implement in Tualatin.

Policy 4E: Park and Ride Facilities
This policy seeks to maximize the existing transportation system and passenger capacity by supporting and developing park-and-ride facilities. TriMet bus routes #12, #36, #37, #38, #76 and #96 (rush hour service) provide service between Beaverton, downtown Portland, and Tualatin. WES Commuter Rail connects Beaverton, Tigard, Tualatin, and Wilsonville.

The following is a list of transit service in Tualatin and associated park-and-ride facilities:

- Route #12
- Route #36 – Tualatin Park and Ride (72nd and Lower Boones Ferry)
- Route #37 – Tualatin Park and Ride (72nd and Lower Boones Ferry)
- Route #38 – Tualatin Park and Ride (72nd and Lower Boones Ferry)
- Route #76 – Tualatin Park and Ride (72nd and Lower Boones Ferry), Martinazzi and Mohawk
- Route #96 – 72nd and I-5, Martinazzi and Mohawk, Lower Boones Ferry and Sagert
- WES Commute Rail – Tualatin Station.

Policy 5A: Environmental Resources
This policy intends to protect the natural and built environment – including air quality, fish and wildlife habitat, migration routes, vegetation, and water resources from impacts from state highways and ODOT facilities. Impacts to identified natural resources must be avoided or mitigated by any proposed construction or reconstruction projects on state facilities or approaches in Tualatin.

Oregon Bicycle and Pedestrian Plan

The Oregon Bicycle and Pedestrian Plan (OBPP) is a modal element of the OTP and provides guidance for planning, design, and operation of facilities for bicycle and pedestrian travel. The plan contains standards and designs used on state highway projects for these types of facilities.

The plan is comprised of two parts: the Policy and Action Plan and the Oregon Bicycle and Pedestrian Design Guide. The policy section provides background information, including relevant state and federal laws, and contains the goals, actions, and implementation strategies proposed by ODOT to improve bicycle and pedestrian transportation.

The plan states that bikeway and walkway systems will be established on urban highways, as follows:

- As part of modernization projects (bike lanes and sidewalks will be included);

- As part of preservation projects, where minor upgrades can be made;
- By restriping roads with bike lanes;
- With improvement betterment projects, such as completing short missing segments of sidewalks;
- As bikeway or walkway modernization projects;
- By developers as part of permit conditions, where warranted.

The second section of the OBPP is the technical element of the plan that guides the design and management of bicycle and pedestrian facilities on state-owned facilities. It underwent updates from 2007 to 2011.[9] Many new pedestrian and bicycle treatments have been developed and included in the update of the Oregon Bicycle and Pedestrian Design Guide. This section has been designated as a companion piece to the Highway Design Manual. The design standards and guidelines in this section will be referred to for bicycle or pedestrian facilities that are considered as part of improvements to state facilities in Tualatin. Design details for bicycle and pedestrian facilities on state roadways are still subject to design review and other permitting procedures for proposed projects on state roadways.

Department of Transportation Coordination Rules (OAR 731-015)

ODOT's Division 15, Coordination Rules, (OAR 731-015) ensures that the procedures used in developing highway improvement projects and other ODOT actions affecting land use comply with Oregon's Statewide Planning Goals and are consistent with applicable acknowledged comprehensive plans, as required by ORS 197.180. This administrative rule provides coordination procedures to be used when adopting Final Facility Plans, such as an interchange area management plan (OAR-731-015-0065).

Access Management Rules (OAR 734-051)

Oregon Administrative Rule 734-051 defines the State's role in managing access to highway facilities in order to maintain functional use and safety and to preserve public investment. The provisions in the OAR apply to the roadways under state jurisdiction within the city of Tualatin, namely I-5, I-205, OR 99W, and the Beaverton-Tualatin Highway (Boones Ferry Road). The access management rules include spacing standards for varying types of state roadways. It also lists criteria for granting right of access and approach locations onto state highway facilities.

OAR 734-051 is in the process of being amended to allow more consideration for economic development when developing and implementing access management rules. The new laws will result in substantial changes in rules about how ODOT manages highway approach road permitting. Changes include modifying how ODOT deals with approach road spacing, highway improvements requirements with development, and traffic impact analyses requirements for approach road permits. The law's provisions take effect on January 1, 2012.

Although the administrative rule is still in the process of being amended, SB 264 establishes new spacing standards for unsignalized approaches to statewide highways and district highways and in urban areas where average daily traffic is more than 5,000 motor vehicles (Tables 2 and 4 in SB 264)

[9] The 1995 policy section and 2011 updated design and technical section of the OBPP are available on ODOT's website at: http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml

Table 1. Spacing Standards for Urban Non-Designated Statewide Highways (OR 99W)

Posted Speed (mph)	Spacing (feet)
55 and higher	1,320
50	1,100
40-45	800
30-35	500
25 and lower	350

Table 2. Spacing Standards for Urban Non-Designated District Highways

(Beaverton-Tualatin Highway)

Posted Speed (mph)	Spacing (feet)
55 and higher	700
50	550
40-45	500
30-35	350
25 and lower	250

Section 734-051-0155 identifies when, how and why ODOT will develop access management plans and interchange area management plans for particular sections of a highway.

Transportation Planning Rule (OAR 660-012)

The Transportation Planning Rule (TPR) implements Oregon Statewide Planning Goal 12, which supports transportation facilities and systems that are safe, efficient, and cost-effective and are designed to reduce reliance on single-occupancy vehicles. The objective of the TPR is to reduce air pollution, congestion, and other livability problems, and to maximize investments made in the transportation system.

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions (OAR 660-012-0045(2))." This policy is achieved through a variety of measures, including:

- Standards to protect future operations of roads;
- Provisions for multimodal access, circulation, and facilities;
- A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;

- A process to apply conditions to development proposals to minimize impacts and protect transportation facilities, corridors or sites;
- Regulations to provide notice to ODOT of land use applications that require public hearings, involve land divisions, or affect private access to roads; and
- Regulations assuring that amendments to land use designations, densities and design standards are consistent with the functions, capacities and performance standards of facilities identified in the TSP. (See OAR 660-012-0060.)

The following subsections of the TPR are relevant to the Tualatin TSP update.

660-012-0020 – Elements of Transportation System Plans

Section –0020 of the TPR specifies what is required in a TSP, including an inventory and assessment of existing conditions; forecasts of transportation needs; a road system plan; a public transportation plan; a bicycle and pedestrian plan; air, rail, water, and pipeline plans as applicable; transportation system and demand management plans; a financing program; and implementing policies and land use regulations.

660-012-0035 – Evaluation and Selection of Transportation System Alternatives

Section –0035 describes standards and alternatives available to agencies evaluating and selecting transportation projects, including benefits to different modes, land use alternatives, and environmental and economic impacts.

660-012-0045 – Implementation of the Transportation System Plan

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions." This policy is achieved through:

- Access control measures,
- Standards to protect future operations of roads,
- Expanded notice requirements and coordinated review procedures for land use applications,
- A process to apply conditions of approval to development proposals, and
- Regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP.

660-012-0060 – Plan and Land Use Regulation Amendments

Amendments made to Section –0060 in 2005 are among the most significant changes that have been made to the TPR since adoption of the City's 2001 TSP. The amendments required local jurisdictions to balance the need for development with the need for transportation improvements, established the end of the planning period as the measure for determining "significant effect", defined the transportation improvements that a local government can consider in determining significant effect, and identified methods for the state and local jurisdictions to determine whether a needed transportation facility is reasonably likely to be provided within the planning horizon.

This section of the TPR was amended on December 8, 2011. The amendments exempt zoning map amendments from a significant effect determination if the amendment is consistent with adopted comprehensive plan map designations. Other TPR changes include exempting proposed amendments to functional plans, comprehensive plans, or land use regulations in locally designated multimodal mixed-use areas ("MMAs") from applying performance standards related to traffic

congestion and delay if specific criteria are met. Criteria include a requirement that the proposed map or text amendment affects only land entirely within a MMA. Amendments to -0060 also prescribe under what circumstances local government can approve partial mitigation for transportation impacts, which include findings that the proposed amendment will "create direct benefits in terms of industrial or traded-sector jobs created or retained."

2010-2013 Statewide Transportation Improvement Program (STIP)

The State Transportation Improvement Program (STIP) is the programming and funding document for transportation projects and programs statewide. The projects and programs undergo a selection process managed by ODOT Regions and/or ODOT central offices. The document covers a period of four years and is updated every two years.

There are six projects – a mixture of roadway capacity projects and bike and pedestrian facilities – that are programmed in the Tualatin vicinity in the Final 2008-2011 STIP, as shown in Table 3. The final three projects in the table are not located within the city but are major projects that are nearby and will affect the city's transportation system.

Table 3. 2010-2013 Final Approved STIP

Project Key #	Project Name and Location	Project Applicant	Project Description	Project Type	Project Cost	Project Year
#13301	I-5/99W Tualatin-Sherwood Connector	Washington County	Planning, environmental document	Modernization	$4.1 million	Begin in 2010
#15669	I-5/99W Tualatin-Sherwood Connector Concept Plan	Washington County	Planning	Planning	$446,000	2010
#17461	Tualatin-Sherwood Road ATMS Phase 2, from OR 99W to Teton	Washington County	Upgrade traffic signal systems and install video detection system	Operations	$2.1 million	Begin in 2012
#16373	OR 99W: Active Corridor Management (No MP range identified)	ODOT	Non-construction project, upgrade traffic controllers and software	Operations	$507,000	2010
#16581	Tualatin Railroad Crossings	TriMet	Install raised medians and 4 quad crossing gates	Safety	$689,000	2010

Project Key #	Project Name and Location	Project Applicant	Project Description	Project Type	Project Cost	Project Year
#15586	Westside Trail Master Plan, from Willamette River to Tualatin River	Tualatin Hills Parks & Recreation District (THPRD)	Planning	Bicycle/pedestrian	$335,000	2011
#17196	SW Boones Ferry Road, SW Norwood Road-SW Day Road	Washington County	Facility improvements to enable jurisdictional transfer	Pavement preservation	$2 million	Begin in 2010

Statewide Planning Goals

Goal 1 (Citizen Involvement)

Goal 1, Citizen Involvement, requires those jurisdictions that prepare, adopt, and maintain comprehensive plans to provide the "opportunity for citizens to be involved in all phases of the planning process." The Tualatin TSP is incorporated into the City's Comprehensive Plan through Chapter 11 of the Tualatin Development Code. Pursuant to this goal, the planning process includes preparation of plans and implementation measures, adoption of plans and implementation measures, and minor and major amendments to adopted plans. Technical information associated with the planning process must be available to citizens in an understandable form; accessible means for providing feedback must also be available.

The TSP update process is scoped to include the following involvement:

- A Task Force that will meet about 10 times
- Seven Working Groups that will meet about 21 times total
- Support and attendance at about four public events
- Support and attendance at about eight coffee klatches and tabling events
- A project website hosted by the City.

The required public hearings for adoption of the TSP update will also provide opportunity for public comment. All of these public involvement activities will be guided by and assessed according to Goal 1.

Goal 2 (Land Use Planning)

Goal 2, Land Use Planning, requires that a land use planning process and policy framework be established as a basis for all decisions and actions relating to the use of land. The Goal requires planning coordination between those local governments and state agencies "which have programs, land ownerships, or responsibilities within the area included in the plan." In preparing this TSP update, Goal 2 will require coordination between ODOT and the City of Tualatin, as well as neighboring jurisdictions. Coordination is particularly important because land use decisions in the vicinity of state facilities have an effect on future use and operations.

Goal 2 requires that city, county, state, and federal plans and actions related to land use are "consistent with the comprehensive plans of cities and counties and regional plans adopted under ORS Chapter 268." This provision is important because the TSP update will need to be consistent

with the adopted regional plans, in particular the 2035 Regional Transportation Plan that was recently adopted. To meet this state requirement, implementation measures for the TSP update may include recommendations for amendments to the City Comprehensive Plan, and Development Code.

Goal 11 (Public Facilities and Services)

Public facilities that are named in Statewide Planning Goal 11 include water, sewer, solid waste, and transportation facilities. Goal 11 establishes the requirement for the preparation of public facility plans for jurisdictions with populations greater 2,500. The public facility plan or plans are supporting documents to the jurisdiction's comprehensive plan. As such, a TSP effectively serves as a jurisdiction's public facility plan for transportation, although a TSP becomes an element of the comprehensive plan, not just a supporting document.

Goal 11 calls for coordination between planning for various public facilities and between the state, agencies, and jurisdictions that it provides with funding for water, sewer, solid waste, and transportation facility planning and development. The goal also recognizes the balance between planning for adequate service to developing areas consistent with planned densities and using public facilities to inappropriately or prematurely urbanize areas that are disproportionately inefficient and costly to serve.

Goal 12 (Transportation)

Statewide Planning Goal 12, Transportation, requires cities, counties, metropolitan planning organizations, and ODOT to provide and encourage a safe, convenient, and economic transportation system. This is accomplished through development of transportation system plans (TSPs) based on inventories of local, regional, and state transportation needs.

Goal 12 is implemented through OAR 660, Division 12, known as the Transportation Planning Rule (TPR). The TPR contains numerous requirements governing transportation planning and project development, several of which are relevant to planning interchange improvements. See the summary of the TPR provided earlier in this Appendix.

Goal 14 (Urbanization)

Goal 14 regulates urban growth boundaries. The goal provides that establishment and change of a UGB shall be based upon consideration of the following four factors:

1. Efficient accommodation of identified land needs;
2. Orderly and economic provision of public facilities and services;
3. Comparative environmental, energy, economic, and social consequences;
4. Compatibility of the proposed urban uses with nearby agricultural and forest activities occurring on farm and forest land outside the UGB.

Additionally, ORS 197.298 establishes priorities for including land inside urban growth boundaries. The first (highest) priority for inclusion is land that is designated "urban reserve" land. The second priority is land adjacent to a UGB that is identified as "an exception area or nonresource land." The third priority is land that is designated as "marginal land" and the final (lowest) priority is land that is designated for agriculture, forestry, or both. There is additional discussion of urban reserve land as it applies to Tualatin later in this Appendix.

I-5 to 99W Connector Project

The I-5 to 99W Connector Project is intended to develop long-term solutions to improving mobility between I-5 and OR 99W and is a collaboration between ODOT, Metro, Washington County, and other affected agencies.

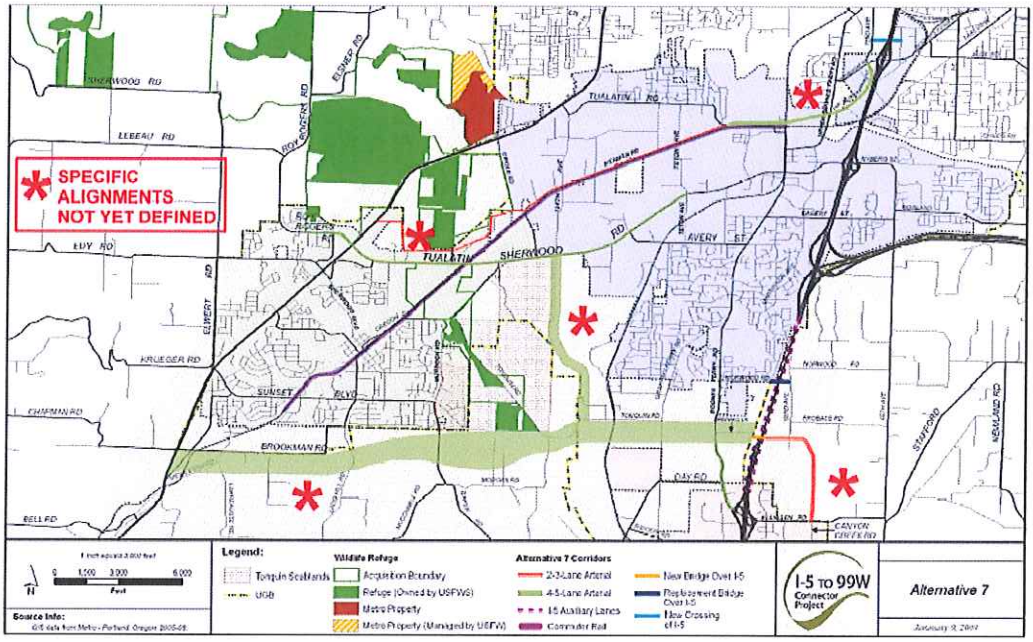
As part of environmental review, six alternatives were developed, including a No-Build concept. Based on project team evaluation of the alternatives, public input from outreach activities, and subsequent direction from the project committees, the project team developed a package of transportation system improvements, the Three Arterial Corridors Alternative, or Alternative 7. A map of Alternative 7 is provided in Figure 1. However, the alternative has not yet received unanimous approval.

Alternative 7 is based on arterial development in a set of three northern, central, and southern arterial corridors. The northern arterial projects are located in Tualatin and are focused around Herman Road. As noted in the figure, alignments are not yet final. The northern arterial projects include the following recommendations:

- Tualatin Road/Lower Boones Ferry – Extend Tualatin Road as a five-lane arterial across the Tualatin River from Herman Road to Lower Boones Ferry Road. Widen Lower Boones Ferry Road to five lanes from the extension to 72nd Avenue.
- Herman Road – Construct a three-lane extension of Herman Road between Tualatin Road and OR 99W.
- Bradbury Court – Construct a new east-west connection across I-5 to 72nd Avenue on a Bradbury Court alignment.[10]

[10] The Tualatin City Council requested that Metro remove the Tualatin Road/Lower Boones Ferry project included in this list from the 2035 RTP. The City also notes that the east-west connection aligned with Bradbury Court has not been reviewed or discussed in detail.

Figure 1. I-5 to 99W Connector Alternative 7 (2009)



The 2010-2013 STIP includes programmed funding for planning work related to the project. The 2035 Regional Transportation Plan (RTP) includes projects expanding Lower Boones Ferry Road to five lanes and Herman Road to three lanes. As noted above, projects associated with the I-5 to 99W Connector Plan have been debated and alternative strategies are still being developed and reviewed.

State Comprehensive Outdoor Recreation Plan (2008-2012)

The Oregon Parks and Recreation Department (OPRD) State Comprehensive Outdoor Recreation Plan (SCORP) serves several purposes including providing recommendations to the Oregon State Park System programs (operations, administration, planning, development, and recreation) and guiding OPRD-administered grant programs, such as the Local Government Grant, County Opportunity Grant, Recreational Trails, All-Terrain Vehicle Programs, and Land and Water Conservation Funds.

The following recommendations in the SCORP may be relevant to the Tualatin TSP, particularly in planning and funding transportation and trail improvements:

- Prioritize OPRD-administered grants for trail acquisition and development in communities projected to have the largest growth in their population of those 60 years and older. The OPRD Recreational Trails Program provides funding for trail development in Oregon, although only at a limited level of about $800,000 statewide annually and with some restrictions. High priority jurisdictions include Clackamas and Washington counties and Tualatin's neighbors Beaverton and Tigard.

- Prioritize OPRD-administered grants for developing group-day use facilities and recreational trails in communities that are projected to have the greatest increase in their Latino, Asian, and African-American populations. High priority jurisdictions for Latino and Asian/Pacific

Islander population growth include Clackamas and Washington counties and Tualatin. High priority jurisdictions for African American population growth include Washington County and Tualatin.

Regional Plans and Regulations

Metro Regional Framework Plan

The Regional Framework Plan unites all of Metro's adopted land use planning policies and requirements. This document brings together regional policies found in the Regional Urban Growth Goals and Objectives, 2040 Growth Concept, Metropolitan Greenspaces Master Plan, and Regional Transportation Plan, to create a coordinated, integrated, Regional Framework Plan.

The 2040 Growth Concept is the unifying concept around which this Regional Framework Plan is based. Metro 2040 Growth Concept land use designations identified in Tualatin include the following:

- Town Center
- Corridors
- Station Community
- Employment Land
- Parks and Natural Areas
- Neighborhoods.

Metro 2035 Regional Transportation Plan (RTP)

The Regional Transportation Plan provides the long-range blueprint for transportation in the Portland region. The RTP presents the overarching policies and goals, system concepts for all modes of travel, and strategies for funding and local implementation. This RTP update has been shaped by anticipating 2035 transportation needs and the following desired outcomes for the region:

- Promote jobs and create wealth in the economy
- Reduce greenhouse gas emissions
- Improve safety throughout the transportation system
- Promote healthy, active living by making walking and bicycling safe and convenient
- Move freight reliably and make transportation accessible, affordable and reliable for commuting and everyday life
- Promote vibrant communities while preserving farm and forest land.

Chapter 2 of the RTP establishes mobility standards that are intended as minimum standards for an interim regional mobility policy, one that was recognized by the OTC as "an incremental step toward a more comprehensive set of measures." The mobility standards apply to specific transportation facilities in the region, primarily based on surrounding 2040 Growth Concept land use designations.

Table 4 presents the regional volume-to-capacity (v/c) mobility standards that currently apply to roadways in Tualatin. As discussed in the earlier sections on the OHP, these mobility standards are in the process of being amended.

Table 4. Interim Regional Mobility Standards for Tualatin (v/c)

	Mid-Day One-Hour Peak	PM Two-Hour Peak	
		1st Hour	2nd Hour
Town Centers	.99	1.1	.99
Station Communities	.99	1.1	.99
Corridors	.90	.99	.99
Employment Land	.90	.99	.99
Neighborhoods	.90	.99	.99
I-5 (Marquam Bridge to Wilsonville)	.90	.99	.99

Chapter 2 of the RTP gives transportation facilities in the region multiple designations based on the following modes and types of systems: regional street design, street and throughway system, transit system, freight system, bicycle system, and pedestrian system. The designations generally correspond to vision and concept statements. However, only the regional street design classifications are associated with facility design guidance and only the street and throughway system, bicycle system, and pedestrian system designations are associated with policy statements. Regional street design, street and throughway system, bicycle system, and pedestrian system classifications for transportation facilities in Tualatin are presented in Table 5. Corresponding policy language is presented following the table. Design concepts for Throughways (Freeways), Regional Streets, Community Boulevards, and Community Streets are presented in Figure 2 excerpted from the RTP (Table 2.6).

Table 5. Regional Transportation Facility Classifications in Tualatin*

	Regional Street Design	Regional Street and Throughway System	Regional Bicycle System**	Regional Pedestrian System **/***
I-5	Throughway (Freeway)	Principal Arterial	-	-
I-205	Throughway (Freeway)	Principal Arterial	-	
OR 99W	Regional Street	Major Arterial	Regional Bikeway	
SW Boones Ferry Rd	Regional Street	Minor Arterial	Regional Bikeway/Planned Regional Trail**	Planned Regional Trail**
SW Boones Ferry Rd/Upper Boones Ferry Rd	Community Street	Minor Arterial	Regional Bikeway	-
SW Tualatin-Sherwood Rd	Regional Street/Regional Boulevard (in Town Center)	Major Arterial	Regional Bikeway	-
Tualatin Rd	Regional Street	-	Regional Bikeway/Community Bikeway	-
Herman Rd	Community Street	Minor Arterial	-	-
124th Ave	Regional Street	Major Arterial****	Planned Regional Trail**	Planned Regional Trail**
Teton Ave	-	-	Community Bikeway	-
Avery St	-	-	Community Bikeway	-
WES Commuter Rail			Planned Regional Trail**	Mixed Use Corridor/Planned Regional Trail**

*The facility classifications in this table are found in the following maps in the RTP: Figure 2.10 (Regional Design Classifications), Figure 2.12 (Arterial and Throughway Network), Figure 2.22 (Regional Bicycle Network), and Figure 2.25 (Regional Pedestrian Network).

** A Planned Regional (Multi-Use) Trail in Tualatin forms a loop using the Tualatin River, parts of public roads/right-of-way, and potential easements.

*** A pedestrian district is designated in the Tualatin Town Center and Station Community associated with WES Commuter Rail.

****The I-5/99W Connector Plan has made a recommendation (Alternative 7 - with conditions) for new arterials in the area of 124th Avenue .

Regional Street and Throughway System Designations

Throughways currently carry between 50,000 to 100,000 vehicles per day, providing for high-speed travel on longer motor vehicle trips and serving as the primary freight routes, with an emphasis on mobility. Throughways help serve the need to move both trucks and autos through the region. Throughways connect major activity centers within the region, including the Central City, regional centers, industrial areas and intermodal facilities.

Arterial streets usually carry between 10,000 and 40,000 vehicles per day and allow higher speeds than collector and local streets. Major arterial streets accommodate longer-distance through trips and serve more of a regional traffic function. Minor arterial streets serve shorter trips that are localized within a community.

Regional Bicycle System Designations

Regional Bikeways provide for travel to and within the Central City, Regional Centers, and Town Centers.

Community Bikeways provide for travel to and within other 2040 Target Areas. These routes also provide access to regional attractions such as schools, libraries, and parks and connect neighborhoods to the rest of the regional bicycle network.

Regional Trails consist of paved off-street paths for walking, bicycling, and other non-motorized travel. They are typically designed to connect neighborhoods to 2040 Growth Concept target areas and provide access to parks, schools, and natural areas.

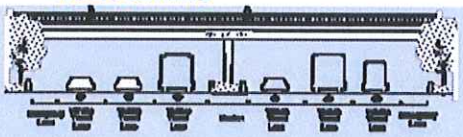
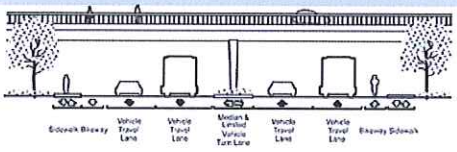
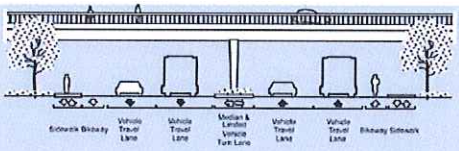
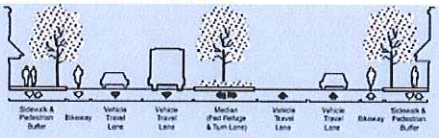
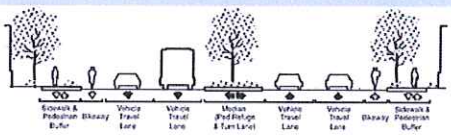
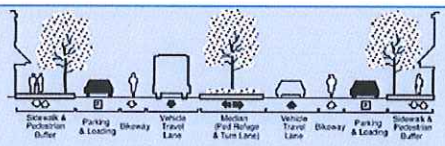
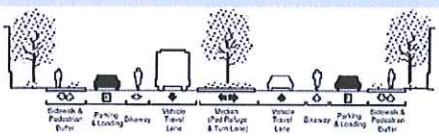
Regional Pedestrian System Designations

Transit/mix-use corridors are priority areas for pedestrian improvements. They are located along good-quality transit lines and will be redeveloped at densities that are somewhat higher than today. These corridors will generate substantial pedestrian traffic near neighborhood-oriented retail development, schools, parks and bus stops.

These corridors should be designed to promote pedestrian travel with such features as wide sidewalks with buffering from adjacent motor vehicle traffic, street crossings at a minimum of 530 feet – though an ideal spacing is 200 to 400 feet where possible (unless there are no intersections, bus stops or other pedestrian attractions), special crossing amenities at some locations, special lighting, bus shelters, awnings and street trees.

Pedestrian districts are areas of high, or potentially high, pedestrian activity where the region places priority on creating a walkable environment. These include the Central City, regional and town centers and light rail station communities where sidewalks, plazas and other public spaces are integrated with civic, commercial and residential development. They are often characterized by compact mixed-use development served by transit, with buildings oriented to the street and boulevard-type street design features, such as wide sidewalks with buffering from adjacent motor vehicle traffic, marked street crossings at all intersections with special crossing amenities at some locations, special lighting, benches, bus shelters, awnings and street trees. All streets within pedestrian districts are important pedestrian connections.

Figure 2. Throughway and Arterial Design Concepts

Trip Type	2040 Design Concept	Network Function	Illustrative Design Concept	Typical number of planned travel lanes[7]
			THROUGHWAYS	
Interstate/ regional	**Throughway** (Freeway)	Principal arterial		6 through lanes (plus auxiliary lanes) with grade separated interchanges
Interstate/ regional	**Throughway** (Highway)	Principal arterial		6 through lanes (plus auxiliary lanes) with grade separated intersections/ interchanges
Interstate/ regional	**Throughway** (Parkway)	Principal arterial		6 through lanes (plus auxiliary lanes) with grade separated intersections/ interchanges
			ARTERIAL STREETS	
Regional / City	**Regional Boulevard** *2040 centers Station communities Main streets*	Major Arterial		4 through lanes with turn lanes
Regional / City	**Regional Street** *Industrial areas Employment areas Corridors Intermodal facilities*	Major Arterial		4 through lanes with turn lanes
City	**Community Boulevard** *2040 centers Station communities Main streets*	Minor Arterial		2 through lanes with turn lanes
City	**Community Street** *Industrial areas Employment areas Corridors Intermodal facilities*	Minor Arterial		2 through lanes with turn lanes

Chapters 4 and 6 establish mobility corridors in the region and planning directives for these corridors. Profiles for the corridors outline the corridors' function, characteristics in terms of population, households, employment, regional transportation facilities, needs and strategies by mode and RTP system designations, RTP 2035 investments, and a 2035 investment strategy. Mobility Corridor #2 (Portland Central City to Tigard), Mobility Corridor #3 (Tigard to Wilsonville), Mobility Corridor #7 (Tualatin to Oregon City), and Mobility Corridor #20 (Tigard to Sherwood & Sherwood to Newberg) all include Tualatin.

Some of the mobility corridors that do not meet RTP performance standards are targeted for additional refinement planning. Specifications for future planning for these corridors are included in Chapter 6[11]. Mobility Corridors #2, #3, and #7 are among the corridors targeted for refinement planning.

The following projects, in or in the vicinity of the city of Tualatin, are included in Metro's Final 2035 RTP Project List in the short term (2008-2017), mid term (2018-2025), and long term (2026-2035)[12], and should be coordinated with project development during the TSP update process. The following projects are all part of the federal RTP and federal regulations require the federal RTP to be financially constrained.[13]

Table 6. RTP Projects in Tualatin

Project number	Location	Description	Estimated Cost (YOE$)
Short term (2008-2017)			
10709	Sagert Rd at Martinazzi (Tualatin)	Signalize intersection, change grades to improve sight distance	$2.5 million
10714	105th Avenue/Avery Street from Blake to 105th (Tualatin)[14]	Realign curves, signalize intersection of Avery/105th, sidewalks on 105th from Avery to 108th	$7.4 million
10715	Herman Road from Teton Avenue To Tualatin Road (Tualatin)	Reconstruct and widen to three lanes	$3.7 million
10716	Myslony Road from 112th to 124th Avenue (Tualatin)	Reconstruct and widen Myslony to fill system	$13.9 million
10718	Herman Road from Cipole to 124th Avenue (Tualatin)	Reconstruct and widen to three lanes	$6.1 million
10728	Boones Ferry Road from Tualatin-Sherwood Road to	Interconnect six signals	$115,500

[11] Mobility corridors slated for refinement planning are listed in Table 6-1 in the 2035 RTP.
[12] Final 2035 RTP Project List, published October 4, 2010.
[13] The federal RTP (known as the 2035 RTP Federal Priorities) is distinguished from the state RTP (known as the 2035 RTP Investment Strategy) in that the federal RTP must be financially constrained and the state RTP includes projects that could be funded if new or expanded revenue sources are secured in addition to the projects that could be funded under financially constrained conditions.
[14] This is how the project location is described in the 2035 RTP. However, the City has more accurately described the location as 105th to 108th from Avery to Ibach.

Project number	Location	Description	Estimated Cost (YOE$)
	Ibach (Tualatin)		
10730	East-west connection from 108th to 112th Avenue (Tualatin)	Construct new street	$26.9 million
10736	124th Avenue from Tualatin-Sherwood Road to Tonquin (Tualatin)	Construct new five-lane road	$122.1 million
10737	Central Design District Pedestrian Improvements (Tualatin)	Pedestrian improvements and bike lanes	$16.0 million
Mid term (2018-2025)			
10603	Tualatin-Sherwood Road improvements from OR 99W to Teton Avenue (Washington County)	Widen from three lanes to five lanes with bike lanes and sidewalks	$99.6 million
10735	Herman Road108th to Teton Avenue (Tualatin)	Widen to five lanes	$2.5 million
10744	Tualatin River Pathway (Tualatin)	Construct multi-use path	$17.4 million
10745	Pedestrian Trail from 65th Avenue to Martinazzi (Tualatin)	Construct multi-use path	$3.2 million
Long term (2026-2035)			
10720	Boones Ferry Road, from Tualatin-Sherwood Road to Ibach (Tualatin)	Widen to five lanes	$49.5 million
10721	McEwan from 65th Avenue to Lake Oswego (Tualatin)	Widen to three lanes	$10.6 million
10722	65th Avenue from Nyberg to Childs Road (Tualatin)	Extend across the Tualatin River	$45.0 million
10725	65th Avenue Sagert to Nyberg (Tualatin)	Widen to five lanes	$57.0 million
10729	Loop Road Martinazzi to Lower Boones Ferry Road (Tualatin)	Construct street from Tualatin-Sherwood Road to Lower Boones Ferry Road to Martinazzi	$20.7 million
10738	Teton Avenue Herman Road to Tualatin-Sherwood Road (Tualatin)	Add bike lanes to Teton Avenue	$11.4 million
10739	Nyberg Road Tualatin-Sherwood Road to 65th	bike lanes from I-5 to 65th Avenue	$21.0 million

Project number	Location	Description	Estimated Cost (YOE$)
	Avenue (Tualatin)		
10740	65th Avenue from Borland to Childs Road (Tualatin)	Add bike lanes on 65th Avenue from Sagert to Nyberg, construct a pedestrian bridge over the river from Tualatin to Childs Road	$24.0 million
10741	95th Avenue from Avery Road to Tualatin-Sherwood Road (Tualatin)	Add bike lanes	$7.2 million
10742	108th Avenue (Tualatin)	Pedestrian bridge over river and connecting paths	$6.0 million

Metro Regional Transportation Functional Plan (RTFP)

The Regional Transportation Functional Plan (RTFP) directs how local TSPs, comprehensive plans, and development codes will implement the RTP. If a TSP is consistent with the RTFP, Metro will find it to be consistent with the RTP. Metro has developed a compliance checklist for TSPs, comprehensive plans, and developments codes that will be used in the update of the Tualatin TSP. The following are directives that specifically pertain to updating local TSPs.

- Include regional and state transportation needs identified in the 2035 RTP in local TSPs along with local needs
- Local needs must be consistent with RTP in terms of land use, system maps and non-SOV modal targets
- When developing solutions, local jurisdictions shall consider a variety of strategies, in the following order:
- TSMO (Transportation System Management Operations)
- Transit, bicycle and pedestrian improvements
- Traffic calming
- Land use strategies in OAR 660-012-0035(2)[15]
- Connectivity, including pedestrian and bicycle facilities
- Motor vehicle capacity improvements
- Local jurisdictions can propose regional projects as part of RTP process
- Local jurisdictions can propose alternate performance and mobility standards, however, changes must be consistent with regional and statewide planning goals
- Local parking regulations shall be consistent with the RTFP.

[15] This section of the TPR requires Metro area jurisdictions to evaluate land use designations, densities, and design standards to meet local and regional transportation needs. Strategies could include increasing residential densities, setting density minimums near transit lines, employment areas, etc., designating lands for neighborhood shopping centers within convenient walking and cycling distance of residential areas, and designating land uses to provide a better balance between jobs and housing.

Metro High Capacity Transit Plan

The High Capacity Transit System Plan (2010) guides the region's long-term investments in high capacity transit. The high capacity transit (HCT) corridors and improvements to the existing system that are recommended and prioritized in the plan are based on planned land uses, community values, environmental benefits, and economic viability. An implementation guidance document was developed for high capacity transit in the region, and that document is reviewed next in this Appendix.

The plan is considered a component of the RTP and focuses on the frequent, fast, and high capacity element of the public transit system. High capacity transit is characterized by exclusive right of way and routes with fewer stops. Other transit system functions, including local bus, streetcar, frequent bus, and paratransit service and facilities are included in the main RTP.

Priority HCT Corridors

Corridor prioritization will be updated each time the RTP is updated or by amending the RTP. A description of the three priority corridors through Tualatin are listed below. Policy and transportation projects in the updated Tualatin TSP will need to be consistent with the objectives and actions that are outlined in Table 7 according to corridor designation.

- Near-Term Regional Priority Corridors – Corridor 34 Beaverton to Wilsonville (in the vicinity of WES commuter rail corridor). Note: WES frequency improvements to 15-minute all day service are currently included in the RTP financially constrained list of projects.
- Next Phase Regional Priority Corridors – Corridor 28, Washington Square Transit Center to Clackamas Town Center in the vicinity of the I-205/Highway 217 corridors
- Regional Vision Corridors – Corridor 38S Tualatin to Sherwood.

Table 7. Objectives and Actions for Implementing the HCT Plan (2010)

	Potential Local Actions	Potential Regional Support	Potential System Expansion Targets	Potential Strategies
Near-Term Regional Priority Corridors – Implementation planned in the next four years	Develop corridor problem statement. Define corridor extent. Assess corridor against system expansion targets Create ridership development, land use and TOD plans for centers and stations. Assess mode and function of HCT. Create multimodal station access and parking plans. Assess financial	Create land use and TOD plans for centers and stations. Analyze station siting alternatives. Coordinate with MTIP priorities. Perform multi-modal transportation analysis. Create multimodal station access and parking plans. Start potential alternatives analysis.	Transit supportive land use/station context Community support Partnership/political leadership Regional transit network connectivity Housing needs supportiveness Financial capacity – capital and operating finance plans Integrated transportation system development	Corridor working group Existing land use and transportation working groups

	Potential Local Actions	Potential Regional Support	Potential System Expansion Targets	Potential Strategies
	feasibility.			
Next Phase Regional Priority Corridors – Future HCT investment may be viable if recommended planning and policy actions are implemented	Develop corridor problem statement. Define corridor extent. Assess corridor against system expansion targets Create ridership development, land use and TOD plans for centers and stations. Assess mode and function of HCT.	Create land use and TOD plans for centers and stations. Analyze station siting alternatives. Coordinate with MTIP priorities.	Transit supportive land use/station context Community support Partnership/political leadership Regional transit network connectivity Housing needs supportiveness Financial capacity – capital and operating finance plans	Existing land use and transportation working groups
Regional Vision Corridors – Corridors where projected 2035 land use and commensurate ridership potential are not supportive of HCT implementation	Develop corridor problem statement. Define corridor extent. Assess corridor against system expansion targets Create ridership development, land use and TOD plans for centers and stations.	Create land use and TOD plans for centers and stations.	Transit supportive land use/station context Community support	Existing land use and transportation working groups

High Capacity Transit System Expansion Policy: Implementation Guidance for the Portland Metropolitan Region (May 2011)

The 2035 RTP included an outline for developing a high capacity transit (HCT) system expansion policy. The policy emphasizes fiscal responsibility by ensuring that limited resources for new HCT are spent where local jurisdictions have committed supportive land uses, high quality pedestrian and bicycle access, management of parking resources and demonstrated broad based financial and political support. This guidance document was published to help local jurisdictions understand how HCT will be implemented and the jurisdictions' roles in the process.

The purpose of this document is to:

- Clearly articulate the decision-making process by which future HCT corridors will be advanced for regional investment.
- Establish minimum requirements for HCT corridor working groups to inform local jurisdictions as they work to advance their priorities for future HCT.

- Define quantitative and qualitative performance measures to guide local land use and transportation planning and investment decisions.
- Outline the process for updating the 2035 RTP, including potential future RTP amendments, for future HCT investment decisions.

This document is significant to the TSP effort since the WES commuter rail corridor is designated as a "near-term regional priority corridor" In the High Capacity Transit Plan (see the previous section of this Appendix). Also, the document calls for a Corridor Working Group for the Southwest Corridor. Corridor Working Groups are intended to implement the regional System Expansion Policy (SEP) and determine and plan for high HCT corridors.

1992 Metro Greenspaces Master Plan

The 1992 Metro Greenspaces Master Plan represents the long-term vision for a network of natural areas, parks and trails in the region. The plan is divided into three parts:

1. Planning and Coordinating a Cooperative Regional System;
2. Protecting, Managing and Financing Regionally Significant Natural Area Sites, Interconnections and Areas Deficient in Greenspaces; and
3. Protection and Enhancement of the System through Citizen Involvement, Education and Technical Assistance.

Goals and policies are established in Part One and are related to Metro's Regional Urban Growth Goals and Objectives (RUGGOs) addressing open space, recreation, and resource protection and conservation, and urban design and growth management. Goals include:

- Create a regional system of natural areas, open space, parks, trails, and greenways for wildlife and people in Multnomah, Clackamas, Washington, and Clark Counties.
- Develop an interconnected system of trails, greenways, and wildlife corridors.
- Protect, restore, and manage significant natural areas and resources.
- Coordinate protection, management, and operations of the system with partners in other Metro division, other jurisdictions, nonprofit organizations, land trusts, and businesses.
- Provide environmental education and encourage environmental awareness and stewardship in association with the regional system of natural areas, open space, parks, trails, and greenways.

Policies address cooperative land use planning and implementation of Greenspaces system, including inter-governmental agreements; regionally significant natural area sites; significant trails, greenways and wildlife corridors; areas deficient in Greenspaces; resource management plans; financing the Greenspaces system; citizen involvement and education; technical assistance; protection and enhancement of publicly owned, quasi-public and private tax-exempt lands; waterways and floodplains; and agricultural and timber lands.

Regionally Significant Natural Area Sites and Interconnections

The following areas in or near Tualatin are identified in the Metro Greenspaces Master Plan as regionally significant. Regional significance was determined given the immediacy or threat of development (and otherwise loss or conversion of the land), accessibility to residents of the region, ability to preserve large contiguous blocks of open space, and ability to expand existing regionally

significant protected areas. Descriptions of these areas can be found on pages 25-28 in the Master Plan.

- Hedges Creek, in the Tualatin River watershed
- Tonquin Geologic Area, in the Willamette River and Tualatin River watersheds
- Tualatin River Greenway and Access Points in the Tualatin River watershed.

Significant Trails, Greenways and Wildlife Corridors

The plan also identifies significant corridors in the region that are important for recreation, naturalists, and wildlife. The following areas are in or near Tualatin:

- Tualatin River Greenway Trail - *The Tualatin River between the Willamette and the confluence with Dairy Creek at Jackson Bottom has been designated as a river trail. Opportunities for additional access points will be explored as planning for this route continues.*
- Tonquin Trail - *The Tonquin Trail connects the Tualatin National Wildlife Refuge to the Willamette River near Wilsonville. It passes through the Tonquin geological area and the Dammasch property recently acquired by the Division of State Lands, before joining the Willamette Greenway Trail.*
- Lower Tualatin Trail - *Following the Tualatin River from the proposed Wildlife Refuge to confluence with the Willamette River, this trail makes additional connections with Hedges Creek, Nyberg Creek and Saum Creek Greenway. .*

These trails are included in the 1995 City of Tualatin Greenway Development Plan and other planning documents that are discussed later in this Appendix.

2006 Bond Target Areas

A bond measure passed in 2006 designated target areas for natural area protection. The bond supports Metro in protecting these areas as well as providing funds to local park providers to purchase and improve natural areas. There are two target areas that are found in and around Tualatin – the Tonquin Geologic Area and Tualatin River Greenway. The following outlines the objectives that have been established for these target areas that should be considered in greenway and corridor planning related to the TSP.

Tonquin Geologic Area Target Area

Tier I Objectives

- Acquire lands within the Coffee Lake Creek and Rock Creek for completing restoration on Coffee Creek and on permanent protection of the unique geologic features.
- Acquire lands within the Coffee Lake Creek and Rock Creek areas for regional trail connections.

Tier II Objectives

- Acquire lands to protect unique geologic features within the Basalt Creek area.
- Acquire land for the trail corridor, particularly along Hedges Creek, Basalt Creek and adjacent to Tonquin Road.

Tualatin River Greenway Target Area

Tier I Objectives

- Protect natural areas adjacent to existing public lands to provide public access and improve wildlife habitat protection.
- Continue the work begun in 1995 to enhance the water trail by providing access point sites along the Tualatin River Greenway that meet the following criteria:
- Locations along the river at intervals of 5 to 10 river miles, allowing for day trips and shorter trips than is now practicable.
- Safe accessibility from a public roadway that can adequately accommodate additional traffic.
- Developable for boat ramps and/or docks by presence of existing shallow slopes and banks.
- Associated with sufficient uplands for such features as parking, restrooms, picnic areas and buffering from the river and adjacent uses.
- Associated with key locations where there is particular interest in additional boat access/pull-outs including: south of Farmington Road, north side of the river in the vicinity of Rainbow Lane, and in the vicinity of Elsner Road.

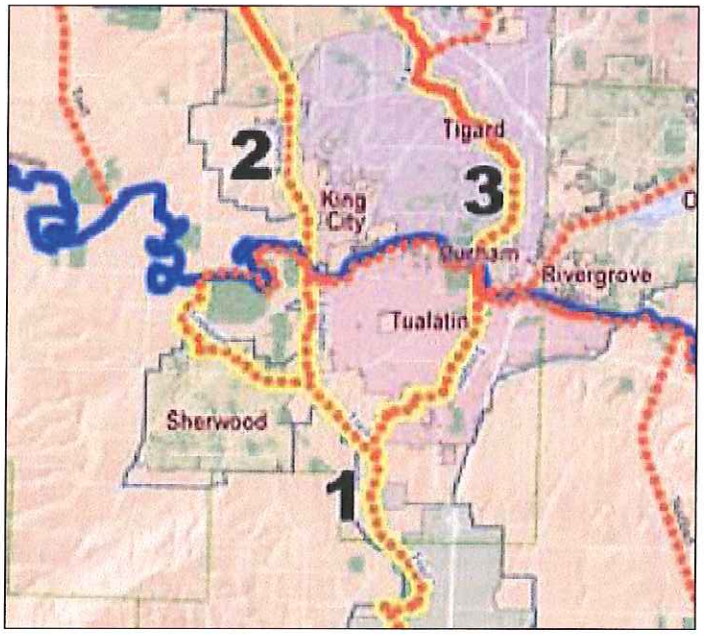
Tier II Objectives

- Acquire land along the Tualatin River for a regional trail that connects Cook Park in Tigard to Stafford Road.
- Acquire through the use of easements, donations, dedications or partnership agreements, additions to large natural areas for wildlife habitat and public access.

2007 Regional Trails and Greenways Map

Figure 3 shows trails and greenways identified in the region, either as existing or planned.

Figure 3. Regional Trails and Greenways in the Tualatin Vicinity



Trails 1, 2, and 3 have planned segments in Tualatin or the Tualatin vicinity. The trail segments that are buffered in yellow indicate segments that are to be bond funded.

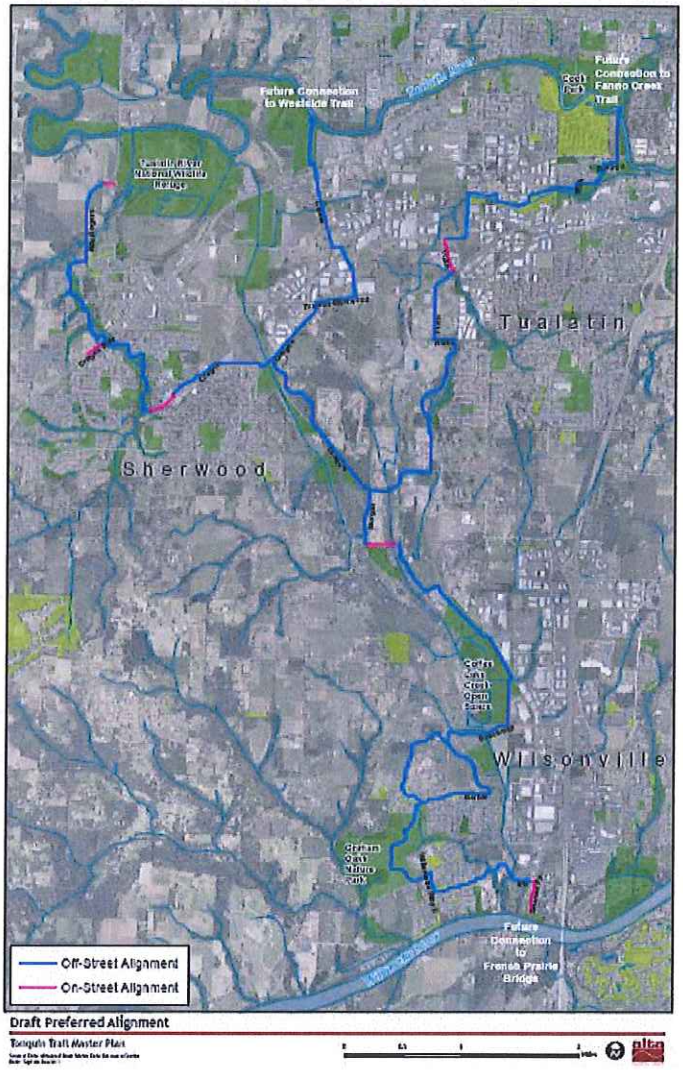
- Trail 1 – Tonquin Trail, 17 miles, 0.3 miles complete

- Trail 2 – Westside Trail, 16.5 miles, 3.2 miles complete
- Trail 3 – Fanno Creek Greenway Trail, 22.1 miles, 12.2 miles complete.

Tonquin Trail Master Plan

As part of the Tonquin Trail master planning process, a preliminary alignment has been developed through the cities of Tualatin, Sherwood, and Wilsonville. This proposed alignment is shown in Figure 4.

Figure 4. Draft Preferred Alignment of the Tonquin Trail in the Tualatin Vicinity



Transportation and Land Use Implementation Guidance for the Portland Metropolitan Region (May 2011)

The purpose of this document is to help local jurisdictions and consultants understand and implement recent regional policy and regulatory changes. It includes guidance for the RTFP and Title 6 of the Urban Growth Management Functional Plan (UGMFP). Title 6 offers investment and other incentives to cities and counties to develop their own strategies and actions to better utilize zoned capacity, in a way that enhances each community and helps them achieve their aspirations in their own 2040 Centers, Corridors, Main Streets and Station Communities.

The document provides a template for developing a local TSP. It also offers checklists for local compliance in TSP, development code and comprehensive plan/other adopted documents.

Title 6 of the UGMFP was recently expanded to cover not only Centers and Station Communities, but corridors and main streets because of their potential for redevelopment and infill. It aligns local and regional investment to support local aspirations and better links land use and transportation to support mixed-use, pedestrian-friendly, and transit-supportive development. It moves away from reporting requirements to an incentive-based approach. Available incentives include:

- Eligibility for a regional investment, currently defined as new high capacity transit lines only. In the future, the Metro Council, in consultation with the Metro Policy Advisory Committee (MPAC) and the Joint Policy Advisory Committee on Transportation (JPACT) could add other major investments to this definition.
- Ability to use a higher volume-to-capacity standard under the Oregon Highway Plan when considering amendments to comprehensive plans or land use regulations, and
- Eligibility for a 30 percent trip reduction credit under the Transportation Planning Rule when analyzing traffic impacts of new development in plan amendments for a Center, Corridor, Station Community, or Main Street[16].

This document outlines requirements to be eligible for these incentives and a chart summarizing the required steps.

Southwest Corridor Plan (in progress)

The Southwest Corridor Plan addresses the Barbur Boulevard/OR 99W/I-5 corridor between Portland and Sherwood. The plan is being developed through a partnership of the cities of King City, Portland, Sherwood, Tigard, and Tualatin, Clackamas and Multnomah counties, ODOT, TriMet, and Metro.

In 2009, the Joint Policy Advisory Committee on Transportation and the Metro Council designated the corridor as the next regional priority for high capacity transit expansion. The corridor, identified as near-term priority in Metro's Regional High Capacity Transit Plan, shows the greatest ridership projections for potential high capacity transit corridors in the region. In December 2010, Metro received a $2 million grant from the Federal Transit Administration to analyze alternatives for improving transit in the corridor. The range of transit alternatives will be narrowed in early 2012, and ultimately a preferred mode of high capacity transit will be selected. Light rail, bus rapid transit, commuter rail, rapid streetcar, and improved local bus are amongst the alternatives being studied. The transit alternative analysis is part of a larger planning process, which will also take into consideration improvements to the roadway, bike, pedestrian, and freight systems in the corridor.

[16] Pursuant to Title 5 of the Regional Transportation Function Plan (RTFP), Section 3.08.510 A and B

The project partners held a series of focus and discussion groups in August and September 2011. Project kick-off and community events were held in September and October 2011. The City of Tigard has been updating participants on the Tigard High Capacity Transit Land Use Plan and the City of Portland has been providing information about the Barbur Concept Plan because both of these local land use plans are components of the Southwest Corridor Plan.[17] The project steering committee began meeting in early October 2011 and consists of elected and appointed officials from the project partner jurisdictions. Their initial tasks have been to review findings from the focus and discussion groups.

TriMet 2011 TIP

The Transit Investment Plan (TIP) establishes TriMet's strategies and programs for investing in service, capital projects and customer information. The strategies and programs are guided by long-term policies and investment priorities developed by Metro, including the 2040 Growth Concept, the 2040 Framework Plan, and the Regional Transportation Plan (RTP). These plans call for transit investments to support Regional Centers, Town Centers and key corridors. The TIP represents TriMet's plan for implementing the transit portion of the RTP over the next five years (FY 2011-FY 2015).

The following TriMet services and facilities currently serve Tualatin:

- Line 12 Barbur/Sandy Blvd
- Line 36 South Shore
- Line 37 Lake Grove
- Line 38 Boones Ferry Road
- Line 76 Beaverton/Tualatin
- Line 96 (Rush Hour Service) Tualatin/I-5
- WES Commuter Rail/Tualatin WES Station.

TIP priorities are organized by four objectives and TIP projects are presented according to each objective. The projects included below potentially affect service and facilities in Tualatin.

1. Build the total transit system – *Enhance customer information, access to transit, stop amenities, frequency, reliability, passenger comfort, safety and security.* Potential project examples include installing new shelters and improving bus stop pavement.

2. Expand high-capacity transit – *Invest in MAX Light Rail, Commuter Rail and Streetcar service along key corridors to connect Regional Centers.* One key corridor and project is the Southwest Corridor Refinement Plan, reaching from downtown Portland to Tigard, Tualatin, King City, and Sherwood. Decisions regarding high capacity transit are not expected to be made until approximately 2013-2015 and construction and service of high capacity transit would not occur until after 2020.

3. Expand frequent service – *Add routes to TriMet's network of bus lines that run every 15 minutes or better, every day.* Service is proposed to be expanded along the Highway 217 corridor between Beaverton and Tigard, and along the I-5 corridor between Tigard and Tualatin.

[17] The City of Tualatin also kicked off Linking Tualatin in Fall 2011, which addresses transportation issues in the Southwest Corridor in Tualatin, as well as citywide.

4. Improve local service – *Work with local jurisdictions to improve transit service in specific local areas.* Access to the Tualatin WES Station has been improved with pedestrian projects and 154 additional park-and-ride spaces, and wayside horns have been installed at several intersections in Tualatin. Long-term improvements are recommended in the RTP to connect Sherwood and employment areas to the Tualatin Station via Tualatin-Sherwood Road.

TriMet Bike Parking Guidelines

Access to transit by bicycle is a key element of the TriMet "Total Transit System." Providing convenient, visible and secure bicycle parking is a cost-effective way to increase the catchment area of transit. The guidelines describe design considerations for bicycle parking at light rail stations, commuter rail stations, and transit centers.

These guidelines were developed using survey, inventory, and count data as well as research of best practices and recommendations. The following topics are addressed:

- Bike & rides
- Bike parking access
- Urban & neighborhood stations: design & layout
- Community stations: design and layout
- Bike & ride secure area layout
- Bike rack and locker layout
- Bike rack and locker spacing
- Bus stop considerations.

These guidelines can be used in Tualatin not to just for transit facilities but other sites where bicycle facilities are required or encouraged.

Local Plans and Regulations

City of Tualatin Comprehensive Plan

The City of Tualatin Comprehensive Plan is incorporated into the Tualatin Development Code as Chapters 1 through 30. The purpose of the plan is to guide the development in the city over a 20-year planning horizon. The following elements that impact transportation planning and funding include:

- Chapters 4 through 8 – Community growth characteristics and community growth objectives, including explanation of the purpose and location for individual land use categories.
- Chapter 9 – Comprehensive Plan map, showing the specific location of land uses and description of the City's Urban Growth Boundary (UGB), in addition to narrative description of each plan area. (Note: The process for amending the plan text or map is addressed in the Tualatin Development Code Section 1.030, Initiation of Amendments.)
- Chapter 10 – Community design objectives.
- Chapters 11 through 15 – Public facilities element of the plan, including transportation, water, sewer, and parks and recreation.
-
- Chapter 11, Transportation, is the City's 2001 TSP and, as such, presents the City's existing set of transportation policies among other plan components, as described in

the next section of this Appendix. These policies will be reviewed and possibly revised as part of the TSP update process.

City of Tualatin Transportation System Plan (2001)

The 2001 TSP currently constitutes the transportation element of the City's Comprehensive Plan; it is currently included in the Comprehensive Plan sections of the Tualatin Development Code as Chapter 11. Its purpose is to comply with state mandates requiring transportation planning, develop standards for the transportation system, address current problem areas, identify future roadway needs required to support 20 years of expected growth, and provide transportation planning guidelines. When adopted in 2001, the plan was found consistent with statewide goals and rules, Metro's RTP, Washington County's Transportation Plan, and Clackamas County's Comprehensive Plan. The TSP update will address recent amendments to these long-range plans, as applicable, to ensure that Tualatin's planning is consistent with regional goals, policies, and planned improvements.

The 2001 TSP includes existing conditions, forecasts of future transportation needs, alternatives analysis, modal plans, a funding plan, and proposed amendments to the City's code. The street system modal plan establishes a functional classification system, street design standards according to functional classification, and a local street plan. Regarding access management, the street system plan refers to coordination with ODOT, Clackamas County, and Washington County when state or county facilities are involved, and refers to Chapter 75 of the Tualatin Development Code for descriptions of where access will occur on the city's arterial street system.

The current TSP update process is an update of the 2001 TSP and will ultimately replace it.

City of Tualatin Bikeway Plan (1993)

The City Bikeway Plan proposes design standards (Section 5.0) for separated bike paths, in-street bike lanes, and shared roadways. Other proposed standards, projects and systems, and associated code changes appear to have been either incorporated into or superseded by the bicycle plan element of the 2001 TSP and code amendments made since the 1993 Bikeway Plan.

City of Tualatin Development Code (TDC)

The Tualatin Development Code regulates the type, location, density, and design of land development and redevelopment in the city. This regulation occurs largely through zoning, and the City has established a series of residential, employment, environmental, and mixed use base zones as well as two overlay zones.

- Low Density Residential Planning District (RL)
- Medium Low Density Residential Planning District (RML)
- Medium High Density Residential Planning District (RMH)
- High Density Residential Planning District (RH)
- High Density High Rise Planning District (RH-HR)
- Institutional Planning District (IN)
- Office Commercial Planning District (CO)
- Neighborhood Commercial Planning District (CN)
- Recreational Commercial Planning District (CR)
- Central Commercial Planning District (CC)
- General Commercial Planning District (CG)

- Office Commercial Planning District (CO)
- Medical Center Planning District (MC)
- Light Manufacturing Planning District (ML)
- General Manufacturing Planning District (MG)
- Manufacturing Business Park Planning District (MBP)
- Floodplain District (FP)
- Wetlands Protection District (WPD)
- Mixed Use Commercial Overlay District (MUCOD)
- Natural Resource Protection Overlay District (NRPO).

Relevant to transportation planning, the code needs be consistent with requirements in Sections -0045 and -0060 in the Transportation Planning Rule (TPR) (reviewed earlier in this Appendix). It is anticipated that the TSP update project will result in recommended amendments to development requirements, consistent with the project's findings and recommendations and state requirements. The following is an overview of code sections that pertain to the city's transportation system; later in the project these sections in particular will be reviewed for compliance with the TPR and consistency with the updated TSP.

Circulation and Connectivity

Pursuant to TDC Section 36.120, subdivision plans must show existing and proposed private and public streets on the subject property and within three hundred feet of the site as well as an outline of connections to transit routes, pedestrian and bike facilities, and accessways to adjacent properties.

Site design standards are established for multi-family housing and commercial, industrial, public, and semi-public uses. Standards for accessways and walkways as a part of multi-family housing development specify a minimum pathway width and require internal circulation and connections to adjacent public land, public uses, and streets with existing or planned pedestrian, bicycle, and transit facilities (TDC Section 73.130). Standards for the design and location of internal pedestrian and bicycle circulation are provided for commercial, public, semi-public, and industrial uses, as well as requirements for connections to adjacent lots and streets (TDC Section 73.160).

The Local Streets Plan outlines overall connectivity in the city and is included as part of the Transportation System Plan (TDC Section 11.630, Figures11-1 and 11-3.) Block lengths and access management are addressed by future street extension requirements (TDC Section 74.410) and Chapter 74 (Access Management on Arterial Streets). Future street extensions requirements also support access and connectivity and discourage cul-de-sacs and circuitous routes (Section 74.410).

Design Standards

Street, walkway, and pathway design is addressed by code sections governing site design standards for multi-family housing and commercial, industrial, public, and semi-public uses (Sections 130 and 160 of Chapter 73, Community Design Standards) and minimum right-of-way standards (Section 210 of Chapter 74, Public Improvement Requirements). TDC Section 74.420 addresses street improvement standards and refers to the Public Works Construction Code for specific standards. The Transportation System Plan provided in TDC Chapter 11 (Transportation) includes road design cross-sections according to functional classification. TDC Section 74.430 regulates the modification of design requirements.

Performance Standards, Conditions of Development Approval, and Traffic Studies

Mobility performance standards are established by Metro for jurisdictions in the Portland metropolitan area and are cited in the OHP and RTP. Traffic studies are required according to the discretion of

the City Engineer (TDC Section 74.440); threshold criteria for when a study is required and submittal requirements are not included in the TDC.

The City's authority to condition approval is codified both in TDC Section 31.073 (Action of the Community Development Director and City Engineer on Architectural Review Plans) and in TDC Section 31.077 (Quasi-Judicial Evidentiary Hearing Procedures). Dedication of land for right-of-way or trail easements is addressed by TDC Section 74.210 (Minimum Street Right-of-Way Widths) and TDC Section 74.310 (Greenway, Natural Area, Bike, and Pedestrian Path Dedications and Easements).

Pedestrian, Bicycle, and Transit Facilities and Amenities

As described above, code sections on subdivision plan requirements (Chapter 36) and community design standards (Chapter 73) address access to and connectivity for pedestrian, bicycle, and transit facilities. The cross sections included in the existing Transportation System Plan (Figures 6-2A – 6-2G in the TDC) show sidewalks for all street types in the city. However, bicycle lanes are not included in cross-sections for types of minor collectors and just on one side of the street for one type of minor collector.

There are special provisions for the Blake Street right-of-way in TDC Section 8-3-150.[18] The code dictates that this 30-foot right-of-way north of and adjacent to the Hedges Park Subdivision cannot be developed for use by motor vehicle traffic but may be developed for use by pedestrians and cyclists.

Requirements for bicycle parking in terms of design, location, and the number of spaces are established in TDC Section 73.370 (Off-Street Parking and Loading); development proposals for that are required to include bicycle parking are subject to the approval of the Architectural Review Board.

Coordination with Other Agencies

There are existing references to coordination with other agencies, and specifically ODOT, in the review notice procedures for architectural review in TDC Section 31.074(2)(b), for notice procedures for quasi-judicial hearings in TDC Section 31.077(2)(a), and for notice procedures for proposed amendments in TDC Section 1.031(1).

City of Tualatin Parks and Recreation Master Plan (1983)

The plan recognizes existing and planned greenways in the city as linear recreation and open space areas that are either developed (usually with paved pathways) or are natural areas with few or no improvements or pathways. The 1995 Greenway Development Plan (described later in this Appendix) addresses these areas in more detail.

The plan designates connecting parks, residential areas, and Downtown with pedestrian pathways and bikeways as one of four planning priorities for the city, for purposes of both recreation and transportation. The document does not include a specific map or plan for how this priority is to be achieved.

City of Tualatin Greenway Development Plan (1995)

The City Greenway Development Plan is based on the regulatory foundation provided in TDC Chapter 72 (Greenway and Riverbank Protection District and Natural Areas) and Chapter 15 (Parks

[18] Additionally, the Blake Street Bikeway Master Plan was adopted January 12, 2012.

and Recreation Master Plan) as it existed prior to 1995. The plan also proposes changes to these and other regulations. The plan identifies greenways, describes them, and recommends pathways, design standards, and maintenance standards. The following greenways and associated pathways are recommended. They are identified on Map 72-2 of the plan.

- Tualatin River Greenway
- Hedges Creek Greenway
- Nyberg Creek Greenway
- Nyberg Creek Greenway (South)
- Saum Creek Greenway
- Chieftain/Dakota Greenway
- Hi-West Estates Greenway
- Indian Meadows Greenway
- Shaniko Greenway.

City of Tualatin Capital Improvement Plan (in progress)

City staff to provide information pertinent to the TSP update, as available.

Tualatin Tomorrow Community Vision and Strategic Action Plan (2009)

The Tualatin Tomorrow Community Vision and Strategic Action Plan, originally adopted in 2007, was last updated in 2009. The document consists of a set of both vision statements and action plans regarding arts, culture, education, youth, and family activities; growth, housing, and the town center; parks, recreation, and natural areas; health, safety, and social services; traffic, transportation, and connectivity; and governance, leadership, and community engagement. The following growth- and transportation-related strategies should be considered during the update of the Tualatin TSP.

Growth, Housing, and Town Center

- Strategy GHT 2/Dynamic Growth Strategy - Develop a dynamic growth strategy for Tualatin that addresses the interest of surrounding communities and promotes mutually beneficial cooperation on common interests such as Tualatin Police Department, fire, water, sewer and transit.
- Strategy GHT 3/Coherent Development Plan - Develop and implement a clear and coordinated plan for the coherent development of all aspects of Tualatin, including housing, businesses, recreation, roads, etc., with flexibility to deal with changing circumstances over time.
- Strategy GHT 9/Funding for Infrastructure - Develop a strong system of infrastructure funding including System Development Charges (SDCs) to help cover the capital costs, maintenance and improvements of schools, roads and other infrastructure required as Tualatin grows and develops. Potential partners with City: League of Oregon Cities, State of Oregon.
- Strategy GHT 10/Addressing Construction Impacts – Address the impacts of ongoing construction in the community through clear and frequent communication with contractors and the public, ensuring safety of all forms of transportation (vehicles, bicycles, pedestrians), and regulating the impact on community livability (hours, noise, etc.). Potential partners with City: ODOT, Clackamas and Washington Counties, developers.
- Strategy GHT 13/Vibrant, Identifiable Town Center – Develop a unique, vibrant and identifiable Town Center for Tualatin, preserving its history and heritage, while providing arterial transit access, cycling and pedestrian-friendly features, places people like to shop,

and easy recreational access. Potential partners with City: Chamber of Commerce, businesses.

- Strategy GHT 15/Diverse Retail Opportunities - Offer a wide range of business and retail opportunities in Tualatin Town Center, geared to a variety of needs and income levels with good accessibility for vehicles and pedestrians. Actions relate to the development and adoption of the Town Center Plan. Potential partners with City: citizen committees and developers.
- Strategy GHT 16/Pedestrian and Bicycle-Friendly Town Center – Ensure that Tualatin's Town Center is safe and friendly for bicyclists and pedestrians, with bicycle and pedestrian-friendly intersections and amenities. Potential partners with City: ODOT, other cities, advocacy groups, school district, Chamber.
- Strategy GHT 17/Commercial Traffic Diversion – Use a variety of means to minimize the impact of commercial through-traffic in Tualatin, diverting a significant portion of this traffic out of the Tualatin Town Center and neighborhoods. Potential partners with City: industries/businesses.
- Strategy GHT 19/Mixed-Use Development – Promote mixed-use development in Tualatin as appropriate, supporting home ownership near businesses where individuals work and reducing vehicle trips in and out of the city.
- Strategy GHT 20/Neighborhood Commercial Centers – Promote the establishment of small, pedestrian-friendly, commercial centers in the community, which promote local interaction within walking distance of neighborhoods with a diversity of shops, businesses and restaurants. Potential partners with the City: realtors, developers.
- Strategy GHT 21/Beautiful Streetscapes – Ensure beautiful streetscapes throughout Tualatin, promoting the ongoing maintenance of street easements through a variety of means.
- Strategy GHT 22/Community Gateways – Develop distinct gateways at key entry points into Tualatin, promoting the community's identity and distinguishing it from surrounding cities. Use structures, art, signage and landscaping to enhance these gateways.

Parks, Recreation, and Natural Areas

- Strategy PRN 11/Natural and Inviting Trails – Promote public awareness and use of Tualatin's trails, including their recognition for providing natural and inviting forms of recreation and nature appreciation. Actions associated with this strategy call for development of a trails master plan. Potential partners with the City: Metro, Counties, other cities, CWS, State of Oregon Parks, Wetlands Conservancy, Tualatin Riverkeepers.
- Strategy PRN 13/Diverse Bicycle Paths – Provide ample bicycle facilities in Tualatin, including both bicycle paths and on-road bicycle lanes. Potential partners with the City: Metro, Counties and other cities, TriMet, CWS, Wetlands Conservancy, Tualatin Riverkeepers.

Traffic, Transportation, and Connectivity

- Strategy TTC 1/Multi-Modal Transportation – Promote the development of a fully multi-modal transportation system in Tualatin, providing safe, efficient, alternative modes of travel for businesses and residents, from youth to seniors. Actions associated with this strategy include a Tualatin River trail, community bus service and bus service improvements, and a PCC shuttle.
- Strategy TTC 4/Downtown Parking – Develop ample public parking in Tualatin Town Center in order to better accommodate local businesses, services and retail establishments. Potential partners with City: TriMet, Chamber, developers, Downtown Business Association, Westside Transportation Alliance.

- Strategy TTC 5/Improved Traffic Management – Develop and institute an improved traffic management system in Tualatin to optimize traffic signals and mass transit for better traffic flow at consistent speeds throughout the city. Potential partners with City: Chamber, business associations, WTA, school district.
- Strategy TTC 6/Improved Traffic Flow – Improve the flow of traffic in Tualatin through special routes and lanes, roadway improvements and other measures, relieving traffic congestion and promoting the flow of local residential traffic. Potential partners with City: ODOT, Metro, Washington County, Chamber, businesses and neighborhood associations, WTA.
- Strategy TTC 12/Roadside Landscaping – Develop new programs and activities to improve and enhance City standards for and involvement in roadside landscaping. Potential partners with City: ODOT, Counties, businesses.
- Strategy TTC 13/Regional Transit Linkage – Strengthen Tualatin's linkages with the regional transit system (bus, rail, etc.), improving transit service and connections within the city and to other parts of the region for the local population at all times of day. Actions associated with this strategy include expansion of commuter rail service.
- Strategy TTC 14/Pedestrian Routes and Crossings – Establish a network of safe, well-designed pedestrian routes and crossings in Tualatin, separating foot traffic from bicycle and vehicular traffic throughout the city. Potential partners with City: ODOT, Metro, Counties.
- Strategy TTC 15/Walkable Commercial Areas – Promote greater walkability and pedestrian-friendly features in all of Tualatin's commercial areas. Potential partners with City: Chamber, Downtown Business Association.

Hedges Creek Wetlands Master Plan (2002)

This master plan directs the use and maintenance of the 29-acre Hedges Creek Wetlands, which the City of Tualatin acquired in 1999. The following vision statement was developed for Hedges Creek Wetlands:

Hedges Creek Wetlands shall be a maintained, multi-use public resource and natural area for the purposes of: (1) enhancing and restoring fish and wildlife habitat; (2) detaining and conveying flood waters; (3) protecting and improving water quality; (4) facilitating passive recreation and environmental education; and (5) contributing to a visible and viable Tualatin Town Center.

Recommendations in the plan address recreation facilities, water quality and hydrology improvements, habitat enhancement, education, transportation and access improvements, maintenance, and administration. In addition to pathways and circulation improvements within the site, the plan proposes the following public access improvements:

- Provide pedestrian access between wetlands site and Tualatin Community Park
- Install park signage (e.g. park identifiers, park maps, park rules).
- Install signage about access to multimodal transportation.
- Pursue agreements with adjacent landowners for pedestrian pathway connections.
- Install pedestrian crossing at SW 90th Avenue.

Downtown Parking Plan (in progress)

A Downtown Parking Plan is being developed and, thus far, an assessment of the Core Area Parking District (June 2011) and a work program proposal for the Core Area Parking District Board (October 2011) have been prepared. The assessment reports on current supply and demand, funding for capital and operations, and revenue from operations. It recommends that some combination of the following strategies be explored and that a work program for FY 2011/2012 be prepared.

- "Re-mix" parking in existing lots to assure a Customer First approach for access in the downtown.
- Reduce current expenses and services.
- Implement a "premium" pricing program to allow a limited number of parking stalls to be leased in highly desired locations.
- Carry some cost of operations in the City's general fund.
- Generate new revenue from tax increases.
- Institute new user fees (e.g., monthly permits, on and off-street pay stations, etc.).

The work program that the City subsequently developed was presented to the Core Area Parking District Board for consideration in early October 2011. The intent was for the Board to agree on an approach to each of the following strategies and give feedback on actions that staff should take in implementing each strategy.

- Consider signage options for parking areas (target completion date: Winter 2012)
- Consider two-hour parking for Red and Yellow Lots (target completion date: Winter 2012)
- Explore the feasibility of ending the fee in lieu program (target completion date: as soon as possible)
- Explore the feasibility of paving the Hanegan Lot and approval by City Council (target completion date: to be determined)
- Consider asking the City Manager and the City Council to consider having the cost of parking enforcement covered by the General Fund in future years (target completion date: June 2012, consistent with approval of the FY 2012/2013 budget)
- Consider paid permit parking options (target completion date: to be determined)
- Establish an enforcement system to eliminate warnings while balancing the needs to be customer friendly.

The TSP update process will coordinate with the ongoing development of this plan.

Northwest Concept Plan (NWCP) (March 2005)

The Northwest Concept Plan was developed with support from the State of Oregon Transportation and Growth Management (TGM) program. The plan was developed as a requirement following a December 2002 decision by Metro to bring the area inside the UGB. The intent of the Concept Plan is to allow for flexibility in industrial development while promoting compatibility with adjacent land uses and natural resources. The plan area is located in unincorporated Washington County, in northwest Tualatin, and is bounded by OR 99W to the north and SW Cipole Road to the east. Land is developed north and east of the plan area but relatively undeveloped to the west and south.

The plan document is organized as a series of plans that address land use and development; transportation facilities; water, sewer, and storm drainage; other utilities; and natural and cultural

resources. The following is a summary of elements from those plans that may directly affect the TSP update:

- Land Use and Development – Land use would be industrial, consistent with City of Tualatin General Manufacturing (MG) zoning. Actual uses to be developed would be determined by market opportunities and constraints at the time of development.
- Transportation – A new access road would connect the plan area and SW Cipole Road and improvements to SW Cipole Road are proposed between OR 99W and Cummins Drive, a planned road.
- Water – A new 10-inch looped water system is recommended to connect to the existing water main in SW Cipole Road.
- Sewer – A new 8-inch sanitary sewer line is proposed in the plan area in addition to plus a connection offsite to the existing SW Cipole Road pump station south of the Plan area.

Southwest Concept Plan (SWCP) (Adopted April 2011)

City staff to provide additional information as is available and pertinent to the TSP update.

The Southwest Concept Plan (SWCP) is intended to guide industrial development in a 614-acre area outside of the city of Tualatin between Tualatin-Sherwood Road and Tonquin Road. Initial concept planning was done for the area in 2004-2005 and then was put on hold until work on the visioning and action plan work for Tualatin Tomorrow could be completed. Concept planning recommenced in 2007, taking into account the Tualatin Tomorrow Vision and Strategic Action Plan and the I-5/99W Connector project.

Plan maps for the SWCP show primarily industrial uses in the area (approximately 430 net acres) while also envisioning a mixed use center (approximately 16 net acres) in the north central part of the area, just south of Tualatin-Sherwood Road on 120th Avenue, and easements and open space . Transportation facilities planned for the area include the following:

- An extension of 124th Avenue between Tualatin-Sherwood Road and Tonquin Road (arterial)
- An extension of 115th Avenue from its existing terminus south of Tualatin-Sherwood Road to Tonquin Road (collector)
- A new east-west connection between the planned 124th Avenue and the existing terminus of 115th Avenue, in the upper third of the plan area (collector)
- A new east-west connection between planned 124th Avenue and 115th Avenue in the lower third of the plan area (collector)
- Generalized east-west or northwest-southeast local street connections between the proposed collectors
- A new local street around the mixed use area and reaching east to the north end of a proposed open space that parallels the commuter rail line
- Sidewalks along the proposed new streets and a sidewalk connection between the mixed use center and the intersection of Tualatin-Sherwood Road and 124th Avenue
- Trails through the mixed use area, through the proposed open space parallel to the commuter rail line, and in PGE and BPA easements that run northwest-southeast through the plan area
- Transit center at the intersection of Tualatin-Sherwood Road and 124th Avenue.

City Council adopted ordinances to implement the Southwest Concept Plan in April 2011. Council directed staff to work with property owners from the Tonquin Industrial Group to create

an overlay zoning district that would allow their businesses to become conforming uses if their properties annex into the city.

Town Center Plan (Final Report, 2005)

The Town Center Plan focuses on the area of Tualatin designated as a Town Center in the Metro 2040 Growth Concept. The objectives of the plan include developing mixed uses and building types; promoting development that was more urban in style and intensity; providing safe and efficient pedestrian and vehicle connections; being consistent with applicable land use and transportation regulations; and improving quality of life.

The 2005 final report for the plan consists of background information, a vision, existing conditions, alternatives analysis, recommended plan elements, and an implementation strategy. The three plan elements are land use/building; transportation; and parks, natural areas, and other elements. The land use and building element proposes include new or expanded public, retail, office, residential, and mixed uses. The parks and other elements include recommendations for enhancements and restoration of Hedges Creek, the Hedges Creek watershed, and other streams, as well as a new "feature" at the Lake of the Commons and gateway signage and landscaping. Recommended transportation improvements include:

- Streetscape and pedestrian improvements
- Traffic calming
- New extension of Seneca Street from Martinazzi Road to the K-Mart site
- Local street grid and loop road around K-Mart building
- Commuter rail station along Boones Ferry Road (*note:* completed)
- Pedestrian trails along both sides of Tualatin River connected with pedestrian bridges (*note:* north side trail completed)
- Expanded recreational trail network within city
- Tualatin Road extension to Hall Boulevard
- Road connections between Lower Boones Ferry Road and SW 90th.

The recommended land uses and improvements are illustrated in Figure 7, the Preferred Town Center Development Concept Plan.

The plan elements are designed to support improvements proposed as part of the I-5 to 99W Connector Project (Alternative 7).

The 2005 final plan report has thus far served as the plan, but has not been adopted by City Council. The plan is in the process of being updated, and when the update is adopted, the TSP and relevant Tualatin Development Code (TDC) chapters will be amended as needed.

Tualatin Town Charter Chapter XI

Chapter XI of the Tualatin Town Charter prevents the transfer, sale, vacation or major change in use of city parks without a vote of Tualatin residents, preserves the natural beauty, ecological integrity and recreational value of the city's parks from in-compatible and non-park development, protects public park uses and purposes for which city parks are established, acquired, or dedicated, and prevents conversion of development of parks and parts thereof to non-park or incompatible uses. The charter requires voter approval for the following actions:

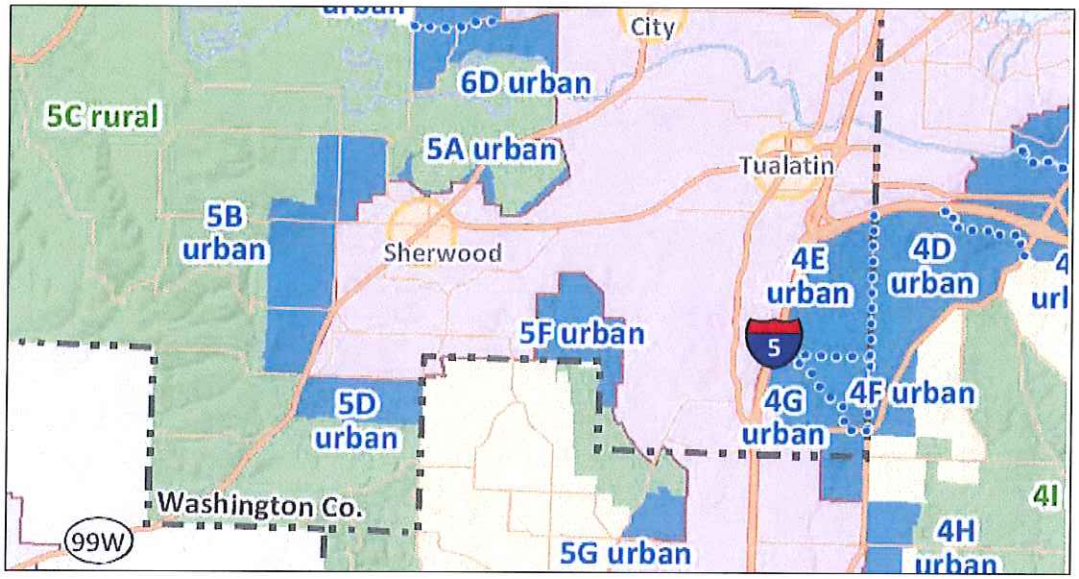
- Sell, lease, or otherwise transfer city park property
- Vacate or otherwise change the ownership or legal status of any city park, or part thereof, except easements for underground utilities and uses that do not cause or create a major change of use in the park or part of the park
- Cause, undertake, or allow any development or construction in a city park that changes the use of park or part of the park
- Construct, or allow to be constructed or expanded any street, road, parking lot or permanent above ground structure, including buildings, power lines, motor vehicle or utility bridges and power lines, other than streets, roads, parking lots or structures needed to serve the park's primary purposes, including park maintenance and operations. Below ground structures or buried utilities that limit above-ground park uses must also comply.

Urban and Rural Reserve Planning

Metro, Clackamas County, Multnomah County, and Washington County led a three-year process from 2008 to 2011 to determine urban and rural reserves for the Portland metropolitan area. Urban and rural reserves are lands currently outside the UGB that are either suitable for urbanization or protection as rural areas over the next 50 years. Designation as an urban or rural reserve does not change current zoning or permitted uses of the land. The Oregon Land Conservation and Development Commission gave final approval to the urban and rural reserves designated in Clackamas, Multnomah, and Washington counties in August 2011.

As shown in Figure 5, there are several adopted urban reserve areas that border Tualatin including Areas 4D, 4E, 4F, 4G, 5A, and 5F as well as a very small portion of rural reserve Area 5C near Sherwood. The urban reserves are significant to transportation system planning because of the potential they hold for urbanization in the next 50 years. However, these areas are not yet under Tualatin's jurisdiction and the TSP process is generally constrained to plan only for the area in the existing city limits and UGB, Consideration of the possible implications of urban reserve areas adjacent to Tualatin may only be treated in a very conceptual or theoretical manner for the purposes of the TSP update.

Figure 5. Urban Reserves in the vicinity of Tualatin



Basalt Creek Intergovernmental Agreement (June 2011)

The Basalt Creek Concept Plan Area refers to two areas (775 acres total) that Metro added to the UGB in 2004. The area is generally located between the Cities of Tualatin and Wilsonville, and was intended for industrial and residential uses. The Cities have entered into an agreement to collaborate on concept planning for the area. However, it has been determined that Washington County will lead a Basalt Creek Transportation Refinement Plan to address general transportation issues in southern Washington County before concept planning begins. The County also is planning to improve SW Boones Ferry Road from SW Norwood Road to SW Day Street within the Basalt Creek Concept Plan Area.

The Tualatin City Council authorized an intergovernmental agreement (IGA) for concept planning the Basalt Creek Area in June 2011. The IGA does not obligate the Cities of Tualatin or Wilsonville to pay for the right-of-way acquisition or construction of the I-5/99W "Southern Arterial" that is conceptually designed and will pass through the Basalt Creek Concept Plan Area. However, the IGA does commit them to the planning and project management of the roadway system in the Basalt Creek Concept Plan Area.

Clackamas County Comprehensive Plan

The Comprehensive Plan for Clackamas County acts as a guide for future growth and development in unincorporated areas of the county, outside of city limits, through the formation of goals and policies that respond to current and future needs over a 20-year planning period. Goals and policies pertaining to land use and transportation are implemented through land use and development ordinances (see the next section in this Appendix). This document defines County land use designations, identifying where these land use designations will be applied, thereby providing the policy foundation for the County zoning map. County zoning has been incorporated into regional transportation models used to develop forecasts for the TSP.

Chapter 5 (Transportation) focuses on developing a transportation system that meets the needs of Clackamas County residents, while also considering regional and state needs at the same time. The plan addresses a balanced transportation system that includes automobile, bicycle, rail, transit, air, pedestrian and pipelines and reflects existing land use plans, policies and regulations that affect the transportation system. The Clackamas County TSP implements these goals and policies and provides a Capital Improvement Plan to address deficiencies. Recommendations that result from the City's TSP update, such as those pertaining to County facilities or to transportation-related coordination between the City and the County, may necessitate an update to the County's Comprehensive Plan so that both jurisdictions' policy documents are consistent with each other. The County is currently in the process of updating its TSP.

Clackamas County Zoning and Development Ordinance

The Zoning and Development Ordinance (ZDO) implements the goals and policies of the County Comprehensive Plan and provides methods of administration and enforcement of the provisions within the ordinance. Clackamas County zoning pertains to unincorporated areas of the county. In the City of Tualatin, the City of Tualatin's zoning would apply.

The ZDO also addresses transportation facilities, primarily in Section 1007 (Roads and Connectivity). The section includes provisions for connectivity, access management, and bicycle and pedestrian facilities. Section 1007.03.C provides references to intersection spacing and access control for new development on county roads. ZDO Section 1007.06 establishes standards for the design and location of pedestrian facilities including sidewalks, accessways, and pathways and for types of bicycle facilities including shoulder bikeways, bike lanes, and bike paths. ZDO Section 1007.009 establishes requirements for transportation facility concurrency.

Clackamas County Transportation System Plan (2001)

The Clackamas County Transportation System Plan is in the process of being updated. County staff shall provide information as is available and pertinent to the Tualatin TSP update.

Chapter 5 of the 2001 TSP is the transportation element of the Clackamas County Comprehensive Plan and is the County's adopted Transportation Systems Plan (TSP). Chapter 5 lists the County transportation polices, standards, and identified projects. It provides roadway classifications and design guidelines and identifies scenic roads, the planned bikeway network, planned pedestrian network, and urban freight routes. It focuses primarily on the County's responsibilities, although it recognizes that the State and various cities own and maintain roads within the county.

To the extent that the Tualatin TSP Update includes recommendations that pertain to County facilities, these recommendations need to be coordinated with the Clackamas County TSP Update

process that is currently underway in order to maintain consistency between the jurisdictions' long-range plans.

The Clackamas County TSP provides the following functional classification for roadways in Tualatin in Clackamas County:

Freeway
- I-5
- 1-205

Major Arterial
- Boones Ferry Road

Minor Arterial
- Borland Road
- 65th Avenue

Collector
- McEwan Road.

The Transportation System Plan 20 Year Projects (Urban) includes the following two projects on roads in Tualatin:

- Project #112 – Childs Road, from Stafford Road to 65th Avenue, reconstruct and widen to 2-3 lanes.
- Project #113 – Borland Road, from 65th Avenue to Stafford Road, widen to four lanes with left-turn lanes.

Clackamas County Capital Improvement Plan

This plan is in the process of being updated and County staff will provide documents as they become available and are relevant to the Tualatin TSP Update.

Washington County Comprehensive Plan

Elements of the Washington County Comprehensive Plan that have bearing on the Tualatin TSP update process include the Unified Capital Improvements Program, which is comprised of the Transportation Capital Improvement Program and the Washington County 2020 Transportation Plan. These documents are discussed in the following sections of the Appendix.[19]

[19] The Washington County Comprehensive Plan includes specific policies for a number of urban areas within the county through community plans that are individual components of the County Comprehensive Plan. The portion of Tualatin that is located in Washington County does not fall within one of the County's community plans.

Washington County Capital Improvement Program

The Washington County 2010-11 Adopted Budget was reviewed for Transportation Capital Projects. The only project that pertains to Tualatin is the I-5-99W Connector (MSTIP 3 – Ongoing).

Washington County 2020 Transportation Plan (2003)

The Washington County 2020 Transportation Plan is in the process of being updated; the following summary is of the currently adopted document. The Transportation Plan supports the adopted development patterns in the Community Plans, the Rural/Natural Resource Plan, and city Comprehensive Plans. The Transportation Plan also implements the applicable policies and strategies of the Community Plans and the Rural/Natural Resource Plan. The Transportation Plan addresses provisions of the RTP and TPR.

The Transportation Plan is a comprehensive analysis and identification of transportation needs associated with the development patterns described in the community plans and the Rural/Natural Resource Plan. It addresses the major roadway system (i.e., non-local roadways), transit, pedestrian and bicycle transportation issues and focuses on specific and system requirements. Existing and planned roads that are part of the major roadway system are classified in the Transportation Plan according to their existing or planned function, right-of-way, alignment, and dimensional standards. The local street system is designated in the community plans and the Rural/Natural Resource Plan.

To the extent that the Tualatin TSP Update includes recommendations that pertain to County facilities, these recommendations may need to be coordinated with the Washington County Transportation Plan Update process that is currently underway in order to maintain consistency between the jurisdictions' long-range plans.

The following roads in Tualatin are classified as freeways, arterials, and collectors in the Washington County TSP:

Freeway
- I-5
- I-205

Principal Arterial/Arterial
- OR 99W

Arterial
- Boones Ferry Road
- Nyberg Road
- Tonquin Road
- Tualatin-Sherwood Road
- 65th Avenue
- 124th Avenue extension (proposed Arterial)

Arterial/Collector
- Sagert Road

Collector
- Hazelbrook Road

- 115th Avenue
- 106th Avenue
- Teton Avenue
- Jurgens Avenue
- Tualatin Road
- Leveton Drive
- Herman Road
- 118th Avenue
- Myslony Street
- Cipole Road
- Avery Road
- 95th Avenue
- 105th Avenue
- Ibach Court
- Myslony/Avery connection (proposed Collector)
- Tualatin-Sherwood Road/OR 99W connection (proposed Collector)[20].

The following project is identified in the Washington County Transportation Plan in Tualatin:

- Project #80 - Tualatin-Sherwood Road, from OR 99W to Teton, widen to five lanes, estimated cost $32 million, near term.

Next Steps

As strategies for addressing the City's transportation needs over the next 20 years are developed in upcoming tasks of this TSP update process, it will be necessary to coordinate and comply with the plans, policies, and regulations described in this Appendix. The policy framework created by the documents will be used throughout the TSP update process as a decision-making tool and will assist in developing any needed amendments to local planning documents and in making findings of compliance with adopted plans and regulations.

[20] The existing adopted Washington County TSP dates back to 2003 and planning for the I-5/OR 99W Connector has since modified this proposed roadway project as part of its alternatives development process.

Appendix B
Existing Conditions and Deficiencies

This Appendix describes the current (2012) transportation system in Tualatin, including existing conditions, opportunities, and deficiencies. The report evaluates the roadway network, public transportation routes and service, bicycle facilities, pedestrian facilities, rail facilities, airports, and pipelines within the project study area. It also describes general land use patterns and major activity centers that generate traffic. The information used to describe the existing system and identify deficiencies in this report came from the City of Tualatin, Washington and Clackamas Counties, the Oregon Department of Transportation (ODOT), Metro, and the consultant team through a site visit on October 12, 2011.

The information in this report served as the starting point for a discussion with the broader community about the current state of the transportation system in Tualatin. This information was used to help inform the project ideas and alternatives developed into Tualatin's Transportation System Plan (TSP).

Contents

Contents 2
Study Area 4
Land Use 4
Existing Land Uses 7
Demographics 9
Commute Characteristics 10
Roadway System, Geometry and Conditions 11
Roadway Classification 11
Ownership 15
Maintenance Responsibility 16
Freight or Truck Routes 16
Existing Geometry vs. City Design Standards 17
Traffic Operations 19
Travel Times and Speeds 25
Safety 29
Safety Analysis 29
Bicycle 36
Bicycle Facilities and Amenities 36
High Bicycle Activity Locations 37
Bike Needs 41
High Crash Locations 42
Pedestrian System 42
Sidewalks, Multi-Use Pathways, Crosswalks, and Pedestrian Signals 42
High Pedestrian Activity Locations 50
High Crash Locations 50
Public Transit 51
Existing Service 51
Existing Transit Facilities 56
Transit Ridership 58
Transit Travel Times 59
Freight Rail, Pipeline, Waterway, Airport 60
Freight Rail 60
Pipeline 60
Waterways 60
Airport 60

Attachment A: Roadway Standards Assessment 63

Attachment B: Bus Stops within the City of Tualatin 65

This page intentionally left blank

Study Area

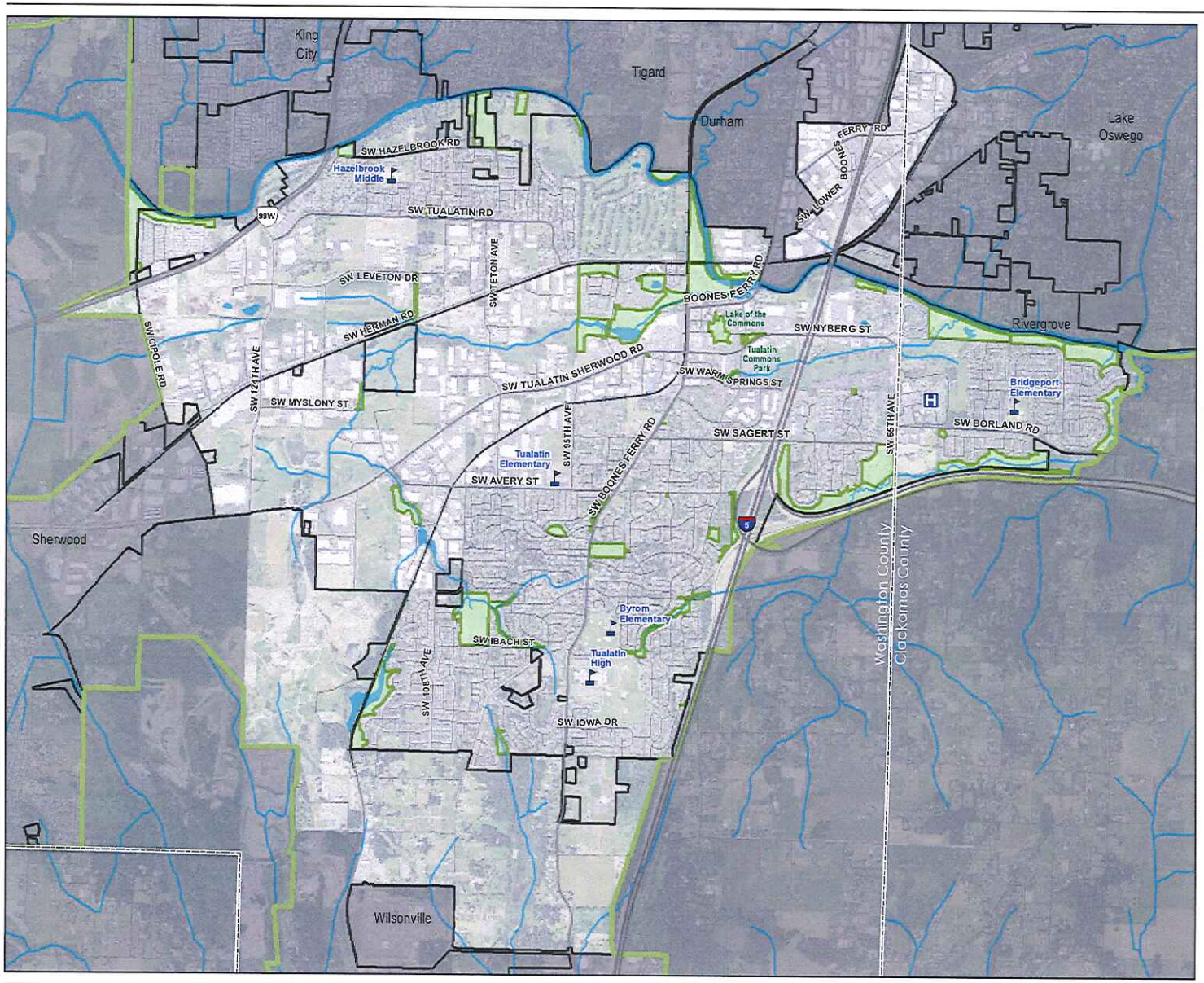
The City of Tualatin is located in the southwestern portion of the Portland Metro region, and according to the 2010 US Census has a population of 26,054 people. It is predominantly located within Washington County, though a small section of the City east of I-5 is located in Clackamas County. Figure 1 shows the study area in more detail.

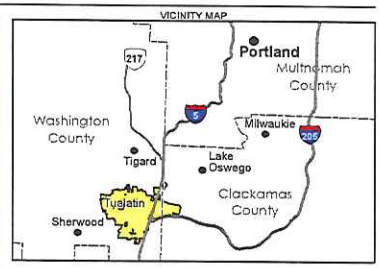
The study area for the Tualatin TSP is comprised of the Tualatin Planning Area Boundary, which includes portions of the Basalt Creek project between Tualatin and Wilsonville and the SW Concept Plan between the City of Sherwood and Tualatin. The Tualatin River is the north boundary of the City west of I-5, with SW Cipole Road and SW 124th Avenue to the west, and SW Helenius and SW Norwood Roads to the south. The eastern boundary follows the west side of I-5 until north of I-205. The City then extends east into Clackamas County east of SW 48th Avenue. The City also includes a section of the Bridgeport Village shopping center on either side of I-5 to approximately SW Rosewood Street in the northeastern quadrant of the City. In addition to the City limits at the edge, there are a handful of areas that are surrounded by the City but not officially incorporated.

Land Use

Introduction

This section provides a general overview of existing and allowed land uses in the City of Tualatin. It is intended to inform the team in identifying how current land uses affect transportation conditions. The City of Tualatin's Zoning and Comprehensive Plan are the same and are codified in the Tualatin Development Code (TDC). The TDC identifies types of development and land uses that are currently allowed within the City. Figure 2 shows land use designations within the City.





LEGEND

- Study Area
- City Boundaries
- County Boundaries
- Urban Growth Boundary
- Parks
- Schools
- Railroad
- Hospitals

Street System

- Interstate
- Arterial

N

0 0.5 1 Miles

FIGURE 1
Base Map
Existing Conditions Analysis
City of Tualatin Transportation System Plan

CH2MHILL

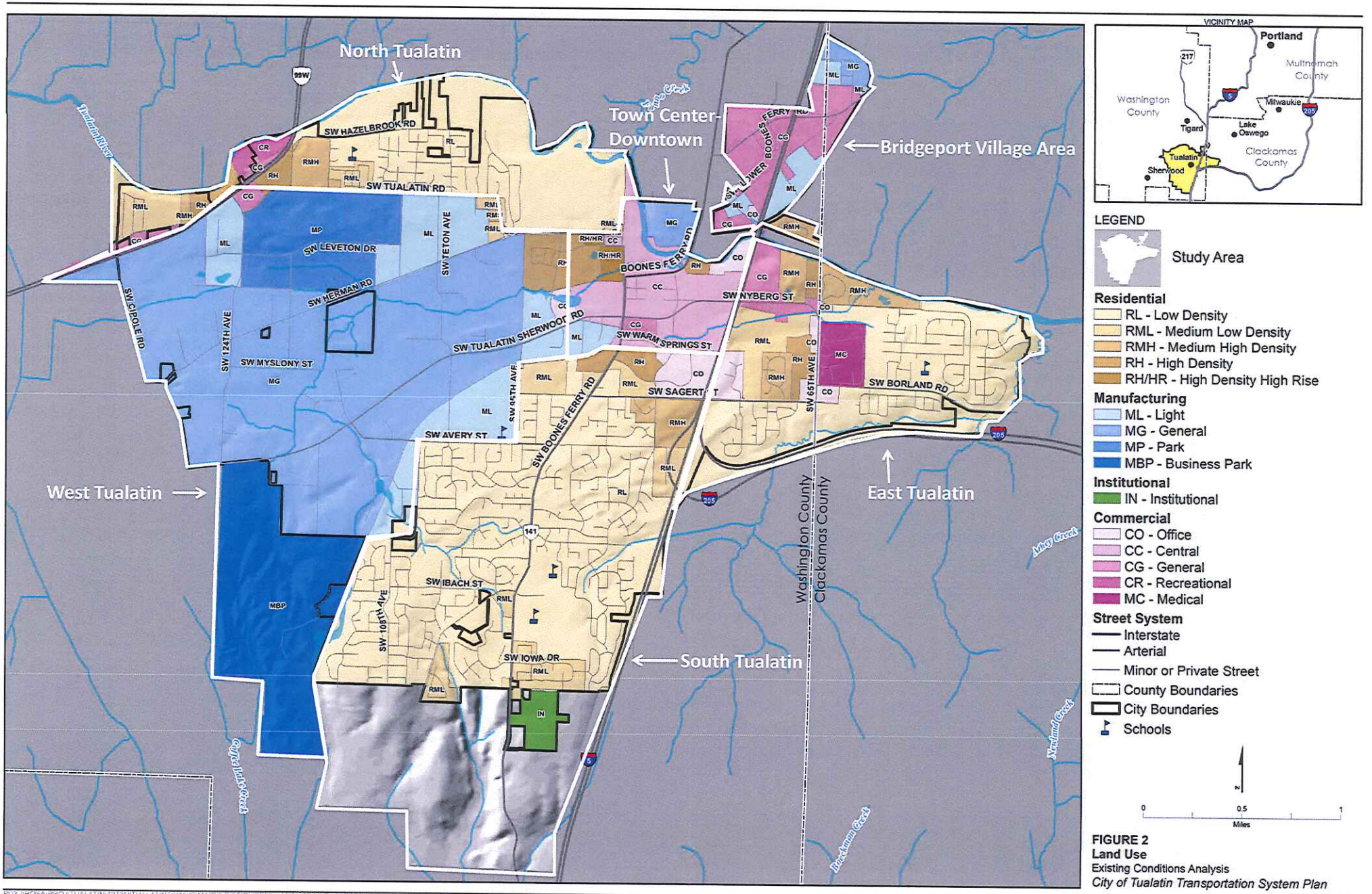


FIGURE 2
Land Use
Existing Conditions Analysis
City of Tualatin Transportation System Plan

P:\X-IROSA\PROJ\TUALATIN\427318TUALATINTSP\GIS\MAPFILES\FIGURE02_LANDUSE.MXD CSTEBBIN 12/23/2011 12:17:36 PM

CH2MHILL.

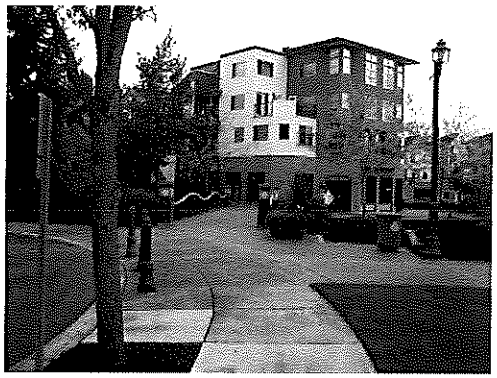
Existing Land Uses

This section provides a general overview of existing and allowed land uses within the City of Tualatin's planning area including the SW Concept Plan and the Basalt Creek Planning area. It is not intended to be comprehensive, but to inform the TSP team in identifying how current land uses affect current transportation conditions. The descriptions and areas below are based on distinct land uses and character within the City and are indicated on Figure 2.

Town Center – Downtown Tualatin

The Town Center Area including downtown Tualatin is centered around SW Nyberg Street west of I-5, bounded by I-5, SW Warm Springs Street, SW 90th Avenue, and SW Tualatin Road. The Town Center Area has the highest density residential areas within Tualatin, though the majority of the area is designated Central Commercial and includes Tualatin Commons and the surrounding businesses along SW Tualatin-Sherwood Road, SW Tonka Street, SW Nyberg Street, SW Boones Ferry Road, and SW Tualatin Road. The Tualatin Community Park is partially within the Town Center Area.

There are a number of shopping centers in the Town Center area, especially along SW Tualatin-Sherwood and SW Nyberg Roads. The businesses are predominantly car-oriented and have large parking lots with fast-food or casual dining restaurants adjacent to the main roadways. Other areas have groups of smaller retail and service-oriented businesses, specifically the area between SW Tualatin-Sherwood Road and SW Warm Springs Street and SW Boones Ferry Road and SW Martinazzi Avenue. The Town Center area also has a couple of hotels, one in the Tualatin Commons area and one further south on SW Warm Springs Street.



Example of mixed use development in the Town Center area

In addition to retail businesses, the Town Center area is also home to many City services including the Tualatin Library, Police Department, City Hall, City administrative offices, and Community Park. The central part of the Town Center area is comprised of the Tualatin Commons, which is oriented towards the lake at the center of the commons. The circular area is surrounded by mixed use development with ground floor retail and upper-story residential development (apartments and condos). There are a number of service and restaurant businesses in the Tualatin Commons, and festivals and community events are held in the Commons. It is the center of the community and provides a gathering place for residents.

North Tualatin

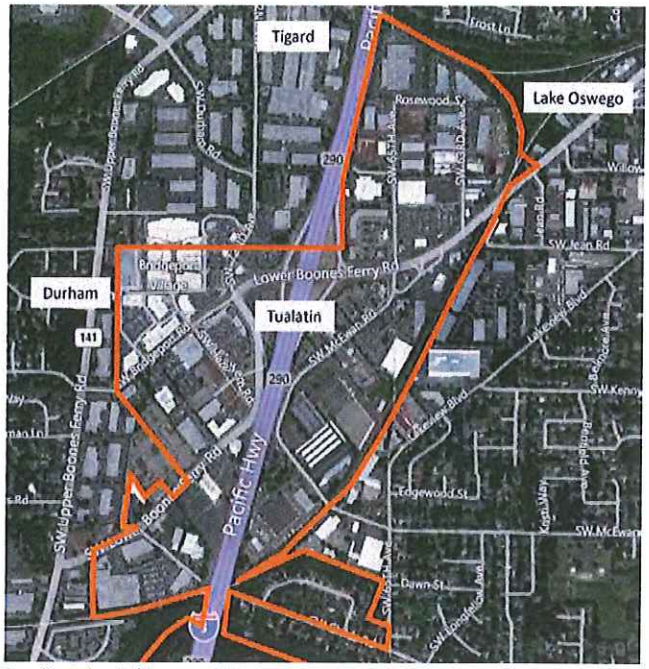
North Tualatin is located north of SW Tualatin Road and includes the section of Tualatin that is northwest of OR 99W. The majority of the area in North Tualatin is low-density residential, with a few areas of medium-high density and high density residential, especially near OR 99W. There are a few mobile home parks north of OR 99W adjacent to SW Pacific Drive and some higher-density residential neighborhoods. There are also a few pockets of recreational commercial and general commercial along OR 99W in North Tualatin. The Tualatin Country Club is located in North Tualatin, along with Jurgens Park and Hazelbrook Middle School.

The major through facility, OR 99W, brings regional traffic through this section of the City, though its location on the edge of town reduces the impact of the regional traffic on the local roads or neighborhoods.

Bridgeport Village Area

There is one section of the City north of the Tualatin River extending along I-5 and SW Bridgeport and SW Lower Boones Ferry Roads. On the west side of I-5 is Bridgeport Village, a lifestyle center providing shopping, dining, and entertainment located directly off of exit 290. With approximately 60 businesses located in Tualatin, it is a regional draw including most of the shopping center and additional businesses south of SW Bridgeport Road including a sporting goods store, jewelry store, and grocery store. Parts of the center are located in both Tualatin and Tigard. This area is also bordered by Lake Oswego and Durham. In Tualatin, this area is designated general commercial. On the east side of I-5 is additional general commercial and some light manufacturing and general manufacturing which

includes a shipping distribution center, a few bakery supply businesses, storage, and vehicle repair businesses. There is also a small section of medium-high density residential just east of I-5 and north of the river.



Detail of the Bridgeport Village Area (Tualatin City limits in orange)
Map Source: Bing Maps

The three study area intersections in this part of Tualatin had the two highest traffic volumes during the traffic count period (I-5 northbound ramps and SW Lower Boones Ferry Road, and I-5 southbound ramps and SW Lower Boones Ferry Road), and the third (SW 72nd Avenue and SW Lower Boones Ferry Road) is in the top third of study area intersections for traffic volumes. Much of the traffic is traveling east-west on SW Bridgeport and SW Lower Boones Ferry Roads to or from the highway, in the afternoon rush hour. Many vehicles are exiting northbound I-5 and turning left towards the shopping center on SW Bridgeport Road. At the I-5 southbound ramps, the traffic counts are very similar – most vehicles are heading either east or west bound, with about the same number of vehicles exiting the highway and turning east or westbound onto SW Lower Boones Ferry Road. The intersection directly adjacent to Bridgeport Village, SW 72nd Avenue/SW Bridgeport Road/SW Lower Boones Ferry Road is a better indicator of afternoon rush hour associated with Bridgeport Village. The majority of vehicles turn off of SW 72nd Avenue towards the I-5 interchange, while similar numbers of westbound vehicles pass through the intersection, and turn left and right towards the shopping areas. This part of Tualatin has one of the four I-5 under- or overcrossings at SW Lower Boones Ferry Road near the shopping center.

The second I-5 interchange in the City is located here, and the roads serve shoppers coming to Bridgeport, but also carry freight for the commercial and manufacturing businesses. There are few local roads - most of the transportation network in this part of Tualatin serves the commercial or manufacturing businesses or provides direct access to the I-5 interchange.

East Tualatin

The eastern segment of Tualatin that is east of I-5 also contains the only part of the City that is within Clackamas County. The County line is approximately SW 65th Avenue between Washington and Clackamas Counties. Eastern Tualatin is separated from the rest of the city by the highway, which presents a physical barrier between the eastern and western parts of the City. Two of the four under- or overpasses in Tualatin are located in East Tualatin: SW Nyberg Street near the Town Center area, SW Sagert Street just north of the I-5 and I-205 interchange. This section is also bounded to the south by I-205 and to the north by the Tualatin River.

Example of low density residential in East Tualatin

East Tualatin is a mix of land uses: one of the largest employers in the City - Legacy Meridian Park Medical Center - is located in the area designated Medical Center. There are few areas of commercial office nearby, and a general commercial area east of I-5 on either side of SW Nyberg Road. In addition to these commercial/employment centers, there is some high and medium high density residential. The remainder of East Tualatin is low or medium-low density residential. Bridgeport Elementary School, Browns Ferry Park, Stoneridge Park, and Atfalati Park provide educational and recreational opportunities. The low-density residential areas are similar to the neighborhoods found in

southeastern Tualatin, but the high-density areas are characterized by multi-story condo and apartment style housing.

This area attracts a mix of traffic – the commercial, office, and medical center areas are regional attractors, and local residential traffic is more concentrated in areas with high density residential. Connections to the rest of the city are constrained by I-5, the river, and I -205, but there is a regional connection to the east via SW Borland Road.

South Tualatin

This area around SW Boones Ferry Road, between I-5 and SW 95th Avenue and SW 105th/108th Avenues and the railroad, and downtown Tualatin and the southern planning area limits, including the Basalt Creek Planning Area is mainly low to medium-low density residential with mostly single-family homes organized in cohesive neighborhoods. Many of the neighborhoods seem to have been developed or subdivided at the same time, and have similar house designs and consistent architecture. Two of the public schools are located in south Tualatin: Tualatin High School, and Byrom Elementary School. Parks in this area include Ibach Park, and Little Woodrose Natural Area, Lafky, Saarinen Wayside, and Koller Wetland parks. The street network is neighborhood-oriented with few through streets, and characterized by cul-de-sacs and curving, low volume and speed streets. Many of the neighborhoods were constructed recently and have sidewalks, curbs and gutters. There is also a private school campus located south of Norwood Road, which is zoned institutional. South Tualatin also has one of the four under or over-crossings of I-5 at Norwood Road.

Example of Manufacturing Building in West Tualatin

The transportation system in this part of Tualatin is mainly to serve the neighborhoods; the local streets connect to the arterials to move traffic into and out of the residential areas. The neighborhoods are bicycle and pedestrian friendly in order to accommodate the recreational needs of the families that live in the adjacent houses. Except for the public schools, there are few services or jobs within walking or bicycling range.

West Tualatin

The area between OR 99/OR 99W, SW Tualatin Road and the limits of the SW Corridor planning area between Tualatin and Sherwood, and SW 95th Avenue and SW 105th/108thAvenues and the railroad, is designated manufacturing: Light, General, Park, or Business Park. There are some lumber companies, a national window manufacturer, landscaping, equipment and parts machining and a gravel business, among others in this area. The manufacturing designation is characterized by big parcels with large warehouse style buildings. Additionally, Tualatin Elementary School is located at SW 95th Avenue and SW Avery Street.

These land uses have specific transportation needs; manufacturing businesses are reliant on predictable and consistent deliveries for raw materials and finished goods, making freight accessibility and predictability important. Roads in western Tualatin such as SW Herman Road, SW Tualatin-Sherwood Road, SW 124th Avenue, and OR 99W carry more freight and larger vehicles than other areas within the City. Additionally, the workforce in manufacturing is employed in shifts, and many of the workers leave and arrive in a short time frame, potentially contributing to congestion during shift change times. Due to the large parcels and long distances, the manufacturing land uses are not very pedestrian friendly, though the major roadways do have bicycle lanes.

Demographics

According to the 2005-2009 American Community Survey, the City of Tualatin is fairly similar to the Portland Metro area in terms of household and family size, and in general the population is more likely to have a high school or college degree than the metro area. The median household and family income is also slightly higher than the Portland area and the poverty level of both households and individuals is slightly lower. There are also more children under 18 and fewer adults over 65 in Tualatin when compared to the rest of the region.

Tualatin has a higher percentage of Spanish speakers and Hispanic or Latino residents compared to the Portland Metro area, with approximately 18 percent of the population self-identifying as Hispanic or Latino. A similar percentage of the population speaks Spanish, while approximately 10 percent of the population speaks Spanish with English spoken less than "very well". A higher number of residents within Tualatin rent their homes than own them when compared to the Metro area. Tualatin has grown quickly and attracted residents; approximately 72 percent of current residents moved to the City since 2000.

Commute Characteristics

Tualatin has more jobs in the City than there are workers to fill those jobs, and many of Tualatin residents work outside of the City. According to the 2010 three year ACS estimates, 25 percent of Tualatin residents identified themselves as working in Tualatin, while 75 percent identified as working outside of the City. Thirty-seven percent of workers in the Portland Metro area work in the City where they live, with 50 percent identifying themselves as working outside of where they live. These commute patterns mean that there are a large number of commuters that are both entering and leaving the city at both the morning and evening peak times. As discussed above in the West Tualatin section, many of the manufacturing jobs tend to be scheduled around shifts, creating demand for roadways near these areas.

The City is home major to companies including Kershaw Knives, Columbia River Knife and Tool, and Novellus Systems, which designs and manufactures equipment for use in semiconductors. The City's largest employer is Legacy Meridian Park Hospital, followed by the United Parcel Service (UPS) and Precision Wire Components. These employers are scattered throughout the City, and are not located in one consolidated employment center. Table 1 lists the top five employers according to number of employees.

TABLE 1
Top Five Employers in Tualatin

Business Name	Number of Employees	Type of Business
Legacy Meridian Park Hospital	823	Hospital
Novellus Systems, Inc.	650	Manufacturer
United Parcel Service (UPS)	512	Delivery Service
Precision Wire Components	457	Manufacturer
Huntair	360	Manufacturer

Source: City of Tualatin business license information. March 2011 Active Business List

According to the 2010 US Census American Community Survey (ACS) three year estimates, Tualatin is home to approximately 14,800 non-military employees in the labor force, with a 10.3 percent unemployment rate. Workers 16 and older predominantly drive to work alone (77.6 percent), with smaller percentages carpooling (7.4 percent), using public transit (4.2 percent), walking (2.9 percent), bicycling (0.4 percent), or working at home (6.1 percent). Travel time to work for Tualatin residents varies across the working population. Table 2 below shows the estimated percentage of workers based on their travel time to work. It should be noted that these travel times are self-reported, and may be based on perception rather than actual travel time.

TABLE 2
Travel Time to Work

Travel Time to Work for Tualatin Residents	City of Tualatin Percent	Portland Metro Area Percent
Less than 10 minutes	23%	12%
10 to 14 minutes	16%	14
15 to 19 minutes	14%	15
20 to 24 minutes	13%	17
25 to 29 minutes	7%	7
30 to 34 minutes	12	15
35 to 44 minutes	7%	7
45 to 59 minutes	4%	7
60 or more minutes	5%	6

Source: US Census American Community Survey 3 year estimates. Accessed 11/17/2011.

Roadway System, Geometry and Conditions

Introduction

This section describes the current roadway network within the study area, including functional classification, ownership, geometric conditions (including alignment, cross section, and vertical curves), and freight designation. Sections were developed based on information provided from the City's GIS database as well as ODOT's statewide database.

Roadway Classification

Functional classification identifies how a roadway is intended to operate within the overall transportation system and defines the character of service it provides. In addition, functional classification defines standards for roadway and right-of-way width, access spacing and pedestrian and bicycle facilities. The City of Tualatin has established a functional classification system for the roadways owned by the City. Table 3 identifies the existing classifications as described in the current City of Tualatin TSP. Functional classifications assessed as part of this TSP include major and minor arterials, and major, minor, and residential collectors, local roadways, and freeways. Figure 3 shows the roadway classifications in the City of Tualatin.

TABLE 3
City of Tualatin Functional Classification Description

Functional Classification	Description
Freeway	Primary function is to carry high levels of regional vehicular traffic and public transit at high speeds; full access control with access limited to interchanges and street crossings with grade separations; widely spaced access points; serves motorized vehicle traffic only; contains a median.
Major Arterial - (Ei) - (Eb&t)	Primary function is to serve both local and through traffic as it enters and leaves the urban area; connects the minor arterial and collector street system to freeways and expressways; provides access to other cities and communities; serves major traffic movements; access control through medians and/or channelization; restricted on-street parking; sidewalks and bicycle facilities required; may allow a right-turn pocket if warranted; will be used by public transit.
Minor Arterial - (Db&t) - (Db&t – Downtown)	Primary function is to serve local and through traffic between neighborhoods and to community and regional facilities; distributes traffic from major arterials to collectors and local streets, higher degree of access than major arterials; trip lengths, traffic volumes, and speeds are lower than on major arterials; sidewalks and bicycle lanes required; likely to be used by public transit.
Major Collector - (Cb&t)	Primary function is to serve local traffic between neighborhoods and community facilities, principal carrier between arterials and local streets; provides some degree of access to adjacent properties, while maintaining circulation and mobility for all users; carries lower traffic volumes at slower speeds than arterials; typically has two to three lanes; may contain some on-street parking; pedestrian and bicycle facilities are required; may be used by public transit.
Minor Collector - (Cb&p) - (Cs&2p) - (Cs&p) - (Cb)	Primary function is to connect neighborhoods with major collector streets to facilitate movement of local traffic; has slower speeds to ensure community livability and safety for pedestrians and bicyclists; on-street pedestrian and bicycle facilities are required; bicycle facilities may be exclusive or street parking is prevalent; shared roadways depending on traffic volumes, speeds, and extent of bicycle travel; may be used by public transit.
Residential Collector - (Cr)	Provides primary routes into residential neighborhoods; carries higher volumes than local streets, but is not intended to serve through traffic; provides direct access to adjacent land uses; characterized by moderate roadway distances and slow speeds, serves passenger cars, public transit, pedestrians, and bicyclists; pedestrian facilities are required. Pickup and delivery by truck is allowed, but not through-truck movements.
Local Commercial Industrial - (B-CI)	Primary function is to provide direct truck, public transit, and vehicular access to commercial and industrial land uses; characterized by short to moderate roadway distances and slow speeds; offers a high level of accessibility; pedestrian facilities are required.
Local Street - (B-D) - (B)	Primary function is to provide direct access to adjacent land uses; characterized by short roadway distances, slow speeds, and low volumes; offers a high level of accessibility; serves passenger cars, pedestrians, and bicycles, but not trucks; may be used by public transit, pedestrian facilities are required.

Source: City of Tualatin Transportation System Plan 2001.

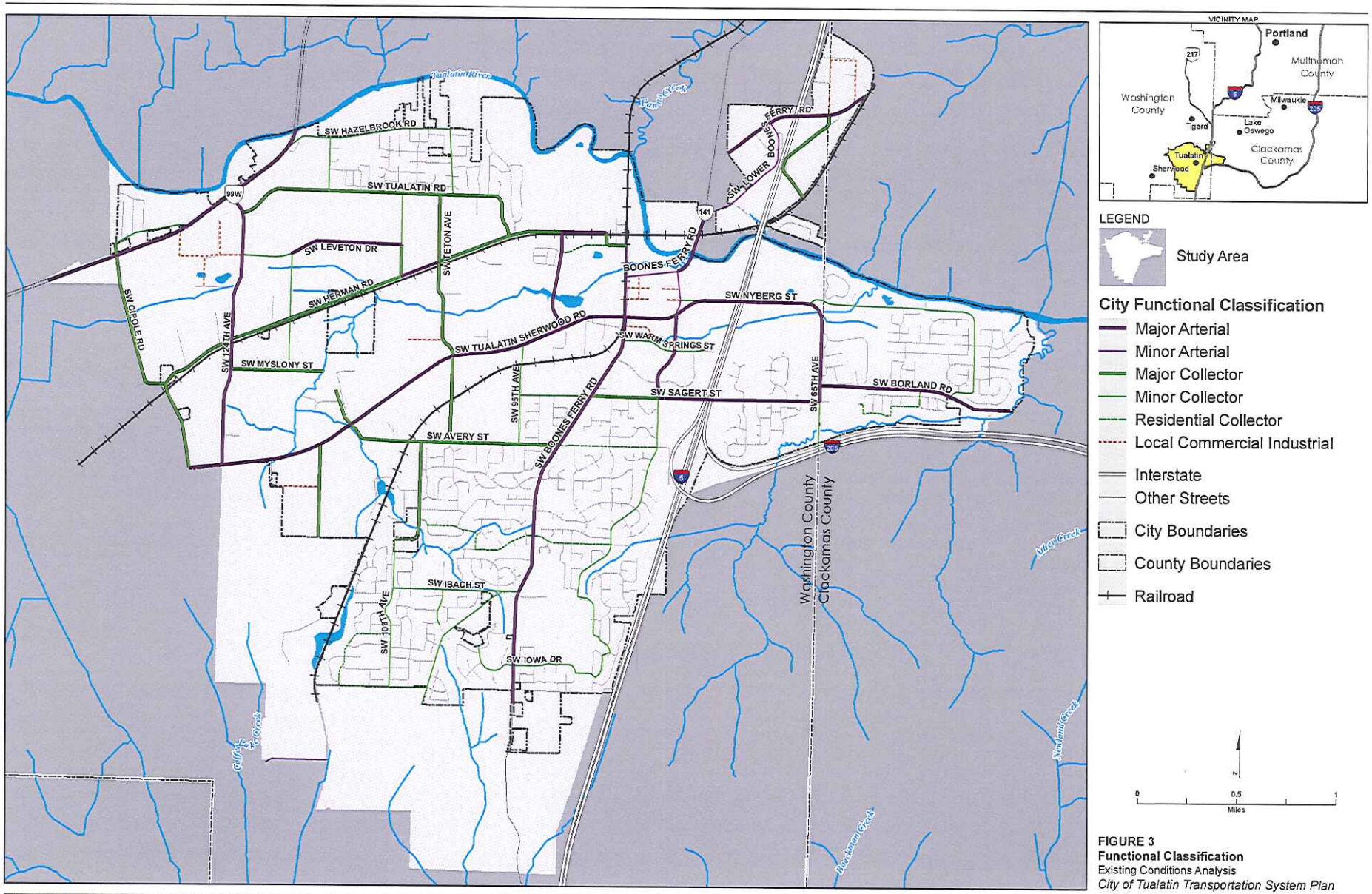


FIGURE 3
Functional Classification
Existing Conditions Analysis
City of Tualatin Transportation System Plan

PDX:\RDSA\PROJ\TUALATIN\427518\TUALATINTSP\GIS\MAPFILES\FIGURE03_FUNCTIONALCLASSIFICATION.MXD CSTEBBIN 12/29/2011 2:15:21 PM

CH2MHILL

This page intentionally left blank.

Arterials

The primary function of arterial streets is to provide a high degree of vehicular mobility including accommodations for trucks; however, they may also serve a secondary role providing access to individual properties. Typically arterials serve longer and higher speed trips. The nature of arterial streets dictates that their designs typically limit property access and on-street parking to improve traffic capacity for through traffic. Arterial streets are used as primary bicycle, pedestrian, emergency response routes and transit routes.

Example of a major arterial: SW Boones Ferry Road at SW Ibach Street

There are two classifications of urban arterial streets within the City of Tualatin: major arterials and minor arterials. Major arterials serve trips entering and leaving the urban area, providing access to other cities and communities. Minor arterials, however, serve local and through traffic between neighborhoods and within the community, and provide more local access than major arterials. Because major and minor arterials have similar functions, the designs of major and minor arterials are also usually similar, except freeways and expressways. While freeways and expressways are typically classified as major arterials, they have unique geometric criteria that control their design, and highly regulated access controls that limit access to adjacent land uses.

Typical major arterials within the city include: SW Tualatin-Sherwood Road, SW 124th Avenue, and SW Boones Ferry Road from SW Tualatin-Sherwood Road south.

Typical minor arterials within the city include: SW Boones Ferry Road from SW Tualatin-Sherwood Road north, SW Martinazzi Avenue between SW Boones Ferry and SW Tualatin-Sherwood Roads, and SW Borland Road.

Collectors

The primary function of collector streets is to assemble traffic from the interior of an area and deliver it to the closest arterial street. Collectors provide for both mobility and access to property and are designed to balance both functions. They usually serve shorter trip lengths and have lower traffic volumes and speeds than arterial streets. Collector streets are also used as important emergency response routes and are frequently used as transit routes.

There are three classifications of collector streets: major collectors, minor collectors and residential collectors. The function of each collector type is progressively less mobility and more land use/access driven from major to residential.

Example of a major collector: Avery Street

Typical major collectors within the city include: SW Herman Road, SW 105th Avenue, and SW Avery Street.

Typical minor collectors within the city include: SW Ibach Street, SW Martinazzi Avenue south of SW Sagert Street, SW Hazelbrook Road

Typical residential collectors within the city include: SW Blake Street between SW Boones Ferry Road and SW Martinazzi Avenue, SW Alsea Drive, and SW Sagert Street.

Ownership

Within the City of Tualatin there are roadways owned by four different agencies; the Oregon Department of Transportation (ODOT), Washington County, Clackamas County, and the City of Tualatin. Typically the higher classified roadways focused on vehicle mobility and throughput are owned by the other agencies such as ODOT, Clackamas County or Washington County. The lower classification arterials, collector streets, and local roadways are typically owned by the City of Tualatin. The breakdown of ownership is shown below.

ODOT

- I-5
- OR 99W (Pacific Highway)
- SW Nyberg Street (in the vicinity of the I-5 and Nyberg Street Interchange)
- SW Boones Ferry Road (between the Tualatin River Bridge and SW Lower Boones Ferry Road)
- SW Lower Boones Ferry Road (OR 141, in the vicinity of the I-5/Lower Boones Ferry Road Interchange)

Washington County

Major Arterials

- SW 65th Avenue[1]
- SW Bridgeport Road
- SW Nyberg Street (between SW Nyberg and SW Sagert Streets)
- SW Tualatin-Sherwood Road

Minor Arterials

- SW 72nd Avenue
- SW Lower Boones Ferry Road

Major Collectors

- SW Cipole Road

Minor Collectors

- SW 65th Avenue (south of SW Sagert Street)
- SW Grahams Ferry Road
- SW Pacific Drive

Clackamas County

- SW Borland Road
- SW Lower Boones Ferry Road (within Clackamas County)

Maintenance Responsibility

Maintenance responsibility of the roadway infrastructure typically falls to the agency which has jurisdiction or ownership of that roadway. For example, SW Tualatin-Sherwood Road, although located within the City of Tualatin is owned and operated by Washington County and thus maintenance responsibility lies with the County. Some exceptions may occur where two agencies have entered in to a separate agreement for maintenance responsibility. This may be a case by case type agreement or wholesale through the City. The City maintains an agreement with Clackamas County where the City is responsible for all existing traffic control devices and for installing additional traffic control devices, except energized traffic signals, as necessary upon the County roads within City boundaries. There is also an agreement with Washington County that the City will maintain the storm drains on County roads located in the City. All other maintenance responsibilities lie with the owning agency for each roadway.

Freight or Truck Routes

Designated freight and truck routes exist within the project study area. State freight routes and federally designated truck routes that are part of the National Highway System (NHS) are described in the following sections. The City of

[1] SW 65th Avenue is located on the border between Washington and Clackamas Counties, though Washington County maintains the roadway.

Tualatin has also designated certain roadway corridors as trucks routes. Typically these routes connect the commercial/industrial districts within the City to major arterials and ultimately OR 99W and I-5.

City of Tualatin Truck Routes

- I-5 (north to south City limits)
- OR 99W (west to north City limits)
- SW 124th Avenue (OR 99W to SW Tualatin-Sherwood Road)
- SW Tualatin Road (SW 124th Avenue to SW Jurgens Avenue)
- SW Herman Road (SW Tualatin Road to SW Cipole Road)
- SW 108th Avenue (SW Tualatin Road to SW Herman Road)
- SW Teton Avenue (SW Tualatin Road to SW Avery Street)
- SW Cipole Road (OR 99W to SW Tualatin-Sherwood Road)
- SW Boones Ferry Road (south City Limits to SW Lower Boones Ferry Road)
- SW Lower Boones Ferry Road (SW Boones Ferry Road to the northeast City limits)
- SW Tualatin-Sherwood Road (west City limits to the Nyberg Street Interchange)
- SW Avery Street (SW Tualatin-Sherwood Road to SW 95th Avenue)
- SW 105th Avenue (SW Avery Street to SW Moratoc Drive)

State Designated Freight Route

- I 5 (north to south City limits)
- OR 99W (west to north City limits)

Federally Designated Truck Routes

- I 5 (north to south City limits)
- OR 99W (west to north City limits)

The difference between freight and truck routes is the agency that is authorized to make changes (mobility standards, construction, etc) to the routes. Federally designated freight routes need Federal Highway Administration (FHWA) approval while state routes need ODOT and/or local government approval. State freight routes have higher mobility standards than other state highways, but these mobility standards apply to freight routes only. The NHS truck routes also have certain standards, such as truck size, that must be met. In Tualatin, the state/federal freight routes generally correspond with the interstate highway system and the truck routes generally correspond with other major arterials within Tualatin. The City-designated truck routes are meant to connect local roadways within the City to State and federally designated freight and truck routes.

Existing Geometry vs. City Design Standards

A high level assessment compared the existing City of Tualatin roadway network against current design standards to identify deficiencies in the system. Roadways were checked for intersection skew angles, spacing and general conformance with the cross section standards including presence of parking, medians and sidewalks.

Existing intersections within the City of Tualatin system conform to this requirement. The standards identify a minimum interior angle of 75° with a preferred angle of 90°. In some cases, intersections with major arterials or collectors occur as slightly smaller angles, which could result in sight distance limitations and increased safety concerns. However, in most cases this occurs at wide intersections that are signalized where sight distance and trailer sweep are better accommodated.

In general, major arterials within the City match the current established design standards. One exception is SW Boones Ferry Road south of SW Warm Springs Street. Although identified as a major arterial in the City's current TSP, the roadway width and section more closely matches a major collector. Another example is portions of SW Herman Road that are identified as major arterial but are not yet improved to City standard and lack curb, sidewalk, etc.

In general the minor arterials within the City have been built out and meet the standards with the exception of overall width, which tends to be slightly narrower than the standard curb-to-curb width. Additionally SW Martinazzi Avenue lacks designated bicycle lanes between SW Sagert Road and SW Boones Ferry Road.

Major collectors within the City generally meet the design standards reviewed. There are some instances where there are no bike lanes on portions of SW Herman Road and SW Teton Avenue. Further, bike lanes are reduced or eliminated at most intersections due to left turn lanes. Curb-to-curb widths are generally less than the standard (14 feet) due to the reduction in median/center turn lane width.

Minor collectors within the City appear to vary the most from standard. In most cases the roadways lack either bike lanes, on street parking, or both. Some minor collectors are not striped at all, but still do not meet the standard because the overall curb-to-curb is narrower than the accepted width.

Residential collectors in the City generally meet the design standard curb-to-curb width. Residential collectors, like local streets, are typically not striped and therefore individually dedicated cross section elements are difficult to determine, however the overall width appears to generally meet standard.

Roadway Needs

Based on the review of existing roadway infrastructure against the standards listed above, Table 4 lists high level deficiencies identified in no particular order of priority:

TABLE 4
Previously Identified Deficiencies in Tualatin

Item No.	Roadway Segment or Intersection	Deficiency
1	SW Boones Ferry Road south of SW Tualatin-Sherwood Road	Roadway is listed as Eb&t major arterial to south city limits but is generally a 3-lane section.
2	SW Herman Road at SW Cipole Road	Intersection within a sharp curve on SW Cipole and is at close proximity to an unimproved railroad crossing. Bicycle and pedestrian are not accommodated.
3	SW Herman Road between SW 125th Avenue and SW Cipole Road	Section is 2-lane unimproved with no curbs, sidewalks or bike lanes. Shoulders are extremely narrow.
4	SW Herman Road between SW Teton Avenue to SW Tualatin Road	Section is 2-lane unimproved with no curbs, sidewalks or bike lanes but is listed at Eb&t in current plan. Shoulders are extremely narrow.
5	SW 105th Avenue to SW Blake Street to SW 108th Avenue, south of SW Tualatin-Sherwood Road	This segment of roadway is unimproved 2-lane roadway with sharp curvature and no accommodations for bicycles or pedestrians.
6	SW Borland Road	Roadway is listed as Eb&t major arterial to south city limits but is generally a 3-lane section from SW 65th Avenue east of SW Wilke Road, and then a 2-lane section east to the City limits.
7	SW 65th Avenue	Roadway is listed as Eb&t major arterial to south city limits between SW Nyberg and SW Sagert Streets but is a 3-lane section.
8	OR 99W	Designated as an arterial, but the cross-section is not consistent with arterial design standards.
9	SW Grahams Ferry Road between Sitka and Ibach	This segment of roadway is unimproved 2-lane roadway has no accommodations for bicycles or pedestrians.
10	SW Sagert Street	Roadway is listed as a Eb&t major arterial between SW Martinazzi and SW 65th Avenues but is a 2-lane section.

Source: Site visit observations and city-provided Geographic Information System (GIS) data

In addition to the above deficiencies, there is also limited connectivity on some of the local neighborhood streets, especially in neighborhoods that are adjacent to land that has not yet been developed.

A listing of streets and the standards assessed including commentary is included in Attachment A for reference.

Traffic Operations

This section describes the motor vehicle environment and operations at key intersections within Tualatin. Areas covered in this section include data collection techniques, intersection operations, travel times on key corridors, and safety analysis.

Data Collection

The project team collected traffic volume counts for 30 study intersections in October 2011 on weekdays during the morning (7am-9am) and afternoon (4pm-6pm) peak periods. In addition, the team took 24-hour counts at 11 locations on key roadways in Tualatin. In addition to intersection and daily volume profiles, the project team collected corridor data related to travel times and speeds during the pm peak period.

Daily Traffic Volumes

Daily traffic volume counts help demonstrate overall travel behavior trends in Tualatin. Table 5 provides bi-directional motor vehicle volumes for each of the 11 locations where 24-hour counts were taken. The team identified the time period with the highest overall bi-directional demand as well. All counts were taken in October 2011 unless noted otherwise.

TABLE 5
Daily Motor Vehicle Traffic Volumes

No.	Roadway	Count Location	Daily Volume	Peak Hour
1	SW Tualatin-Sherwood Road	West of SW 124th Avenue	26,600	4pm-5pm
2	SW Nyberg Road*	West of SW 65th Avenue	21,700	5pm-6pm
3	SW Boones Ferry Road	North of SW Ibach Street	16,100	4pm-5pm
4	SW Tualatin Road	East of SW 90th Avenue	14,600	4pm-5pm
5	SW Boones Ferry Road	North of SW Sagert Street	14,300	5pm-6pm
6	SW Lower Boones Ferry Road*	East of SW Childs Road	13,700	5pm-6pm
7	SW Tualatin Road	West of SW 109th Avenue	10,700	5pm-6pm
8	SW Borland Street	East of SW 60th Avenue	10,500	5pm-6pm
9	SW Boones Ferry Road	South of SW Ibach Street	10,400	4pm-5pm
10	SW Bridgeport Road*	West of SW Hazel Fern Road	10,000	12pm-1pm
11	SW Herman Road	West of SW 108th Avenue	7,200	4pm-5pm

SOURCE: Count data collected in October 2011 by All Traffic Data unless noted otherwise.

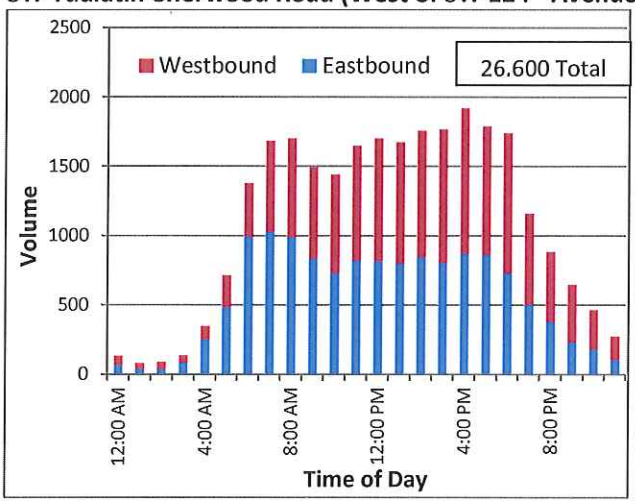
*Count taken in May 2010 (SW Bridgeport Road & SW Nyberg Road) or March 2010 (SW Lower Boones Ferry Road) by Quality Counts.

The daily traffic volumes illustrate the relative use of Tualatin's roadways by autos and trucks at various locations within the city. The peak hour demonstrates when during the day there is the highest use of the roads. SW Tualatin-Sherwood and SW Nyberg Roads have the highest traffic volumes, with over 20,000 vehicles per day. The SW Tualatin Road and SW Boones Ferry Road corridors have10,000 motor vehicles daily at multiple locations.

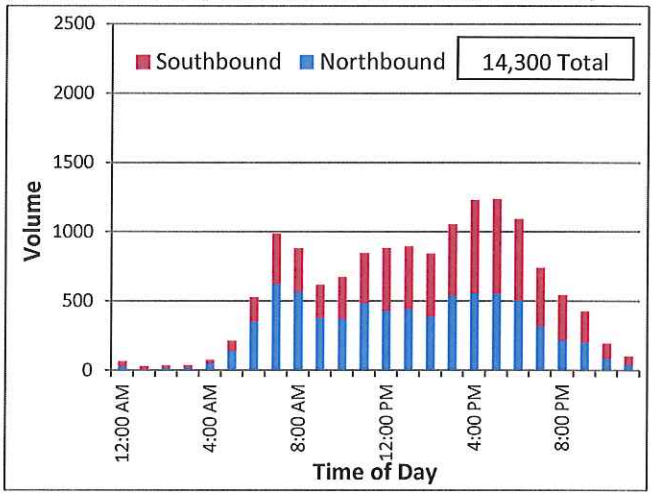
- On most roadways, traffic volumes peak during the morning and afternoon commute periods, with the highest overall volumes occurring between 4pm to 6pm. This profile is known as a "commuter profile" and is representative of most roadways in Tualatin. However, some roadways have a more consistent hourly demand, with a less dramatic increase in demand during the AM and PM peak commute periods. These

roadways tend to have more truck traffic, retail trips, or school trips. Figure 4 shows a sample of 24-hour volume profiles for various geographic locations around the city.

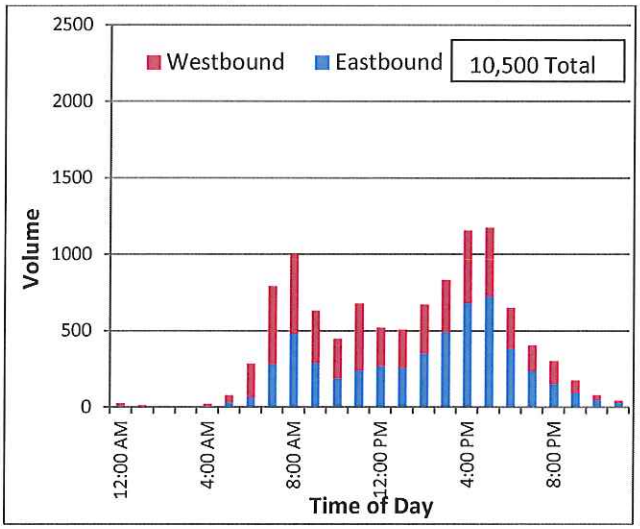
SW **Tualatin-Sherwood Road (West of** SW **124th Avenue)**



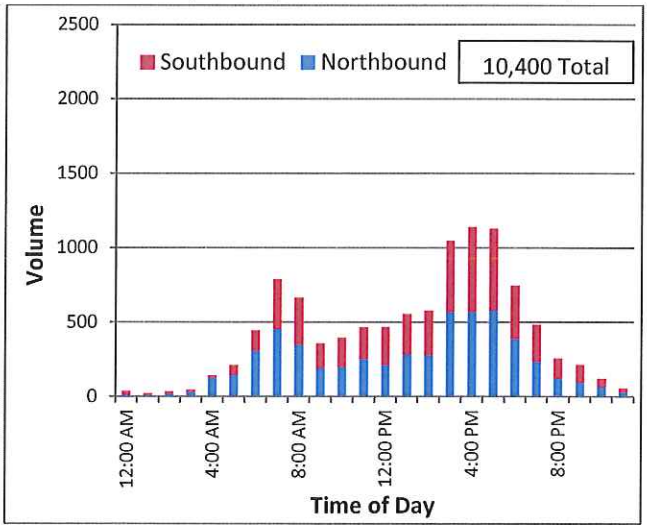
SW **Boones Ferry Road (North of** SW **Sagert Street)**



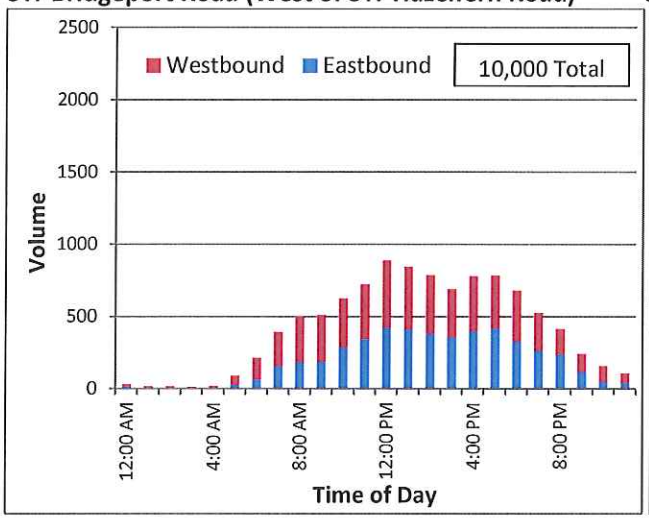
SW **Borland Street (East of** SW **60th Avenue)**



SW **Boones Ferry Road (South of** SW **Ibach Street)**



SW **Bridgeport Road (West of** SW **Hazelfern Road)**



SW **Tualatin Road (West of** SW **109th Avenue)**

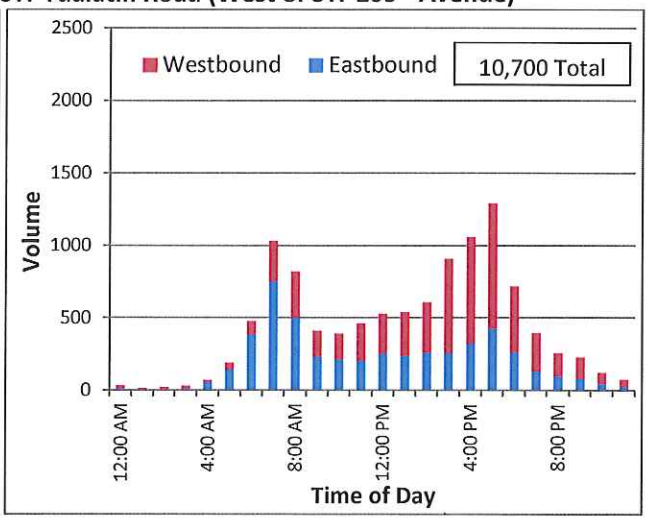


Figure 4: 24-Hour Volume Profiles

Areas with predominantly retail or commercial land uses may experience more traffic during the mid-day. An example of this is SW Bridgeport Road near the Bridgeport Village shopping center, which has a relatively consistent volume profile with peak demand occurring between 12 pm and 1pm.

While SW Tualatin-Sherwood Road has peak periods in line with the commuter profile, the difference between peak and off-peak travel is relatively small, due in part to the high percentage of heavy vehicles (trucks with three or more axles) and trucks. From 8am to 3pm, heavy vehicles make up 15 percent of SW Tualatin-Sherwood Road traffic volume, compared to 8 percent during the pm peak period (4pm to 6pm). Table 6 identifies the percentage of heavy vehicles from four 24-hour classification counts performed for the TSP Update. These percentages are higher than an average road in the Portland Metro area which typically has 2-4 percent heavy vehicles.

TABLE 6
Heavy Vehicle Percentage of Daily Motor Vehicle Traffic

Roadway	Count Location	Heavy Vehicle Percentage
SW Tualatin-Sherwood Road	West of SW 124th Avenue	11.5%
SW Boones Ferry Road	South of SW Ibach Street	8.4%
SW Lower Boones Ferry Road*	East of SW Childs Road	5.4%
SW Nyberg Road*	West of SW 65th Avenue	5.2%

SOURCE: Count data collected in October 2011 by All Traffic Data unless noted otherwise.
*Count taken in May 2010 (SW Nyberg Road) or March 2010 (SW Lower Boones Ferry Road) by Quality Counts.

Intersection Operations

While daily traffic volumes analyses are useful in understanding the general nature of traffic and travel behavior, traffic volume alone does not indicate the street network's ability to carry additional traffic, nor the congestion and delay travelers experience. To create a more complete picture of traffic operations, the project team uses performance measures for intersections based on traffic volumes, control (such as traffic signal, four-way stop, etc.), and roadway geometry.

Performance Measures

Level of service (LOS) and volume-to-capacity (V/C) ratios are two commonly used measures of performance for intersection operations. The measures reflect related yet distinct elements of intersection operations:

- Level of service (LOS): A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.
- Volume-to-capacity (V/C) ratio: This measure is a range from 0.0 to 1.0 and represents how full an intersection is with vehicles. The ratio is similar to a percentage, for example, if a glass of water were 75 percent full, it would have a V/C ratio of 0.75. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced.

Design Hour Traffic Volumes

Intersection turn movement traffic counts collected during the am and pm peak periods represent raw data. The Oregon Department of Transportation (ODOT) Transportation Planning and Analysis Unit (TPAU) outlines procedures to take raw data and convert it to represent the 30th highest vehicle hour data. This allows the project team to convert raw data collected at any time during the year to represent data that would be similar to the 30th busiest motor vehicle traffic day of the year for analysis. This does not represent the worst possible traffic day of the year, but represents conditions where the traffic congestion would be better on approximately 80 percent of days.

To convert the raw data to the 30th highest hour, the project team adjusts the raw counts by using a seasonal factor determined by the TPAU Analysis Procedures Manual (APM). The conversion factors are based on the time of year and the type of typical travel. For intersections within the City of Tualatin the project team used a "commuter"

seasonal adjustment factor of 1.03 for October traffic counts[2]. This adjustment factor is supported by automatic traffic recorder data available for similar roadways in the Portland Metro area[3].

In addition to the seasonal factor adjustment, the project team makes balancing adjustments to match volumes between closely spaced intersections and to reflect a consistent overall peak hour for the study area. As a result of these combined adjustments the project team identifies a design hour volume for both the am and pm peak hour.

Jurisdictional Operating Standards

Intersections within the City of Tualatin fall along the jurisdictions previously identified in the Roadway Geometry section of this memo. Each jurisdiction has a distinct set of operating standards depending on the area or type of facility. The City of Tualatin uses a level-of-service standard that is based on the average delay calculated at intersections. The City has decided to use Metro's Regional Transportation Plan Level of Service standards for the Transportation System Planning process.

ODOT and Washington County's standards are based on a volume-to-capacity (V/C) ratio. The V/C ratio uses the most constrained movements at the intersection to calculate the overall intersection V/C ratio. Table 7 outlines the operating standards that will be used for existing and future intersection operations by jurisdiction.

TABLE 7
Intersection Operating Standards by Jurisdiction and Facility

Jurisdiction	Facility	Standard
City of Tualatin	Town Center*	LOS F for peak hour LOS E for ½ hour before and after peak hour
	All Other Areas*	LOS D (signalized) LOS E (unsignalized)
Washington County	General Urban Area	0.99 (first hour) 0.90 (second hour)
	Town Center	0.99 (first hour and second hours)
	Rural Area	0.90 (first and second hours)
ODOT	General Metro Area	0.99 (peak hour)
	Town Center Area	1.10 (peak hour)
	Freeway Ramp Terminals	0.99 (peak hour)
	OR 99W**	0.99 (peak hour)

SOURCE: City of Tualatin 2001 Transportation System Plan and Development Code
Washington County Transportation System Plan, November 2003, Table 5.
1999 Oregon Highway Plan, Table 7, Policy 1F Revisions: Adopted December 21, 2011

* A volume-to-capacity ratio greater than 1.00 should also be considered to be below the minimum standard, regardless of level of service.

** Oregon 99W is specified as an "area of special concern" between I-5 and SW 124th Avenue, and has a 0.95 minimum acceptable V/C standard. Elsewhere the standard for OR 99W is 0.99 V/C ratio.

Operational Results

The project team analyzed study area intersections using the most current version of the *Highway Capacity Manual (2010)* which uses both the average intersection delay (converted to LOS) and critical V/C ratio calculations. Intersection traffic operations are evaluated using identified design hour (30th highest hour) traffic volumes. Table 8 identifies the am and pm LOS and V/C for each study intersection, as well as the applicable jurisdictional standard for minimum performance.

[2] Based on the ODOT 2011 Seasonal Trend Table, printed 10/27/2011.

[3] Similar roadways, with urbanized commuter characteristics, with available automatic traffic recorder data available in Portland Metro included: OR 224 near Johnson Road, TV Highway in Hillsboro, and US 26 through the Vista Ridge Tunnel.

Two of the thirty study intersections fail to meet performance standards. The intersections that do not meet performance standards are SW Teton Avenue at SW Tualatin Road and SW Martinazzi Avenue at SW Sagert Street. SW Teton Avenue is stop-controlled; while through traffic on SW Tualatin Road is not stopped. This is an intersection under city jurisdiction with the performance standard of LOS E. During the pm peak hour, the northbound left turn operates at LOS F. The intersection of SW Martinazzi Avenue at SW Sagert Street is an all-way stop controlled intersection. During the AM peak hour, northbound traffic operates at LOS F, while during the PM peak hour, southbound traffic operates at LOS F.

TABLE 8
AM and PM Peak Hour Intersection Traffic Operations

Intersection	Jurisdiction	Minimum Standard	AM LOS	AM V/C	PM LOS	PM V/C
Signalized						
SW 124th Ave & Hwy 99W	ODOT	0.99	C	0.80	C	0.69
SW 124th Ave & SW Tualatin Rd	Tualatin	D	A	0.64	B	0.66
SW 124th Ave & SW Herman Rd	Tualatin	D	C	0.48	C	0.53
SW 124th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	B	0.81	C	0.90
SW Avery St & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.73	B	0.71
SW Teton Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.79	D	0.79
SW 90th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.78	C	0.60
SW Boones Ferry Rd & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.93	D	0.93
SW Martinazzi Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.90	D	0.94
I-5 SB Ramps & SW Nyberg Rd	ODOT	0.99	D	0.79	D	0.79
I-5 NB Ramps & SW Nyberg Rd	ODOT	0.99	C	0.71	B	0.68
SW 65th Ave & SW Borland Rd	Wash. Co.	0.99	C	0.78	D	0.93
SW Teton Ave & SW Herman Rd	Tualatin	D	C	0.76	C	0.65
SW Tualatin Rd & SW Herman Rd	Tualatin	D	C	0.89	B	0.59
SW 90th Ave & SW Tualatin Rd	Tualatin	D	B	0.84	B	0.75
SW Tualatin Rd & SW Boones Ferry Rd	Wash. Co	0.99	A	0.48	B	0.62
SW Martinazzi Ave & SW Boones Ferry Rd	Wash. Co	0.99	D	0.92	D	0.89
SW Boones Ferry Rd & SW Lower Boones Ferry Rd	ODOT	0.99	B	0.72	C	0.76
SW 72nd Ave & Lower Boones Ferry Rd & Bridgeport Rd	Wash. Co	0.99	C	0.51	C	0.66
I-5 SB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	B	0.53	C	0.75
I-5 NB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	B	0.54	B	0.74
SW Boones Ferry Rd & SW Avery St	Wash. Co.	0.99	C	0.70	C	0.87
SW Boones Ferry Rd & SW Sagert St	Wash. Co.	0.99	C	0.71	C	0.75
SW Boones Ferry Rd & SW Ibach St	Wash. Co.	0.99	B	0.75	B	0.70
All-way Stop-control						
SW Martinazzi Ave & SW Avery St*	Tualatin	E	B	0.42	B	0.55
SW Martinazzi Ave & SW Sagert St*[4]	Tualatin	E	F	0.93	F	0.95
SW Teton Ave & SW Avery St*	Tualatin	E	D	0.41	C	0.40

[4] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the three lanes (one dedicated to each movement) are combined into two: through-right and through-left lanes. Because of this approximation, actual performance may be slightly better than reported above.

TABLE 8
AM and PM Peak Hour Intersection Traffic Operations

Intersection	Jurisdiction	Minimum Standard	AM LOS	AM V/C	PM LOS	PM V/C
SW 65th Ave & SW Sagert St* [5]	Wash. Co.	0.99	F	0.98	F	0.98
*Minor Street Stop-control**						
SW 105th Ave & SW Avery St	Tualatin	E	D	0.45	C	0.28
SW Teton Ave & SW Tualatin Rd	Tualatin	E	D	0.43	F	0.98

SOURCE: Count data collected by All Traffic Data on October 18th (Tuesday) or October 19th (Wednesday) 2011
*LOS and V/C reported for highest delay movement.
Bold and highlighted dark grey text indicates meet minimum performance standard is not met

Travel Times and Speeds

The project team selected four corridors within Tualatin to gather travel time data during the PM peak period. These travel time corridors were selected on roadways that help connect through and to downtown Tualatin. The corridors selected were SW Tualatin-Sherwood Road/Nyberg Road/65th Avenue/Borland Road (from SW Cipole Road to SW Prosperity Park Road), SW Boones Ferry Road (from SW Durham Road to SW Norwood Road), SW Tualatin Road (from 99W to SW Boones Ferry Road), and the connection of SW Avery Street and SW Martinazzi Road (from SW Tualatin-Sherwood Road to SW Boones Ferry Road). The project team collected travel times and the average speed along the corridors. Table 9 summarizes the overall travel time results for each corridor, while Figure 5 illustrates individual pieces of each corridor at a smaller scale.

TABLE 9
Existing (2011) PM Peak Period (4pm-6pm) Travel Time Data

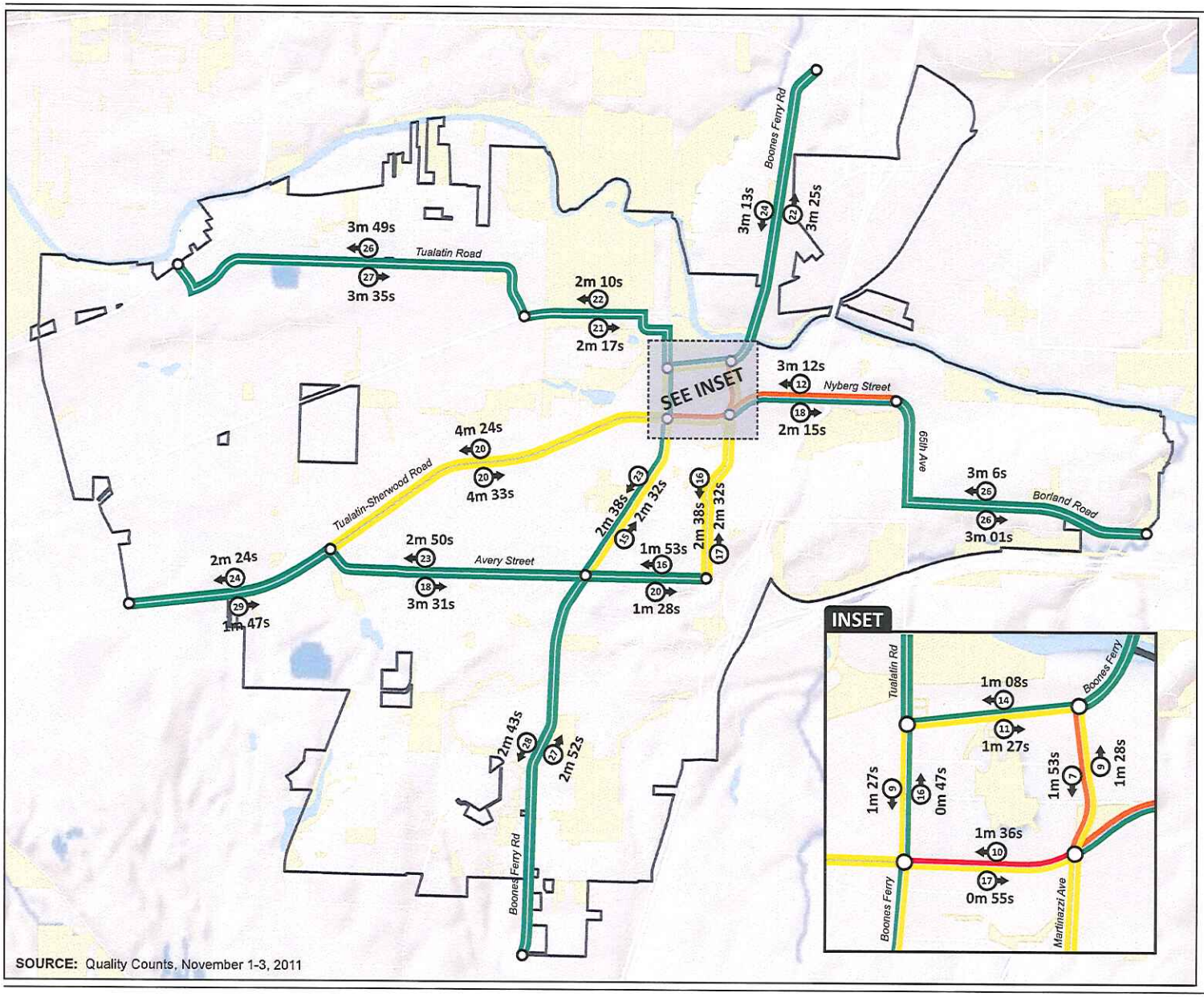
Corridor	From	To	Distance	Posted Speed	Average Speed	Average Travel Time
SW Tualatin-Sherwood Rd/Nyberg Rd/SW 65th Ave/Borland Rd	SW Cipole Road	SW Prosperity Park Road	4.6 miles	35/45mph	22 mph	12min 32 sec
	SW Prosperity Park Road	SW Cipole Road	4.6 miles	35/45mph	10 mph	28 min 32 sec
SW Boones Ferry Road	SW Durham Road	SW Norwood Road	3.7 miles	30/35mph	20 mph	10 min 25 sec
	SW Norwood Road	SW Durham Road	3.7 miles	30/35mph	18 mph	11 min 31 sec
SW Avery/ SW Martinazzi	SW Tualatin-Sherwood Rd	SW Boones Ferry Road	2.5 miles	25/35mph	16 mph	8 min 58sec
	SW Boones Ferry Road	SW Tualatin-Sherwood Rd	2.5 miles	25/35mph	15 mph	9 min 14 sec
SW Tualatin Road	Hwy 99W	SW Boones Ferry Road	2.4 miles	35mph	24 mph	5 min 52 sec
	SW Boones Ferry Road	Hwy 99W	2.4 miles	35mph	24 mph	5 min 59 sec

SOURCE: All Traffic Data, November 2011

The travel time runs along the corridors help identify congested areas on major roadways beyond signalized intersections. Based on the travel time runs, a level-of-service for the roadways can be calculated from the travel speed. To best serve travel with reliable travel times on a corridor, it is best to have corridors at a level-of-service D or better during peak travel times. This indicates a minor level of congestion on a corridor. When LOS for a corridor

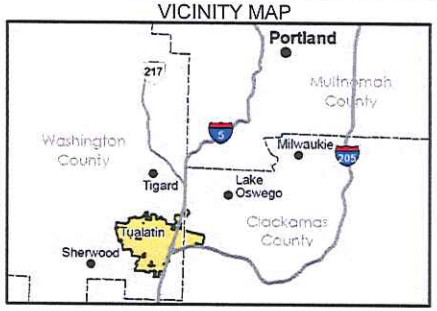
[5] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the dedicated southbound left turn lane and through lane are combined, due to the relatively small volume on the left turn movement. Because of this approximation, actual performance may be slightly better than reported above.

starts to reach levels of E and F it is an indication that the corridor (as well as the intersections typically) is reaching saturated conditions and users will frequently be going slow, or waiting through multiple signal cycles to get through the intersection.



SOURCE: Quality Counts, November 1-3, 2011

VICINITY MAP



LEGEND

- ○ - Travel Time Checkpoint
- ◄(XX) - Average Directional Speed (mph)
- Xm XXs - Average Directional Travel Time (min/sec)

Arterial Level-of-Service (LOS)

- - LOS A through C
- - LOS D
- - LOS E
- - LOS F

FIGURE 5
PM Peak Period Travel Time Survey Results
City of Tualatin Transportation System Plan

This page intentionally left blank.

Results from the travel time runs indicate that SW Tualatin Road, major portions of SW Boones Ferry Road, and the combination of SW Avery Street/ SW Martinazzi Road tend to operate at a LOS D or better during the PM peak period. SW Tualatin-Sherwood Road typically has delays near the I-5 interchange area, and westbound from the downtown core. In addition, the downtown area where all four corridors surveyed interact with one another typically has some level of congestion.

Roadway Needs

Needs and deficiencies identified for the roadway system in the City of Tualatin are summarized below:

- **Improved Roadway connectivity** – new roadway connections should be constructed to improve east-west connectivity south of SW Tualatin-Sherwood Road and north-south connectivity between SW Boones Ferry Road and OR 99W, as well as across the Tualatin River. Metro RTP policies related to a complete street system identify one-mile spacing between major arterial streets, with collector streets or minor arterials spaced a half-mile apart.
- **Improved travel time along congested corridors** - SW Tualatin-Sherwood Road, SW Nyberg Street, SW 65th Avenue, Boones Ferry Road, Martinazzi Avenue, and I-5 are some key corridors that experience significant congestion.
- **Intersection improvements**- at the SW Teton Avenue and SW Tualatin Road to address the peak period demand for vehicles turning from SW Teton Avenue.
- **Upgrading roadway geometries** - City design standards for roadway width, sidewalks, and bicycle facilities should be followed where specific deficiencies have been identified (see Table 4).

Safety

Safety Analysis

The project team evaluated the crash history for the City of Tualatin for the three year period of January 1, 2008 through December 31, 2010[6]. In addition, the team reviewed Safety Priority Indexing System (SPIS) data, which is the ranking system for collision locations based on crash rates and severity, from Washington County and ODOT to determine if any SPIS intersections were within the City of Tualatin. Key findings from the crash data analysis are summarized below and Figure 6 shows all collision data.

- Over the three year time frame, one fatality occurred when a driver lost control, crashing into a tree and fence, while traveling on Grahams Ferry Road near SW Sitka Court. Two other fatalities occurred on I-5.
- Half of all collisions resulted in injury while the other half resulted in property damage only (PDO).
- The majority of the crashes were intersection or congestion related. These included rear-end (58 percent) and turn movement (24 percent) type crashes. In the case of rear-end crashes, the cause was often cited as "following too close". The cause for turn movement type crashes were most often cited as being "failure to yield" or "disregarding a traffic signal".
- The number of reported crashes coincides with the daily changes in traffic volume, with peaks during the morning and evening commute hours, particularly between 7:00-8:00 a.m. and from 3:00-4:00 p.m.
- The majority (64 percent) of crashes occurred under clear, dry and daylight conditions.
- The majority (61 percent) of crashes occurred on (or at intersections on) Tualatin-Sherwood Road, Nyberg Road, and Boones Ferry Road.

In addition to the intersection collisions, Figure 7 shows the average annual crashes per mile for the major through streets and average number of crashes per year for each of the major intersections. This figure also identifies the

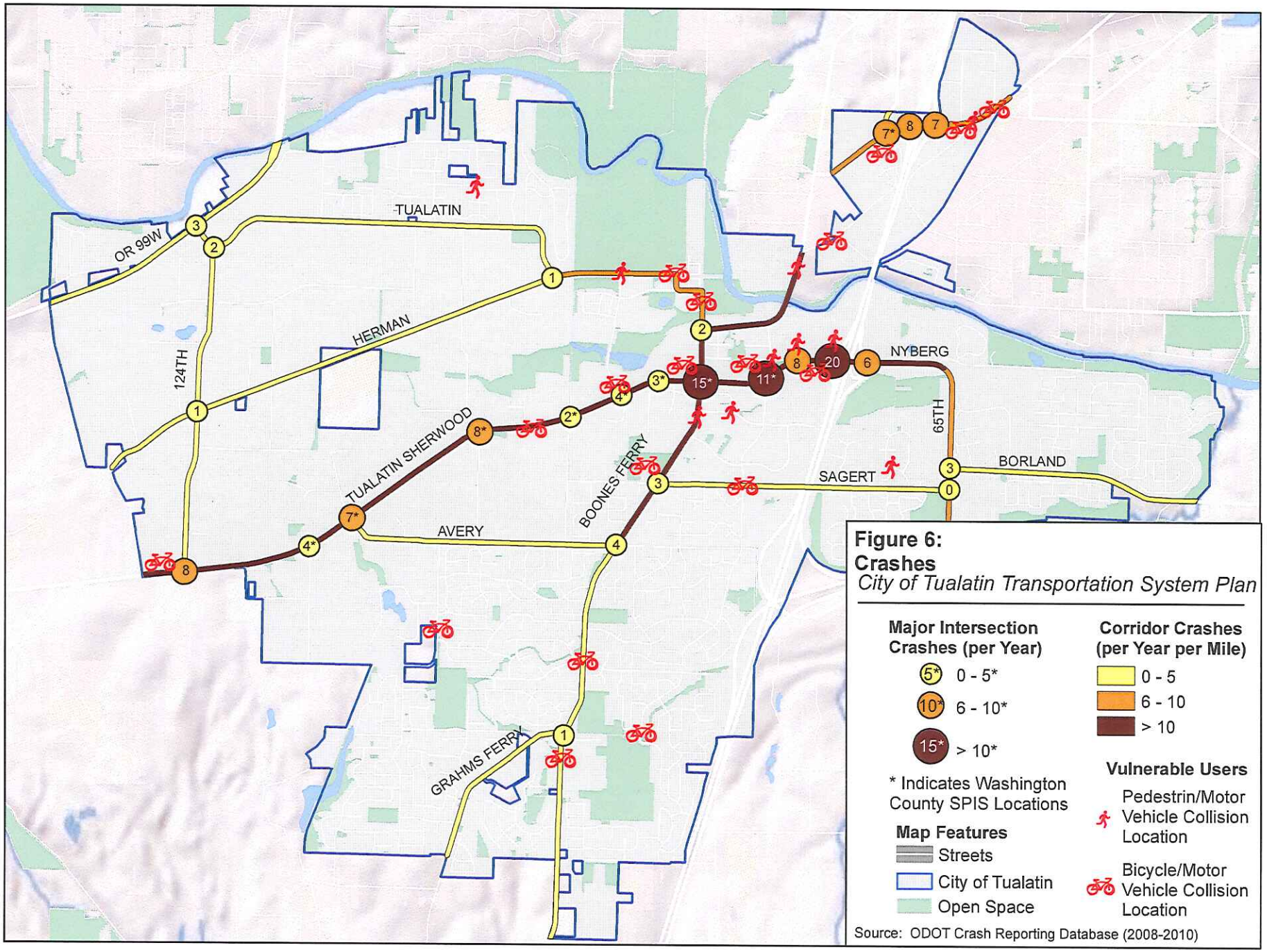
[6] Source: Oregon Department of Transportation Crash Reporting Database, received October 2011.

locations of all of bicycle or pedestrian crashes during the study time frame. Many of these crashes occurred along the busy major streets.

Both Washington County and ODOT rank their high accident SPIS locations based on an indexing formula that identifies potentially hazardous locations. The index is based on frequency (total number of crashes), rate (frequency compared to traffic volumes), and severity. Within the City of Tualatin there are three locations that rank within the top 50 SPIS sites in Washington County: SW Tualatin-Sherwood Road/ SW Boones Ferry Road, SW Tualatin-Sherwood Road/ SW Martinazzi Avenue, and SW Bridgeport Road/ SW 72nd Avenue. Eight other intersections are included in Washington County's list of top 262 SPIS sites. ODOT has identified five SPIS locations within the City: SPIS locations for both ODOT and Washington County are illustrated in Figure 7.

Intersection Analysis

The project team calculated intersection crash rates for the arterial to arterial intersections and for Washington County SPIS intersections. Table 10 below shows the results of the crash rate analysis. An intersection crash rate is a measure of the frequency of crashes compared to the total motor vehicle traffic volume (this measures exposure to the crash risk). The rate is measured in crashes per one million entering vehicles. Typically rates of 1.0 crashes per million entering vehicles are considered higher than normal and the intersection becomes a candidate for additional investigation.


TUALATIN
OR 99W
HERMAN
124TH
TUALATIN SHERWOOD
BOONES FERRY
AVERY
GRAHMS FERRY
NYBERG
65TH
SAGERT
BORLAND
Figure 6:
Crashes
City of Tualatin Transportation System Plan
Major Intersection Crashes (per Year)
0 - 5*
6 - 10*
> 10*
* Indicates Washington County SPIS Locations
Map Features
Streets
City of Tualatin
Open Space
Corridor Crashes (per Year per Mile)
0 - 5
6 - 10
> 10
Vulnerable Users
Pedestrin/Motor Vehicle Collision Location
Bicycle/Motor Vehicle Collision Location
Source: ODOT Crash Reporting Database (2008-2010)

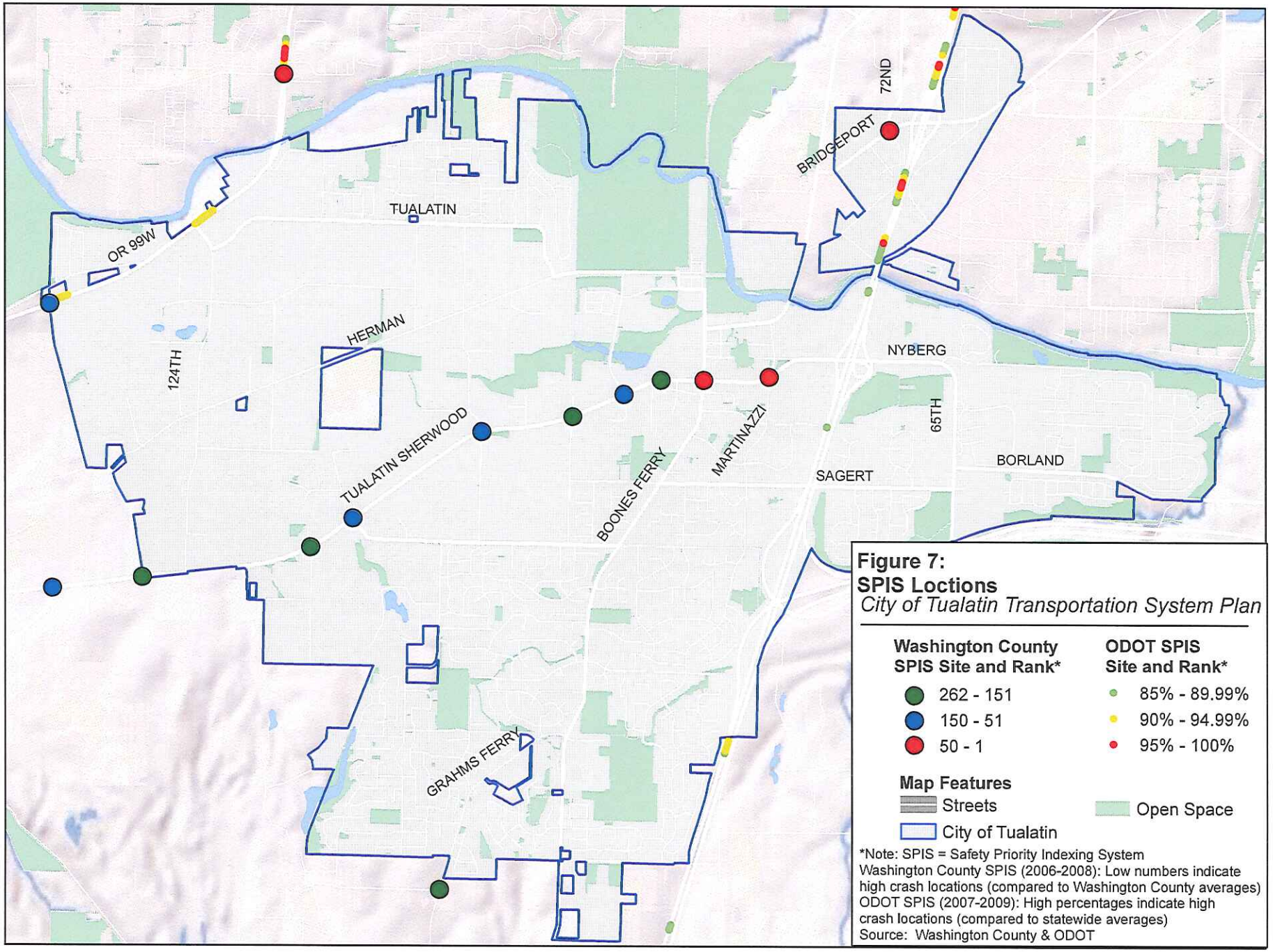


Figure 7:
SPIS Loctions
City of Tualatin Transportation System Plan

Washington County SPIS Site and Rank*
- 262 - 151
- 150 - 51
- 50 - 1

ODOT SPIS Site and Rank*
- 85% - 89.99%
- 90% - 94.99%
- 95% - 100%

Map Features
- Streets
- City of Tualatin
- Open Space

*Note: SPIS = Safety Priority Indexing System
Washington County SPIS (2006-2008): Low numbers indicate high crash locations (compared to Washington County averages)
ODOT SPIS (2007-2009): High percentages indicate high crash locations (compared to statewide averages)
Source: Washington County & ODOT

TABLE 10
Intersection Crash Rates between January 1, 2008 and December 31, 2010

Intersection	Crashes	Annual Average Daily Traffic	Crash Rate (Crashes per million entering vehicles)	Washington County SPIS Site?[7]
Hwy 99W/SW SW 124th Ave	9	30500	0.27	
SW Herman Rd/SW 124th Ave	3	11250	0.24	
SW Tualatin Rd/SW 124th Ave	6	16750	0.33	
SW Bridgeport Rd/SW 72nd Ave/SW Lower Boones Ferry Rd	21	39400	0.49	Yes
SW Lower Boones Ferry Rd/I-5SB	24	47500	0.46	
SW Lower Boones Ferry Rd/I-5NB	21	47750	0.40	
SW Tualatin Rd/SW Boones Ferry Rd	6	25700	0.21	
SW Avery St/SW Boones Ferry Rd	12	21000	0.52	
SW Sagert St/SW Boones Ferry Rd	9	19350	0.42	
SW Nyberg St/I-5SB	**58**	**45550**	**1.16**	
SW Nyberg St/I-5NB	18	31900	0.52	
SW Tualatin-Sherwood Rd/SW Boones Ferry Rd	**50**	**39650**	**1.15**	**Yes**
SW Tualatin-Sherwood Rd/ SW Avery St/SW 112th Ave	21	21350	0.90	Yes
SW Tualatin Rd/SW Herman Rd	3	19300	0.14	
SW Tualatin-Sherwood Rd/SW 89th Ave	9	26900	0.31	Yes
SW Tualatin-Sherwood Rd/SW 90th Ave	12	27050	0.41	Yes
SW Tualatin-Sherwood Rd/SW 95th Ave	6	21430	0.26	Yes
SW Tualatin-Sherwood Rd/SW Teton Ave	24	26500	0.83	Yes
SW Tualatin-Sherwood Rd/SW 115th Ave	12	24600	0.45	Yes
SW Tualatin-Sherwood Rd/SW 124th Ave	20	22200	0.82	
SW Tualatin-Sherwood Rd/SW Martinazzi Ave	33	41650	0.72	Yes
SW Tualatin-Sherwood Rd/SW Nyberg St	24	44700	0.49	
SW 65th Ave/SW Sagert St	0	16250	0.00	
SW Boones Ferry Rd/SW Ibach St	3	19400	0.14	
SW 65th Ave/SW Borland Rd	9	21300	0.39	

Source: ODOT, October 2011
Bold text indicates intersections with a crash rate over 1.0

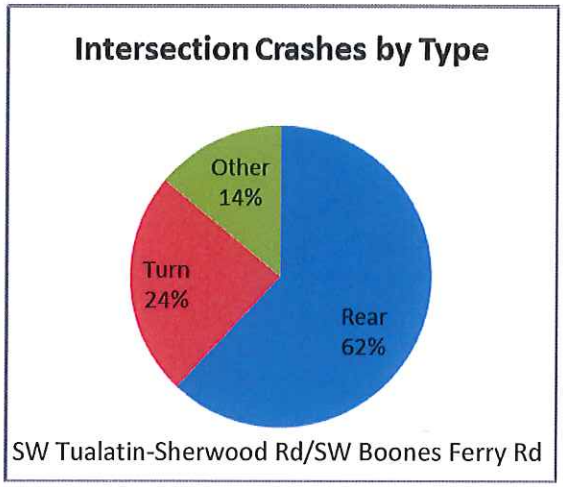
High Crash Locations

Within the City of Tualatin, there were two locations (SW Tualatin-Sherwood Rd/ SW Boones Ferry Rd and SW Nyberg St/ I-5 SB) where the crash rate exceeded 1.0 crashes per million entering vehicles. The project team investigated both of these intersections further to identify potential patterns.

[7] SPIS sites represent the top 50% SPIS-rated Washington County intersections that experienced at least three total crashes, one severe crash, or a fatality over the three-year period. Latest available SPIS rankings are based on 2006-2008 data.

SW Tualatin-Sherwood Rd/SW Boones Ferry Rd

Between 2008 and 2010, 50 crashes were recorded at the intersection of SW Tualatin-Sherwood Road/SW Boones Ferry Road, which has an average annual crash rate of 1.15 crashes per million entering vehicles. No fatalities were recorded at this location, less than one-half of the crashes (46 percent) resulted in injury, and the remainder of the crashes were recorded as property damage only.



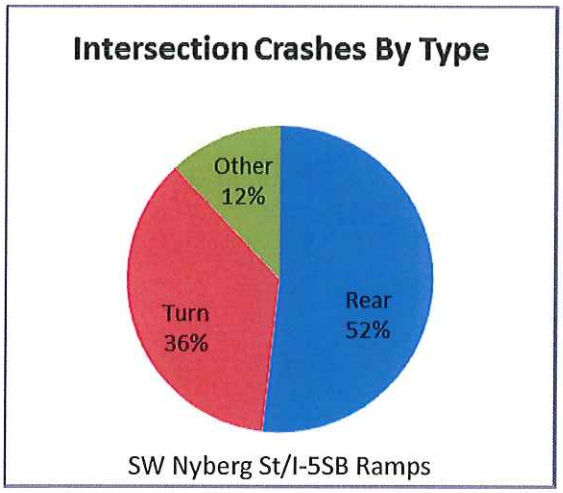
SW Tualatin-Sherwood Rd/SW Boones Ferry Rd

Further analysis revealed that the majority of the crashes were either rear-end or turn movement related. This type of crash pattern is typically seen at congested signalized intersections where vehicles are likely to be stopped or moving slowly due to the traffic signal. The primary cause for the rear-end type crashes was recorded as following too close. The cause for the turn movement crashes was indicated as being a result of not yielding the right of way. Both of these causes are symptoms of congested conditions as well as impatient, aggressive, or inattentive drivers.

There was one bike crash reported at this intersection over the three year analysis time period. The crash occurred during clear daylight hours and was caused by a norhtbound right turning motorist. Driver innattetion may have been a contribution factor in this crash, which resulted in injury to the bicyclist.

SW Nyberg St/I-5 SB Ramps

At the intersection of SW Nyberg Street/I-5 Southbound Ramps, 58 crashes were recorded between 2008 and 2010. The average annual crash rate at this intersection was 1.16 crashes per million entering vehicles. No fatalities were recorded at this location and one-half of the crashes (50 percent) resulted in either an injury or a property damage only crash.



SW Nyberg St/I-5SB Ramps

Further analysis revealed that the majority of the crashes were either rear-end or turn movement type crashes. Similar to the intersection of SW Tualatin-Sherwood Road/SW Boones Ferry Road, congestion at this signalized intersection may contribute to crashes. The proportion of turn movement crashes to rear end high crashes at this location is higher than the intersection of SW Tualatin-Sherwood Road/SW Boones Ferry Road, which was to be expected, given the higher proportion of turning vehicles to vehicles traveling straight through the intersection.

Over the three year time period, there were two bike crashes and one pedestrian crash recorded at this intersection, each resulting in injury to the bicyclist or pedestrian. All three of these crashes occurred during dark conditions by southbound right turning vehicles. Illumination levels and/or driver innattetion at the intersection may have contributed to these crashes. Conflicts may result when southbound right-turning vehicles attempt to turn on red while westbound through travelers (incuding bicyclists) attempt to stay in the far right travel lane where the additional (third) westbound through lane is added west of the intersections.

Safety Needs

Needs and deficiencies identified for the safe travel through the City of Tualatin are identified based on analysis of available crash data. SW Boones Ferry Road, SW Tualatin-Sherwood Road and SW Nyberg Street have the highest crash rates per mile and include the intersections with the highest reported intersection crash rates and SPIS rankings (based on crash severity, rate, and frequency) in the city. Safety improvements along the SW Tualatin-Sherwood Road and SW Nyberg Street corridor are needed, particularly along the segment between Boones Ferry Road and the

I-5/Nyberg Road interchange. Specific improvements should be considered to improve conflicts between motor vehicles and pedestrians or bicycles, particularly for southbound right turning vehicles at the intersection of SW Nyberg Street/I-5 Southbound Ramps. A second segment with safety concerns is the SW Lower Boones Ferry Road interchange including Bridgeport Village. Crashes along these corridors appear to be the symptoms of congested conditions and impatient, aggressive, or inattentive drivers.

Bicycle

Introduction

This section describes the current bicycle network and usage at key intersections within Tualatin, and covers existing shared roadways, shoulder bikeways, bike lanes, multi-use paths, and facility conditions. Bicycling is an inexpensive and important mode of transportation that provides health benefits and reduces stress. When considering bicycle connections it is important to focus on shorter trips, typically trips less than three miles in length, and to consider key destinations, such as schools, services, and commercial areas.

Bicycle Facilities and Amenities

Bicyclists use a variety of facilities within the City of Tualatin. These are briefly described below.

Example of a bike lane on SW Martinazzi Avenue

- **Bike Lanes:** Bike lanes are portions of the roadway that are striped and stenciled specifically for bicycle travel. The typical width of bike lanes is 5 feet, but when the road is narrow, lanes can be as narrow as 4 feet. Buffered bike lanes, with an additional two-foot width, are striped to create a painted buffer area between motor vehicle traffic and bike lanes. Bike lanes are most appropriate on higher volume and speed streets to separate travel modes. Bike lanes comprise a substantial portion of the bicycle facilities in Tualatin. The city defers bike lane width standards to the most recent AASHTO Guide for the Development of Bicycle Facilities and the Oregon Bicycle and Pedestrian Plan. Standards include a 4 foot minimum on a roadway with no curb and gutter, and 5 foot minimum when adjacent to parking or a curb.

Example of a signed shared roadway

- **Shared Roadway:** Shared roadways are roads where bicyclists and motorists share the same travel lane. The most suitable roadways for shared bicycle use are low speed (25mph or less) and low traffic volumes (3,000 vehicles per day or fewer) roads. Shared roadways are often signed, and are designated bicycle routes, providing links to other bicycle facilities (e.g. bicycle lanes) or designating a preferred route through a community. Shared roadways can also include signs that highlight specific information such as travel time or distance to popular destinations. There are a number of shared roadways in Tualatin, but they are primarily in the southern residential area of the city.

Example of a multi-use path in Tualatin Community Park

- **Multi-use Paths:** A multi-use path is an off-street route that is shared with bicycles, pedestrians, and other non-motorized users. Paths are typically recreationally focused, but can also serve as a commuting corridor. These paths are meant to provide a lower stress environment than a roadway for users by separating motor vehicles and bicyclists. The multi-use paths in Tualatin are located primarily to the north next to the Tualatin River and public parks.

- **Cycle Track:** While not currently found in the City of Tualatin, a cycle track provides a separate facility for

bicycles, and is physically separated (usually raised or lowered) from both pedestrians and motor vehicles.

Other bicycle amenities besides those described above can provide an inviting environment to help encourage riders to use the existing bicycle facilities, including areas to store/secure bicycles at destinations. Bike parking and storage is typically provided in either a bicycle rack or a storage locker.

Existing Facilities

In general, the bicycle network in the City of Tualatin consists of on-street bike lanes ranging in width from 4 to 6 feet. Buffered bike lanes have been striped along Tualatin-Sherwood Road between Sherwood and the SW Teton Avenue intersection. There are a number of shared roadway facilities, usually on lower volume streets within and around residential neighborhoods. Multi-use paths are found near parks and schools, and are mostly in the north portion of the city along the Tualatin River. Figure 8 shows the existing bike network by facility type, including planned facilities. Additionally, data from Metro includes areas that are labeled "Caution areas" which include streets with narrow lanes, high traffic, and/or sharp curves.

Much of the City has bicycle facilities. However, there are a few gaps in the system. Many of these gaps have been identified as a planned improvement; the following list includes planned facilities where applicable:

Gaps with Planned Facilities

- SW Herman Road – from SW Teton Avenue approximately 1,000 to the east (planned)
- SW Norwood Road – from SW Boones Ferry Road to SW 84th Avenue (planned)
- SW Ibach Court – from SW Boones Ferry Road to SW Martinazzi Ave (planned)
- Tualatin River Greenway Trail:
    - From SW 84th Avenue to just east of SW 65th Avenue (planned)
    - From SW 55th Avenue to approximately SW Canal Road (planned)
    - From SW Boones Ferry Road to SW Cheyenne Way (planned)
    - West of SW Cheyenne Way to eastern City boundary – some segments built (planned)
- Interstate 5 multi-use path:
    - From SW Boones Ferry Road to SW Avery Street (planned)
    - From SW 80th Avenue to SW Norwood Road (planned)

Gaps without planned facilities

- SW 95th Avenue – from SW Sagert Street north to SW Tualatin-Sherwood Road
- SW 112th Avenue – from cul-de-sac end north to SW Myslony Street
- SW Blake Street – from SW 105th Avenue to SW 108th Avenue
- SW Martinazzi Avenue – from SW Warm Springs Street to SW Boones Ferry Road
- SW Wilke Road – from SW Borland Road to SW 50th Avenue
- SW 80th Avenue – from SW Avery Lane to I-5 multi-use path
- SW Grahams Ferry Road – south of SW Ibach Road to southern City boundary

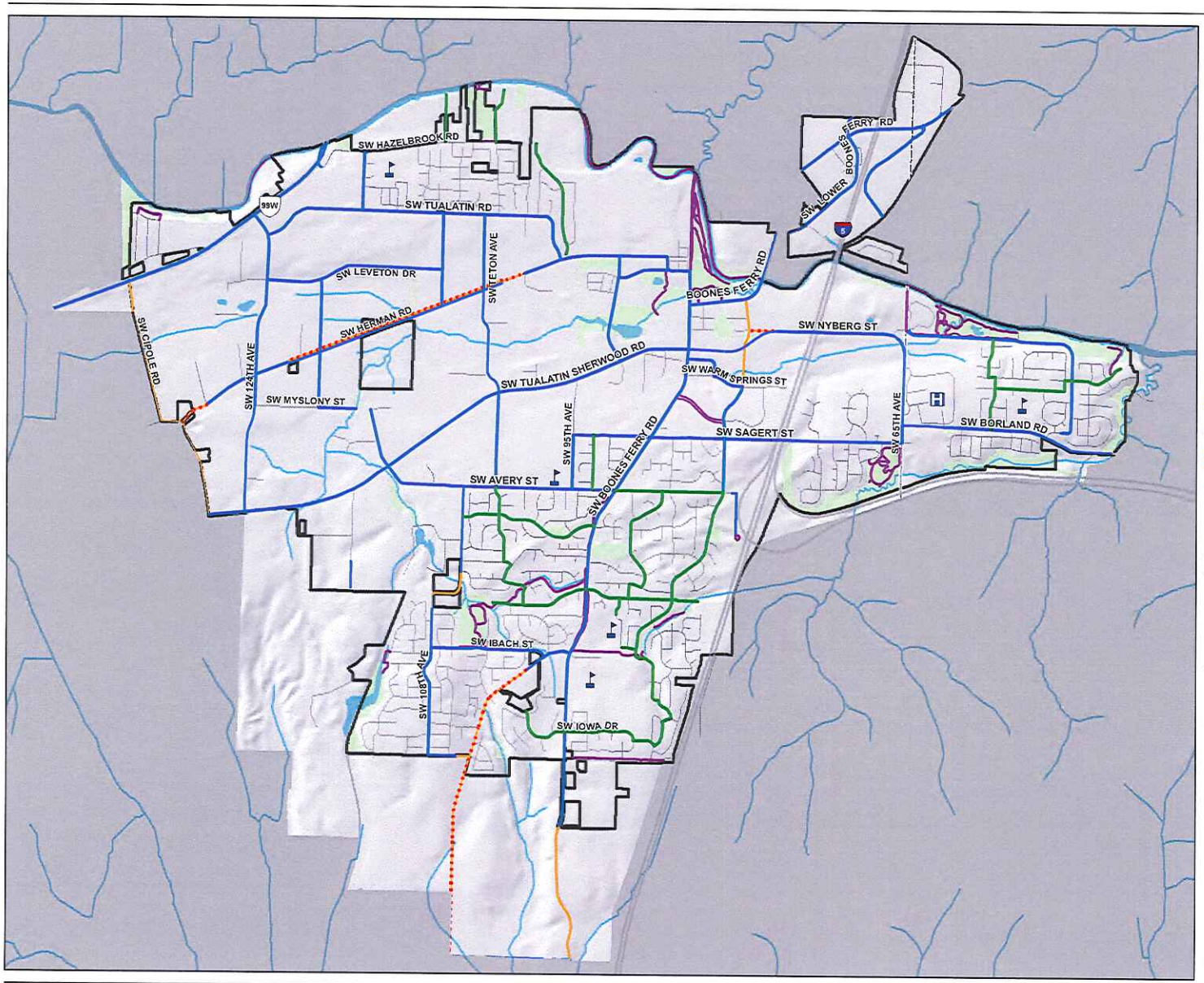
Many of the gaps with no planned facilities are less than ¼ mile in total distance.

High Bicycle Activity Locations

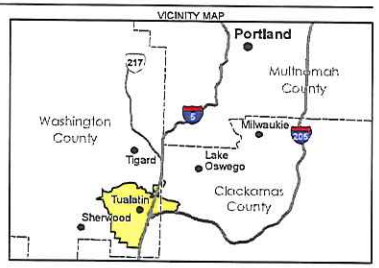
The study team collected activity data at 30 intersections during both the morning (7am-9am) and afternoon (4pm-6pm) rush hour on a typical weekday. These activity data included bicycle counts, indicating intersections with high bicycle volumes. The counts were taken on Wednesday October 19, 2011 when temperatures were between 50 and 60 degrees, with no precipitation. These conditions would reflect typical weather for the area and should not have depressed bicycle demand relative to a typical day over the course of the year, though volumes could be significantly higher during the summer.

The data indicated that both the morning and afternoon rush hours have fewer than ten bicycles traveling through any one intersection during the corresponding peak hours. Of the top ten intersections with bicycle activity, five of

those were along the Tualatin-Sherwood corridor connection to the I-5 interchange at SW Nyberg Street. Table 11 provides a list of the top ten intersections and the bicycle count.



VICINITY MAP



LEGEND

Study Area

Bike System

- Multi-use path
- Bike lane
- Shared Roadways
- High traffic through street
- Caution area
- County Boundaries
- Parks
- City Boundary
- Hospitals
- Schools

Street System

- Interstate
- Arterial
- Minor or Private Street

N

0 0.5 1
Miles

FIGURE 8
Bike System
Existing Conditions Analysis
City of Tualatin Transportation System Plan

PDX:\ROSA\PROJ\TUALATIN\427518\TUALATINTSP\GIS\MAPFILES\FIGURE09_BIKESYSTEM_REVISEDNOPLANNEDFAC.MXD CSTEBBIN 2/3/2012 1:13:20 PM

CH2MHILL

This page intentionally left blank.

TABLE 11
Top Bicycle Activity Intersections by Morning and Afternoon Peak Hours

Intersection	AM Peak Hour	PM Peak Hour	Total Activity
SW Martinazzi Ave/SW Tualatin-Sherwood Rd	5	5	10
SW Boones Ferry Rd/SW Tualatin-Sherwood Rd	4	5	9
SW 65th Ave/SW Borland Rd	6	2	8
SW Boones Ferry Rd/SW Lower Boones Ferry Rd	3	5	8
SW Teton Ave/SW Avery St	3	5	8
I-5 SB Ramps/SW Nyberg St	2	5	7
I-5 NB Ramps/SW Nyberg St	2	5	7
SW Boones Ferry Rd/SW Avery St	2	5	7
SW 124th Ave/SW Tualatin-Sherwood Rd	3	3	6
SW Teton Ave/SW Tualatin-Sherwood Rd	3	3	6

SOURCE: Count data collected by All Traffic Data on October 18th (Tuesday) 2011

In addition to the count data collected at study area intersections, bicycle usage along sections of the multi-use path on the Tualatin River Greenway Trail was previously collected as part of the *Intertwine Trail Use Snapshot*. This report reviewed multi-use trail users at three locations; two were in the City of Tualatin. The following are some of the relevant bicycle user findings.

The multi-use trail has approximately 150 daily users, with slightly higher use on the weekends. Annually, approximately 55,350 bicyclists use the multi-use trail. Almost two-thirds of bicyclists are male (65 percent). Bicycle use makes up 16 percent of the overall use of the trail system. The trail is used primarily for pleasure/ exercise (80 percent of respondents), while the other 20 percent use the trail for going to/from school or work. Users typically access the trail by biking or walking (83 percent), but 17 percent of users access it by car.

Bike Needs

The City of Tualatin enjoys a robust bicycle network with minor gaps (less than ¼ mile in general). Needs and gaps within this system are summarized below:

- **Difficult left turn maneuvers –** Along wider roadways that have bike lanes (four lanes or wider) it is difficult to traverse from the bike lane on the right to make a left turn at intersections. Many riders choose to dismount their bicycle and use the sidewalk system to cross the street via a crosswalk. A few current examples of this occurrence are the intersections of SW Martinazzi Avenue/SW Nyberg Street and SW Lower Boones Ferry Road/SW 72nd Avenue/SW Bridgeport Road.

- **Constrained environment –** At some locations the bike lanes narrow to four feet on roadways with high vehicle volumes making it a less desirable environment for cyclists. This occurs in areas like SW Lower Boones Ferry Road where it passes beneath I-5 and SW Boones Ferry Road south of SW Sagert Street.

Narrow bike lanes in constrained areas at SW Lower Boones Ferry Road interchange

- **Difficult areas with low bike visibility –** Some of the roadways have vehicle right turns that cross over existing bike lanes into a separate right turn pocket. Bike lanes at

these locations are only indicated by dashed white lines. Additional visibility for bicycles could be made through a colored pavement on the bicycle lane highlighting where bicycles are likely to be present. This occurs on SW Boones Ferry Road northbound, and on SW 90th Avenue at SW Tualatin-Sherwood Road.

- **Bike lanes outside of turn lanes** – when bicycle lanes are located to the right of right-turn lanes, through movements at an intersection are more difficult and hazardous. Examples of this include southbound SW Martinazzi Avenue at SW Sagert Road and eastbound SW Ibach Road at SW Grahams Ferry Road.

- **Obstacles within the bike lane** – There are currently some obstacles within bike lanes that affect bicycles. One example is drainage grates located in the bike lane with the grating parallel to the bicycle travel direction. Bicycle wheels could get caught in these grates. Another obstacle is rail lines over bike lanes. The preferable bike lane crossing over a rail line would be at a 90 degree angle. Less than 90 degree angles can catch bike wheels when bicyclists travel across the rail tracks.

Bicycle crossing on SW Teton Avenue

- **Gaps in the network** – Gaps in the network (identified on the previous page) do not provide continuity to or connectivity to the network, which can be discouraging for riders. In some areas bike lanes do not extend all the way to intersections making it potentially hazardous for cyclists.

High Crash Locations

Between January 1, 2008 and December 31, 2010 there were 17 reported crashes involving bicycles within the City. All of these crashes resulted in an injury to the bicyclist, and most occurred on dry roadway surface (16 out of 17 crashes) in daylight conditions. Many of the crashes were also result of a vehicle turning maneuver, and most occurred at intersection areas. The highest crash locations for bicyclists are along various points of SW Boones Ferry Road (6 crashes), and SW Tualatin-Sherwood Road (4 crashes, 2 at SW 90th Avenue, and the others at other points along the roadway). There were also two bicycle crashes on Nyberg, both at the southbound ramp exiting from I-5.

Pedestrian System

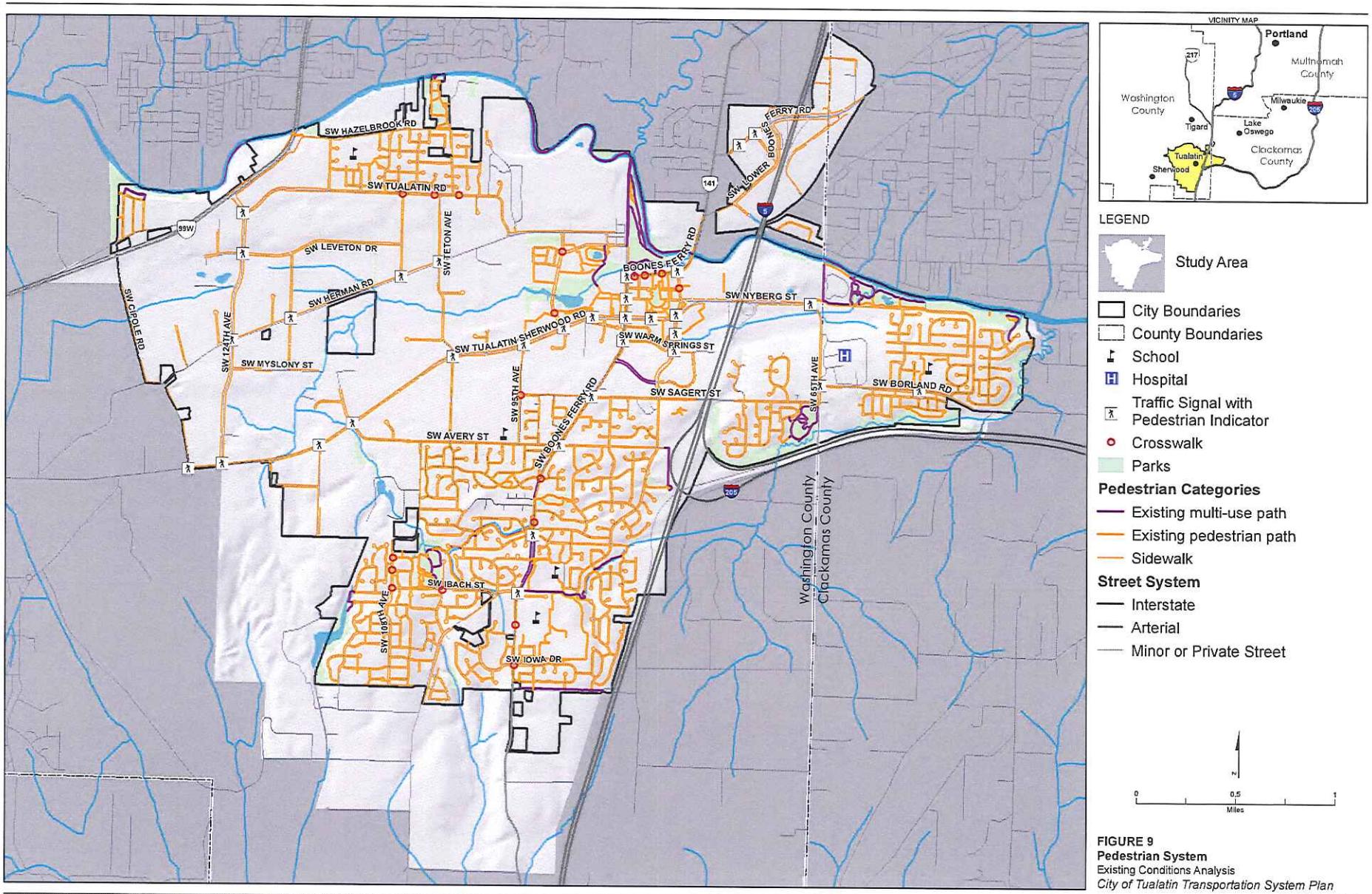
Introduction

This section describes the current pedestrian facility network within the study area, including sidewalks, roadway shoulders, accessways, multi-use paths, and facility conditions. The pedestrian system serves all types of pedestrians and different types of pedestrian trips. This section will document the different types of facilities and identify needs. Figure 9 shows the pedestrian system within the City.

Sidewalks, Multi-Use Pathways, Crosswalks, and Pedestrian Signals

Sidewalks

Sidewalks are located along roadways, sometimes directly adjacent to the curb or separated from the road by landscaping or a planter strip. They are hard surfaced, usually concrete or asphalt. Sidewalks should also be free of utility poles, sign posts, fire hydrants, vegetation and removable objects such as trash cans. According to the Tualatin Development Code, sidewalks are required on both sides of all fully developed major and minor arterial streets within the City. Major collector, minor collector, residential collector, local commercial industrial, and local streets are required to have sidewalks on both sides. Sidewalk standards are included in Table 12 below:



LEGEND

- Study Area
- City Boundaries
- County Boundaries
- School
- Hospital
- Traffic Signal with Pedestrian Indicator
- Crosswalk
- Parks

Pedestrian Categories

- Existing multi-use path
- Existing pedestrian path
- Sidewalk

Street System

- Interstate
- Arterial
- Minor or Private Street

N

0 0.5 1
Miles

FIGURE 9
Pedestrian System
Existing Conditions Analysis
City of Tualatin Transportation System Plan

PDX: \ROSA\PROJ\TUALATIN\427318\TUALATINTSP\GIS\MAPFILES\FIGURE09_PEDESTRIANSYSTEM.MXD CSTEBBIN 2/3/2012 1:18:37 PM

CH2MHILL

This page intentionally left blank.

TABLE 12
Sidewalk Standards

Street Classification	Required Sidewalk Width (for both sides of the street)
Major Arterial	6-8 feet
Minor Arterial	8-10 feet
Minor Arterial (downtown) – includes tree well	12 feet
Major, Minor, and Residential Collector	6-8 feet
Local Commercial Industrial	6 feet
Interim Local Commercial Industrial	5 feet
Local street (downtown) – includes a tree well	10 feet
Local Street	5 feet

Source: Tualatin Development Code

Many of the arterial and collector streets within Tualatin have sidewalks, with the notable exception of SW Herman Road between SW Tualatin Road and SW Teton Avenue, and between SW 125th Court and SW Cipole Road. There is a paved/gravel shoulder on the south side of the road, and on the north side there is a drainage ditch directly adjacent to the roadway, making it impossible for pedestrians or those in mobility devices to walk along the north side of the road. There is a new sidewalk on the north side of the street starting just east of Teton Avenue and extending to SW 125th Court, but not along the full length of the road through the City. Other arterials such as SW Tualatin Road, SW Tualatin-Sherwood Road, and SW Boones Ferry Road have sidewalks on both sides, though in places the sidewalks may be narrower than City standards, discussed above in the roadway system section.

No sidewalks exist on SW 108th/105th Avenues

SW Blake Street and SW 105th Avenue lack of shoulder

Sidewalks in Tualatin are wide and well maintained in areas where there are likely to be pedestrians: the Tualatin Commons and downtown Tualatin, immediately adjacent to all five public schools, and the four park and ride facilities.

There are a number of local roads with sidewalks on only one side, including SW 105th Avenue south of SW Siletz Drive, where there is a narrow sidewalk on the east side of the street, but no pedestrian facility on the west side. South of SW Paulina Drive, where SW 105th Avenue curves to connect to SW 108thAvenue via SW Blake Street there are no sidewalks and no shoulder for pedestrians. The speed limit is signed at 30 miles per hour, and there are few other connections for pedestrians in the area. The roadway is signed to warn drivers that pedestrians are present, but there is little room for both vehicles and pedestrians on the roadway.

Much of the residential development within Tualatin consists of subdivisions that were generally built at the same time, ranging from the 1960s to the 2000s. Most have sidewalks, with the exception of:

- The neighborhood built in the 1970s just west of the Tualatin Country Club including:
  - Sections of SW Cheyenne Way

  - SW Shawnee Trail
  - SW Pawnee Path
  - SW Chippewa Trail
- The neighborhood built in the 1960s and 1970s west of Little Woodrose Natural Area along SW Killarney and SW Cherry Lanes, and
- The mobile home park north of OR 99W near SW 122nd Terrace.

Pedestrian in bike lane on Sagert Street overpass

These neighborhoods generally have wide and/or curving streets that provide a visual cue for drivers to slow down. Additionally, they are not connected to the surrounding roadway network and do not have through traffic which keeps vehicle speeds and volumes low.

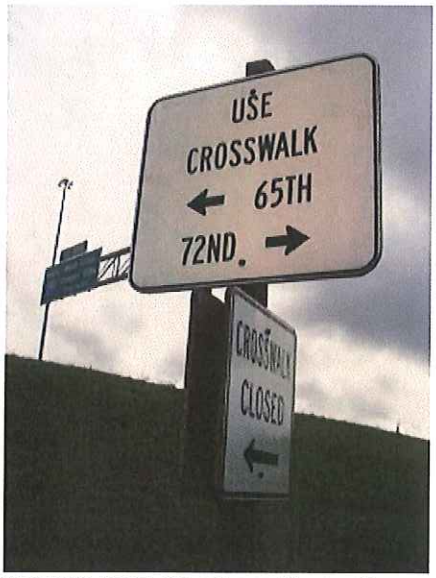
In areas that have sidewalks, especially neighborhoods built in the 1970s and 1980s; the sidewalks can be narrow with barriers for pedestrians including light poles, trees, mailboxes, and movable objects such as trash cans. Fixed barriers can make a sidewalk inaccessible for those in mobility devices, and those with disabilities such as blindness to safely use the sidewalk.

Sidewalk Needs

There are a number of sidewalk gaps on arterials and collector streets. These include:

- SW Herman Road between SW Tualatin Road and SW Teton Avenue, and between SW 125th Court and SW Cipole Road
- SW Grahams Ferry Road on the east side between SW Ibach Street and the Church of Jesus Christ of LDS, and on the west side between the church and just north of SW Sitka Court.
- Sections of SW Boones Ferry Road:
  - On the west side just south of SW Iowa Drive to the southern City limits
  - On the east side, approximately two blocks north of the City limits to the southern City limits
  - On the west side from approximately Tualatin High School south to the southernmost crosswalk associated with the school, approximately two blocks north of SW Iowa Drive
- SW Blake Street between SW 105th and 108th Avenues
- SW 105th Avenue between SW Paulina Drive and SW Blake Street
- SW Sagert Street overpass over I-5 from just west of the overpass to SW 72nd Avenue

Narrow sidewalk blocked by trash can – Boones Ferry Road



Crosswalk closed sign at Lower Boones Ferry Road and I-5 off-ramp

Sidewalks that do not meet current City standards on the arterials and collectors should be studied to determine if there is a need to improve sidewalks to standard.

SW Nyberg Street has a sidewalk on the north side only, but the pedestrian crossings over the highway ramps can be intimidating, and the sidewalks under I-5 at SW Lower Boones Ferry Road require out of direction travel for pedestrians due to closed crosswalks.

Multi-Use Pathways

Multi-use pathways are used by a variety of users including pedestrians, bicyclists, runners, and those using mobility devices. Pathways may be paved or graveled, and are often wider than a sidewalk and are separated from roadways. Multi-use pathways are generally located in a park or greenway.

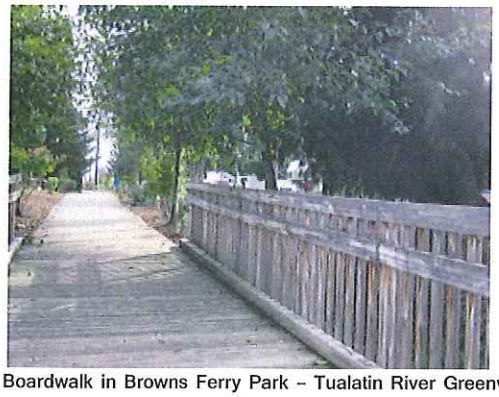
There are a number of planned and existing multi-use, off street paths within the City. Many of the parks and greenways have multi-use paths, and some extend into adjacent commercial or residential areas. Multi-use paths in Tualatin are paved, concrete, or gravel, or in the case of sections of the Tualatin River Greenway, are built as a boardwalk.

Multi-use paths can provide a pleasant off-street alternative for pedestrians. Most of the paths within Tualatin are meant for recreational use – they do not connect residential areas to commercial or job centers. While there are plans for a regional and city-wide interconnected network of off-street paths, the current system is fragmented and limited to areas near parks or schools.

According to the *Intertwine Trail Use Snapshot* from Oregon Metro, approximately 4,675 people use the Tualatin River Greenway path during an average week, most are pedestrians walking for pleasure or exercise. Approximately 70 percent of pedestrians access the trail by car. An interconnected system of trails would allow more people to access the paths by foot from their homes or places of business.

Asphalt path in Tualatin Community Park

Gravel path in Jurgens Park



Boardwalk in Browns Ferry Park – Tualatin River Greenway

Concete path in Tualatin Community Park

Multi-use Pathway Needs

There is currently only one exclusive bicycle or pedestrian crossing over the Tualatin River through the Tualatin Community Park, though two future pedestrian and bicycle bridges are planned but are not yet built: one near Jurgens Park on the west side of the City, the other near Browns Ferry Park on the east side. A bicycle and pedestrian bridge just outside the City's western boundary is planned to be part of the Tonquin Trail. There is a need for an interconnected network of pathways throughout the system. This would allow bicyclists and pedestrians to travel to destinations and potentially use the paths for work or other trips in addition to recreation. Additionally, signs and other wayfinding guides are needed to inform bicyclists or pedestrians how to move between the various multi-use pathways.

Crosswalks

Crosswalks are striped areas on a road that indicate to both pedestrians and motorists that pedestrians are likely to cross a roadway. However, every intersection is a legal crosswalk in the City of Tualatin; this section refers to the striped crosswalks. There are a number of forms of crosswalks, the most common of which are two parallel lines from one side of the street to the other. Other types of crosswalks include the "ladder" or "zebra" crossings that are a series of hash marks across the roadway. Crosswalks can also be a street design element and painted or stamped designs can be added to mimic brick or pavers to further differentiate the crosswalk from the roadway.

There are a number of crosswalks in the City, notably in the commercial areas and near public schools. Major intersections have crosswalks and walk indicators at the signals. Residential crosswalks are located near public schools, parks, or transit stops.

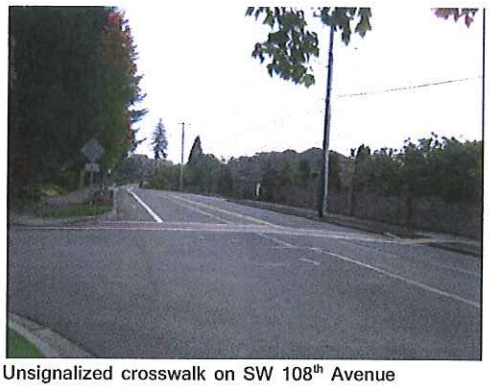
The crosswalks near the WES station at SW Boones Ferry Road and the access into the park and ride lot and at SW Boones Ferry and SW Tualatin-Sherwood Roads have clearly delineated, stamped and painted pavement to indicate where pedestrians are to cross. There are also audible signals at both intersections for vision impaired pedestrians that indicate the street names and when to cross.

SW Boones Ferry Road and WES crosswalk near Park and Ride entrance

Park and ride entrance crosswalk

Additionally, there are crossings at unsignalized intersections including:

- SW Iowa Drive and SW Boones Ferry Road
- SW Ibach Street and SW 103rd Avenue
- SW Ibach Street and SW 108th Avenue
- SW Willow Street and SW 108th Avenue
- SW 95th Avenue and SW Sagert Street
- SW Seneca Street and SW Martinazzi Avenue

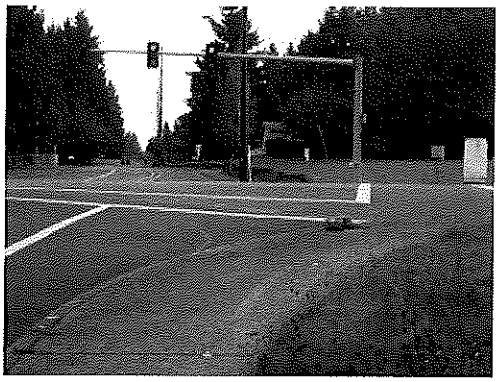


Unsignalized crosswalk on SW 108th Avenue

There are several mid-block crossings on lower volume streets,

usually to connect neighborhoods and schools. A few mid-block crossings in the City include:

- SW Boones Ferry Road just south of the entrance to the Tualatin High School parking lot and includes a pedestrian island
- SW 108th Avenue between SW Willow and Ibach Streets
- Two on SW Boones Ferry Road between SW Tualatin Road and SW Martinazzi Avenue



SW Avery Street and SW Boones Ferry Road intersection wide turning radius

Crosswalk Needs

There are a number of concerns with pedestrian safety at crosswalks, and community members have indicated that better lighting or flashing lights at crosswalks, especially those that see heavy pedestrian usage or are mid-block would help improve safety and drivers would be more aware of pedestrians at these locations.

A number of crosswalks at intersections are not pedestrian-friendly because of a wide turning radius built to accommodate trucks, especially on routes that are frequented by trucks including SW Tualatin-Sherwood Road and SW Lower Boones Ferry Road near Bridgeport Village. This occurs at off and on-ramps to I-5 and at a few intersections in the City including:

- SW Avery Street and SW Boones Ferry Road
- SW Lower Boones Ferry Road, SW Bridgeport Road, and SW 72nd Avenue
- SW65th Avenue and SW Lower Boones Ferry Road
- SW Boones Ferry Road and SW Martinazzi Avenue
- SW Tualatin-Sherwood Road and SW Martinazzi Avenue
- SW Sagert Street and SW Martinazzi Avenue
- SW Tualatin Road and SW Boones Ferry Road
- SW Tualatin-Sherwood Road and SW Boones Ferry Road
- SW Warm Springs Street and SW Boones Ferry Road
- SW Sagert Street and SW Boones Ferry Road
- SW Tualatin-Sherwood Road and SW Avery Street
- SW Tualatin-Sherwood Road and SW 115th Avenue
- SW Tualatin-Sherwood Road and SW 124th Avenue
- SW Herman Road and SW 108th Avenue
- SW Sagert Street and SW 65th Avenue

The wider turning radius allows larger vehicles to turn right easily, but increases vehicle turning speeds, increases the distance that pedestrians need to cross in the intersection, and decreases pedestrian visibility at these intersections when compared to a more right-angle intersection.

Pedestrian Signals

Pedestrian signals are similar to traffic signals, but are only activated when a pedestrian is present to activate the signal. The majority of the time the signal is unlit until a pedestrian is present, and then a red light or a blinking yellow light activates. There are also traffic signals that indicate when pedestrians should cross in addition to controlling vehicle traffic. Depending on the signal programming, the pedestrian signal may automatically indicate

when pedestrians should cross, or the signal may need to be activated by a pedestrian. Many of the study area intersections in Tualatin have pedestrian signals, some indicate when it is safe for a pedestrian to cross automatically, and some require a pedestrian to push a button to activate the pedestrian cross signal. There are no dedicated pedestrian signals within the City of Tualatin.

Pedestrian Signal Need

Some community members have expressed concern for crossings where the light is too short for a pedestrian to cross the entire length of the intersection, specifically in the downtown area and at SW Sweek and SW Tualatin Roads. Other community concerns include issues that the pedestrian light does not work unless it is specifically activated by a pedestrian. The intersection of SW Avery Street and SW Tualatin-Sherwood Road was specifically cited as a location where the pedestrian signal does not work unless it is activated.

High Pedestrian Activity Locations

The study team collected activity data at 30 intersections during both the morning and afternoon rush hour. These activity data included pedestrian counts, indicating intersections with high pedestrian volumes. The intersection with the most pedestrian traffic is SW Boones Ferry Road and SW Ibach Street, which is close to both Byrom Elementary School and Tualatin High School. In the afternoon, most of the pedestrians are crossing from the school to the residential areas west and north of the schools. The next highest intersections for pedestrians are in the downtown area near the Tualatin Commons: SW Martinazzi Avenue and SW Boones Ferry Road and SW Martinazzi Avenue and SW Tualatin-Sherwood Road are near transit stops and city services. Additionally, many people who work in the Tualatin Commons area park in the City parking lots, and likely cross at these intersections to get to and from their cars.

High Crash Locations

Between January 1, 2008 and December 31 2010, there were eight reported crashes involving a pedestrian, four of which were on SW Boones Ferry Road. All of the pedestrian crashes resulted in an injury to the pedestrian, and five of the crashes occurred in dark or low-light conditions such as dusk or dawn. For three of the crashes, the pedestrian was illegally in the roadway, while five crashes were attributed to the vehicle failing to yield for pedestrians. Most of the pedestrian crashes occurred when a passenger car was turning (six out of the eight crashes), and most of the crashes occurred during dry conditions. The reported crashes are included in Table 13 below:

TABLE 13
Pedestrian Crashes by Location

Primary Street	Secondary Street/Intersection	Weather	Light	Cause	Vehicle movement
SW Apache Dr	SW Boones Ferry Rd	Clear	Daylight	Failure to Yield	Right turn
SW Boones Ferry Rd	SW Warm Springs St	Clear	Daylight	Failure to Yield	Left turn
SW Boones Ferry Rd	SW Lower Boones Ferry Rd	Cloudy	Dusk	Pedestrian in roadway	Left turn
SW Boones Ferry Rd	SW Warm Springs St	Rain	Dark – no street lights	Pedestrian in roadway	Straight
SW Boones Ferry Rd	SW Nyberg Rd	Rain	Dark – no street lights	Failure to Yield	Left turn
SW Nyberg Rd	Southbound exit at Nyberg St	Clear	Dark with street lights	Failure to Yield	Right turn
SW Nyberg Road	SW Tualatin-Sherwood Rd	Clear	Daylight	Motorized wheelchair - Pedestrian in roadway	Straight
SW Tualatin Rd	SW 90th Ave	Rain	Dawn	Failure to Yield	Left turn

Source – ODOT 2011

Public Transit

Introduction

Public transportation serves a vital function for residents and businesses/employers of Tualatin. It provides a choice for residents who have a car and wish to not use it at all times, serves as a primary means of transportation for those who have mobility limitations and cannot travel any other way, and it provides options for residents who do not have a car and who wish to travel further than is feasible on a bicycle or on foot. Approximately 60 percent of transit trips within Tualatin are likely to be commuting trips, with the remaining trips likely to be used for shopping, recreation, or other purposes[8]. Transit riders who access the TriMet or South Metro Area Regional Transit (SMART) systems in Tualatin can connect to other services and travel throughout the Portland metropolitan region and Salem.

Public transportation in the City of Tualatin is provided primarily by TriMet, with some service provided by the SMART district. TriMet serves Tualatin with five bus lines, Westside Express Service (WES) commuter rail, and paratransit. SMART serves Tualatin with one bus line (to Wilsonville).

Existing Service[9]

The following paragraphs describe existing bus, commuter rail, paratransit[10], and shuttle service in Tualatin. Figure 10 depicts the locations of bus lines and WES.

Bus Lines

- **TriMet Bus line 12 (Barbur/Sandy Blvd)** connects Gresham to Sherwood via downtown Portland on both weekdays and weekends. Bus line 12 does not serve the center of Tualatin, but it serves OR-99W as it passes through the City of Tualatin in the city's western edge. Bus line 12 operates every 30 minutes in Tualatin between approximately 5:00 am and 10:00 am; then operates every hour between 11:00 am and 3:00 pm; then returns to 30 minute service between 3:00 pm and 6:00 pm.
- **TriMet Bus line 36 (South Shore)** provides weekday service between Lake Oswego and Tualatin and provides continued service during rush hour to Portland city center. It originates at the Tualatin Park and Ride and provides service to Lake Oswego Transit Center approximately every 30 minutes between 6:00 am and 10:00 am, and approximately every 60-120 minutes between 11:40 am and 6:00 pm. Bus line 36 provides two services per weekday that continue to SW 6th and Burnside in Portland City Center; these are currently scheduled to depart Tualatin Park and Ride at 6:58 am and 7:29 am.
- **TriMet Bus line 37 (Lake Grove)** connects Lake Oswego and Tualatin via SW Lower Boones Ferry and Boones Ferry Roads. It operates approximately every 90 minutes on weekdays between 7:00 am and 6:00 pm and connects the Lake Oswego Transit Center and the Tualatin Park and Ride.
- **TriMet Bus line 38 (Boones Ferry Road)** connects Tualatin and Portland city center via Lake Oswego and SW Portland. It originates at the Tualatin Park and Ride provides service every 30-40 minutes between 6:00 am and 8:30 am, and between 3:30 pm and 5:30 pm. Line 38 does not operate on Saturdays or Sundays.
- **TriMet Bus line 76 (Beaverton/Tualatin)** connects Beaverton to Tualatin and passes through Durham, Tigard, and Washington Square. It originates at the Meridian Park Hospital main stop, connects to the Tualatin Park and Ride, the Tigard Transit Center, the Washington Square Transit Center, and the Beaverton Transit Center. Service is provided approximately every 30 minutes from 5:40 am to 6:40 pm, then every hour from 7:30 pm to 9:30 pm on both weekends and weekdays.
- **TriMet Bus Line 94 (Sherwood/Pacific Highway)** connects Sherwood, King City, Tigard, Burlingame and Portland City Center. It travels along Pacific Highway, but does not have a stop within the City of Tualatin.

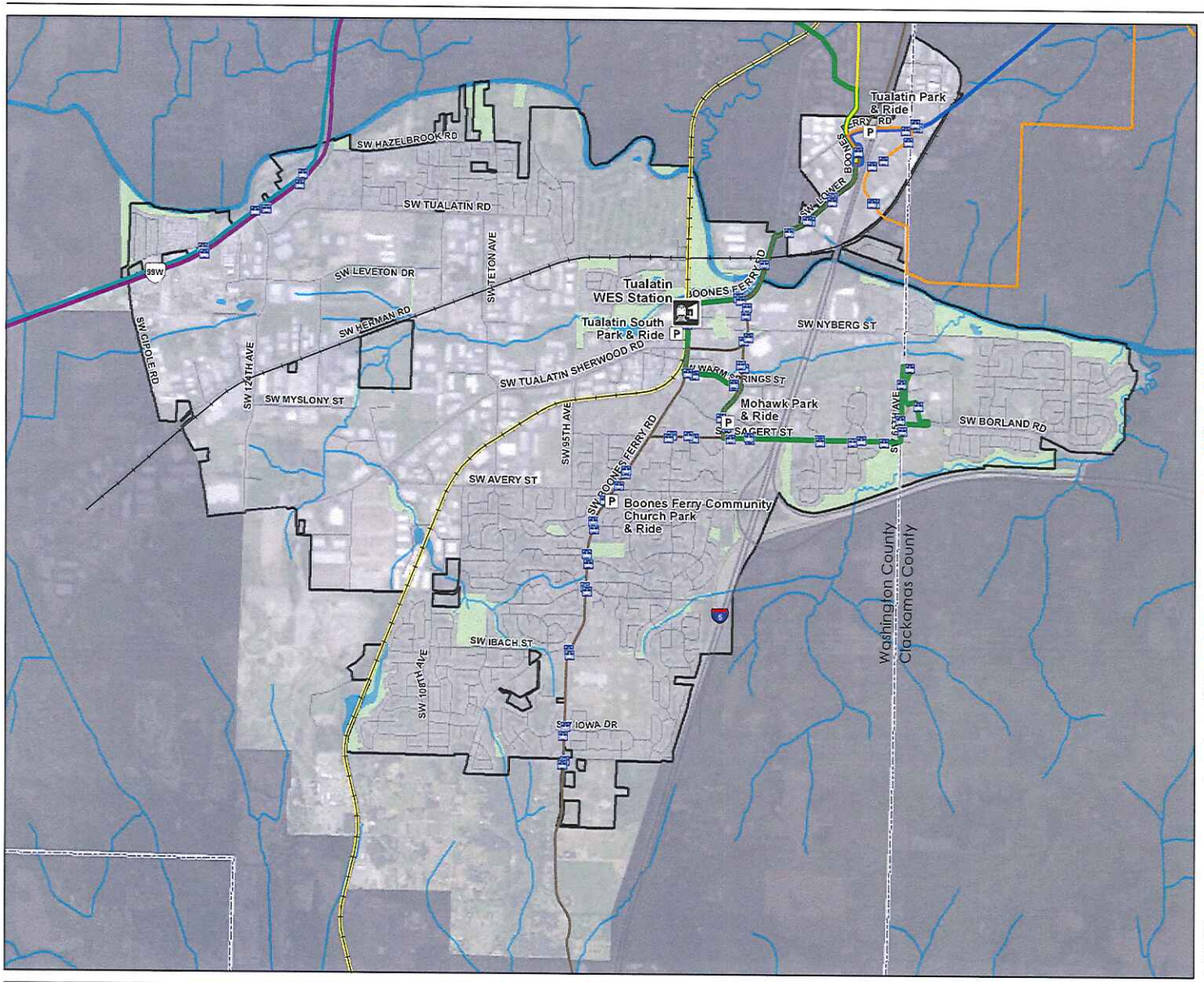
[8] American Public Transportation Association *2010 Fact Book*.

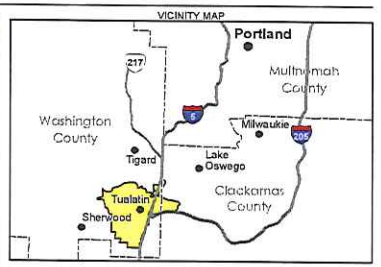
[9] Current bus lines as of March, 2012, data provided by TriMet.

[10] Paratransit is a shared-ride public transportation for those unable to use regular buses or trains due to a disability or disabling health condition.

This line is a commuter-oriented express bus with service only on weekdays heading towards Portland between 5:50 am to 7:40 am and heading towards Sherwood between 3:05 pm to 6:35 pm.

- **TriMet Bus line 96 (Tualatin/I-5)** connects the Commerce Circle in Wilsonville with downtown Portland via I-5. It originates at the 10100 Block on SW Commerce Circle and connects to the Tualatin Park and Ride before continuing on directly to downtown Portland. Bus line 96 provides weekday service approximately every 30 minutes between approximately 5:30 am and 10:00 am, and between 2:30 pm and 9:00 pm.
- **SMART Line 2X -- Barbur** on SMART travels from the Wilsonville WES station to the Barbur Transit Center with a stop at the Tualatin Park and Ride. Service is provided approximately every 30 minutes between 5:00 am to 10:00 am, every hour from 10:00 am to 2:00 pm, and every 30 minutes from 2:30 pm to 7:30 pm on weekdays and Saturdays; there is no Sunday service. Figure 11 shows SMART line 2X.





LEGEND

Study Area

Bus Lines

- Line 12
- Line 36
- Line 37
- Line 38
- Line 76
- Line 94
- Line 96
- WES (Westside Express Service)
- Bus Stop
- WES Stop
- Park and Rides
- Railroad
- Parks
- Streams
- Rivers and Water Bodies
- City Boundaries
- County Boundaries

Street System

- Interstate
- Arterial
- Minor or Private Street

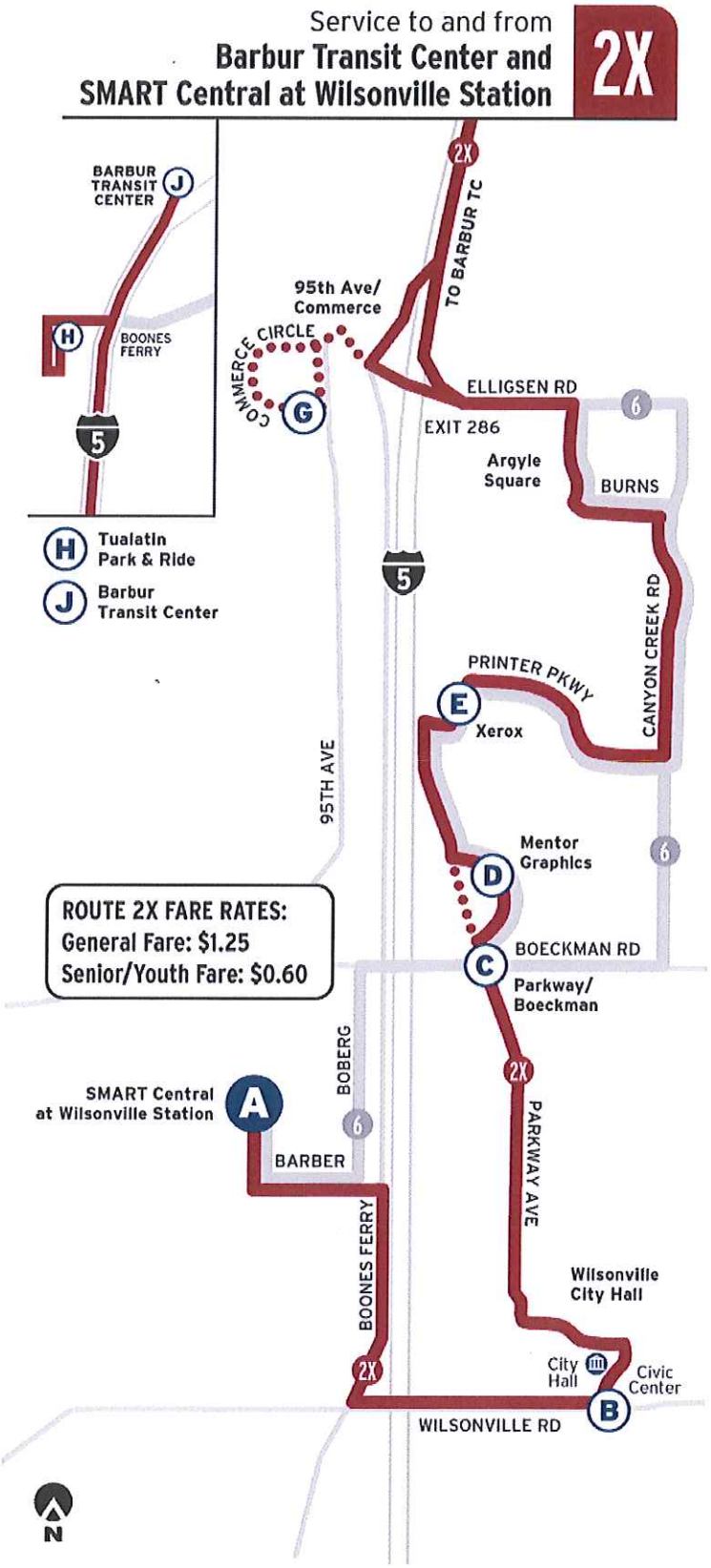
N

0 0.5 1 Miles

FIGURE 10
Public Transit System
Existing Conditions Analysis
City of Tualatin Transportation System Plan

This page intentionally left blank.

Figure 11 SMART Route 2X in Tualatin



TriMet's service area includes three zones which determine the price per ride. Tualatin lies within zone 3. As of November 2011, the cost of an all-zone (zone 3) ticket on TriMet is $2.40, youth tickets are $1.50, and honored citizen tickets (seniors, people with disabilities, and people on Medicare) are $1. Tickets are valid for two hours. If the return trip is made within the two hour period, there is no additional charge.

A regular, one-way fare on SMART costs $1.25 as of November 2011. The fare is $0.60 for seniors, persons with disabilities, youth, and persons on Medicare.

Commuter Rail

TriMet's Westside Express Service (WES) commuter rail connects the Westside suburbs of the Portland metropolitan area. It includes stops in Beaverton, Tigard, Tualatin, and Wilsonville. WES trains stop at the Tualatin station in the northbound direction (towards Beaverton) every half hour on weekdays between 5:30 am and 9:00 am, and between 3:30 pm and 7:00 pm. WES trains stop at the Tualatin station in the southbound direction (towards Wilsonville) every half hour on weekdays between 6:09 am and 9:39 am, and between 4:16 pm and 7:46 pm. WES does not operate on Saturdays or Sundays. As of November 2011, the cost of a ticket on WES is $2.40. Youth tickets are $1.50 and tickets for honored citizens are $1. WES, bus, and MAX tickets can be used interchangeably between those three modes.

Paratransit

TriMet's LIFT paratransit service is available within the City of Tualatin. LIFT is a shared-ride program for eligible people who cannot use regular, fixed-route service due to a disability or health condition. LIFT operates from 4:30 am – 2:30 am all days of the week and services all areas of the TriMet service boundary, which encompasses the majority of the Portland metropolitan region. The cost per ride of using LIFT is $1.85 in November 2011.

Tualatin Shuttle

The Tualatin Chamber of Commerce operates a free service on weekdays to connect passengers from TriMet bus stops and WES to businesses in Tualatin. The shuttle operates from 5:00 am to 9:30 am and from 2:00 pm to 6:00 pm. It is oriented towards commuters coming from outside of Tualatin. The shuttle offers one pickup in downtown Portland at 5:30 am.

Limitations of Existing Transit Service

It is likely that most residents of Tualatin do not rely solely on transit service to meet their transportation needs, because most people in Tualatin do not live within walking distance (one-quarter mile) of a transit stop, and because transit is not provided at frequent intervals during all hours of the day. TriMet does not provide transit service within all areas of the city and on all major corridors. There is no transit service provided on SW Tualatin-Sherwood Road or SW Tualatin Road, and many residents in the western portion of the city live over a mile from the nearest transit line. Residents who do live near a bus line are not served by transit at regular intervals during the day. Because of the limitations of service during off-peak hours, non-commuting trips may be more difficult to complete using transit in Tualatin. Outside of 99W there is no east-west bus service, and outside of the Chamber shuttle, there is no transit loop through the City.

Existing Transit Facilities

TriMet provides amenities at bus stops and park and ride facilities. Bus stops and park and ride facilities are described in detail in the sections below.

Bus Stops

Bus stops in the City of Tualatin vary by the number of amenities provided. Sixty-seven bus stops out of a total of 85 within the city include a sign only. The remaining 18 include a shelter with a posted schedule. The facilities available at bus stops can have an impact on how many people use them; people generally prefer using stops where a shelter and lighting are provided, particularly during the winter months. Other facilities provided at the larger stops include seating and bike parking. Approximately half of the bus stops in Tualatin include lighting from street lights, but fewer than a third have shelters.

Bus lines 76 and 96 have the most stops with shelters and lighting within the City of Tualatin. With the exception of the Tualatin Park and Ride, bus lines 36 and 37 do not have any stops within the City of Tualatin that contain a shelter. Bus line 12 only has one stop within the City of Tualatin that has a shelter. This is consistent with ridership information for each bus line (provided below) – the largest numbers of riders use bus lines 76 and 96.

Attachment B provides detail on bus stops within the City of Tualatin on TriMet routes. SMART does not maintain separate bus stops in Tualatin; the line 2X-Barbur stops at the Tualatin Park and Ride, which is maintained by TriMet.

Bus stop with sign only

Bus stop with shelter and sign

Park and Rides

There are four park and ride lots within the City of Tualatin. They are depicted graphically on Figure 10. All four park and rides have seen less use, on average, in 2011 than they did in 2010[11]. The park and rides are located on the east side of Tualatin, close to either the I-5 or SW Boones Ferry Road corridors.

- The **Tualatin Park and Ride** is the largest park and ride lot within the City of Tualatin, and is located at SW 72nd Avenue and SW Bridgeport Road in the northern part of the City north of the Tualatin River and downtown. It has 466 total vehicle spaces and is open all days. It is served by bus lines 36 (South Shore), 37 (Lake Grove), 38 (Boones Ferry Road), 76 (Beaverton/Tualatin), 96 (Tualatin/I-5), and SMART 201Barbur. Covered bike racks and bike lockers are available at this location, and there are two bus shelters along SW Lower Boones Ferry Road. This park and ride is easily accessed from I-5. On average, this park and ride has been 83 percent full in 2011.

Tualatin Park and Ride

Mohawk Park and Ride

- The **Mohawk Park and Ride** is located at SW Mohawk Street and SW Martinazzi Avenue about a half mile south of the Tualatin Commons and downtown Tualatin. It has 232 total vehicle spaces and is open all days. It is served by bus lines 76 (Beaverton/Tualatin) and 96 (Tualatin/I-5).It also has covered bike

[11] Source: TriMet Operated P&R Facilities (Fall 2010-2011 Comparison)

racks and one covered bus stop. On average, this park and ride has been 22 percent full in 2011.

- The **Tualatin South Park and Ride** is the newest park and ride in the City, and is located at 18955 SW Boones Ferry Road just west of the Tualatin Commons and downtown. It is open all days and provides bike parking with lockers and covered racks. It has 147 total vehicle spaces. It is served by WES and bus line 76 (Beaverton/Tualatin). The main focus of the park and ride is the WES service; the parking lot and pedestrian and bicycle amenities are oriented towards the train station, but there are covered bus stops for both north and southbound passengers on SW Boones Ferry Road. The park and ride is broken up into different lots, one is directly west of the WES stop, and one is further south along SW Boones Ferry Road. On average, this park and ride has been 24 percent full in 2011.

Tualatin South Park and Ride

Boones Ferry Community Church Park and Ride

- The **Boones Ferry Community Church Park and Ride** is the smallest park and ride in the City of Tualatin. It is open Monday through Friday only, and provides 20 vehicle spaces. There are no bike parking facilities at this location It is located at 20500 SW Boones Ferry Road and is served by bus line 96 (Beaverton/Tualatin). The bus stops are located along SW Boones Ferry Road, but riders need to cross either SW Avery Street to access the northbound bus stop, or SW Boones Ferry Road to access the southbound stop. For the southbound stop, riders must walk out of direction to the traffic signal to legally cross SW Boones Ferry Road from the driveway of the Park and Ride. Neither of the bus stops have a shelter, but there is a sign and a bus pull-out to indicate the bus stop. There are also no sidewalks along the driveway from the parking lot to the sidewalk along SW Boones Ferry Road. On average, this park and ride has been 10 percent full in 2011.

Transit Ridership

Ridership on TriMet varies greatly by bus line and by time of day. Bus lines 76 and 96 have the most ridership within the City of Tualatin, followed by WES. Table 14 provides average ridership on each TriMet service in Tualatin. The passenger boardings and alightings (when a passenger gets off the bus or train) statistics provided are for passengers that board or alight at a stop within the Tualatin city limits.

Bus lines in Table 14 with similar counts of boardings and alightings, including bus lines 12, 36, and 38 in the AM and PM peak, 76 in the AM peak and weekend, and 96 in the AM peak indicate that passengers are likely to be using transit round-trip. Disparate counts of boardings and alightings, such as bus line 37 in the AM peak, 38 on average weekdays, 76 in the PM peak, 96 in the AM and PM peak, and WES indicate that passengers may use another form of transportation for part of the trip.

TABLE 14
Average Transit Ridership on TriMet in the City of Tualatin in Spring 2011

Service	Average Total Weekday		Average Weekday AM peak (6-9 am)		Average Weekday PM Peak (4-7 pm)		Average Saturday		Average Sunday	
	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings
Bus line 12 (Barbur/Sandy Blvd)	66	66	17	13	15	18	38	38	27	25
Bus line 36 (South Shore)	18	21	9	8	4	8	-	-	-	-
Bus line 37 (Lake Grove)	26	25	10	5	5	8	-	-	-	-
Bus line 38 (Boones Ferry Road)	27	19	15	10	7	7	-	-	-	-
Bus line 76 (Beaverton/ Tualatin)	504	576	114	119	112	139	416	423	259	263
Bus line 96 (Tualatin/ I-5)	603	591	423	114	88	379	-	-	-	-
WES	229	212	111	81	113	130	-	-	-	-

Note: cells in black with no information indicate lines that do not operate on Saturday or Sunday

Source: TriMet Spring 2011 Passenger Survey

Transit Travel Times

The average in-vehicle transit travel times between the Tualatin South Park and Ride and key regional destinations on the west side of the Portland metropolitan region are as follows[12]:

- **From Tualatin South Park and Ride to Downtown Portland at SW Jefferson and 10th**: 21-26 minutes via bus line 96 (Tualatin/I-5)
- **From Tualatin South Park and Ride to Wilsonville Central**: 10 minutes via WES
- **From Tualatin South Park and Ride to Washington Square Transit Center**: 12-24 minutes via bus line 76 (Beaverton/Tualatin)
- **From Tualatin South Park and Ride to Lake Oswego Transit Center:** 15 minutes via bus line 37 (Lake Grove)
- **From Tualatin South Park and Ride to Beaverton Transit Center**: 17 minutes via WES (from Tualatin South Park and Ride to Beaverton TC WES Station)or 35-48 minutes via bus line 76 (Beaverton/Tualatin)

Total transit travel times are comprised of the in-vehicle times listed above, plus time for walking or driving to the station and time for waiting for the bus or WES to arrive. The total travel time for the trips listed above is likely 10-15 minutes longer than listed, depending on the specific origin of the user's trip. Because TriMet and SMART buses travel in general purpose traffic lanes, transit travel times can vary based on traffic conditions.

Given the typical amount of time it may take to find parking in downtown Portland, the total time for taking a private vehicle is likely similar to that of using transit. Although the in-vehicle travel times for trips to Wilsonville, Washington Square, Lake Oswego, and Beaverton are likely to be similar for transit and private vehicles, the total travel time of using transit to any of those destinations is in general longer than driving in a private vehicle. Therefore, the primary trips that are likely to attract non-transit dependent users are commuting trips to Beaverton or downtown Portland.

12 Source: www.trimet.org, schedules by transit line.

Freight Rail, Pipeline, Waterways, Airport

Introduction

This section describes current freight rail, pipeline, waterways, and airport facilities within the study area, including depots, at-grade crossings (for freight rail), and facility needs. Figure 12 shows freight rail and pipelines in the City.

Freight Rail

Portland and Western Railroad (PNWR) currently owns and operates two freight rail lines in Tualatin: one that runs mostly north-south, which is shared by the WES described in the Transit section, and one that runs east-west along Herman Road. The east-west line carries one train daily in each direction, and the north south has two trains daily in each direction. There are a number of public road railroad crossings in the City, all of which are gated:

- SW Tualatin Road (at two locations)
- West terminus of SW Nyberg Street/entrance to shopping center
- SW Tualatin-Sherwood Road
- SW 95th Avenue
- SW Teton Avenue (at two locations)
- SW Avery Street
- SW Cipole Road
- SW 124th Avenue
- SW 118th Avenue
- SW 90th Avenue
- SW Boones Ferry Road

In addition to these public roadway crossings, there are a number of driveways or private roads that cross the railroad tracks. These crossings are not signalized, but are stop-controlled. Freight trains have the right of way at all intersections.

The railroad tracks pass through the manufacturing areas in west Tualatin, creating the potential for companies to use rail for freight shipping, but there are not currently any depots or stops in the City. PNWR does not currently have plans to increase their freight service through Tualatin.

A freight train on the north-south railroad alignment near Tualatin Community Park

Pipeline

There is one gas transmission pipeline within the City which roughly follows SW Boones Ferry Road in the far north, crossing underneath I-5 south of SW Bridgeport Road, and continuing to the southern city limits along SW Boones Ferry Road. Additionally, there is a gasoline pipeline that is included in the SW Concept Plan area, which is also included in our study area.

Waterways

The Tualatin River is the largest waterway within the study area. The river starts in the Coast Range, and ends at the Willamette River in West Linn. The Tualatin River is not navigable from the Willamette due to impassible areas and a diversion dam near SW Borland Road in West Linn. Recreational canoeing and kayaking is allowed on the Tualatin River and can be accessed from Browns Ferry Park, Tualatin Community Park, Jurgens Park, and at the 99W Bridge at SW Hazelbrook Road. A motorboat launch is located at Tualatin Community Park.

Airport

There are no airports within the Tualatin City limits. There are, however, a number of airports within 30 miles: Aurora State Airport, the Portland Hillsboro Airport, and the Portland International Airport. Only Portland International provides scheduled passenger service.

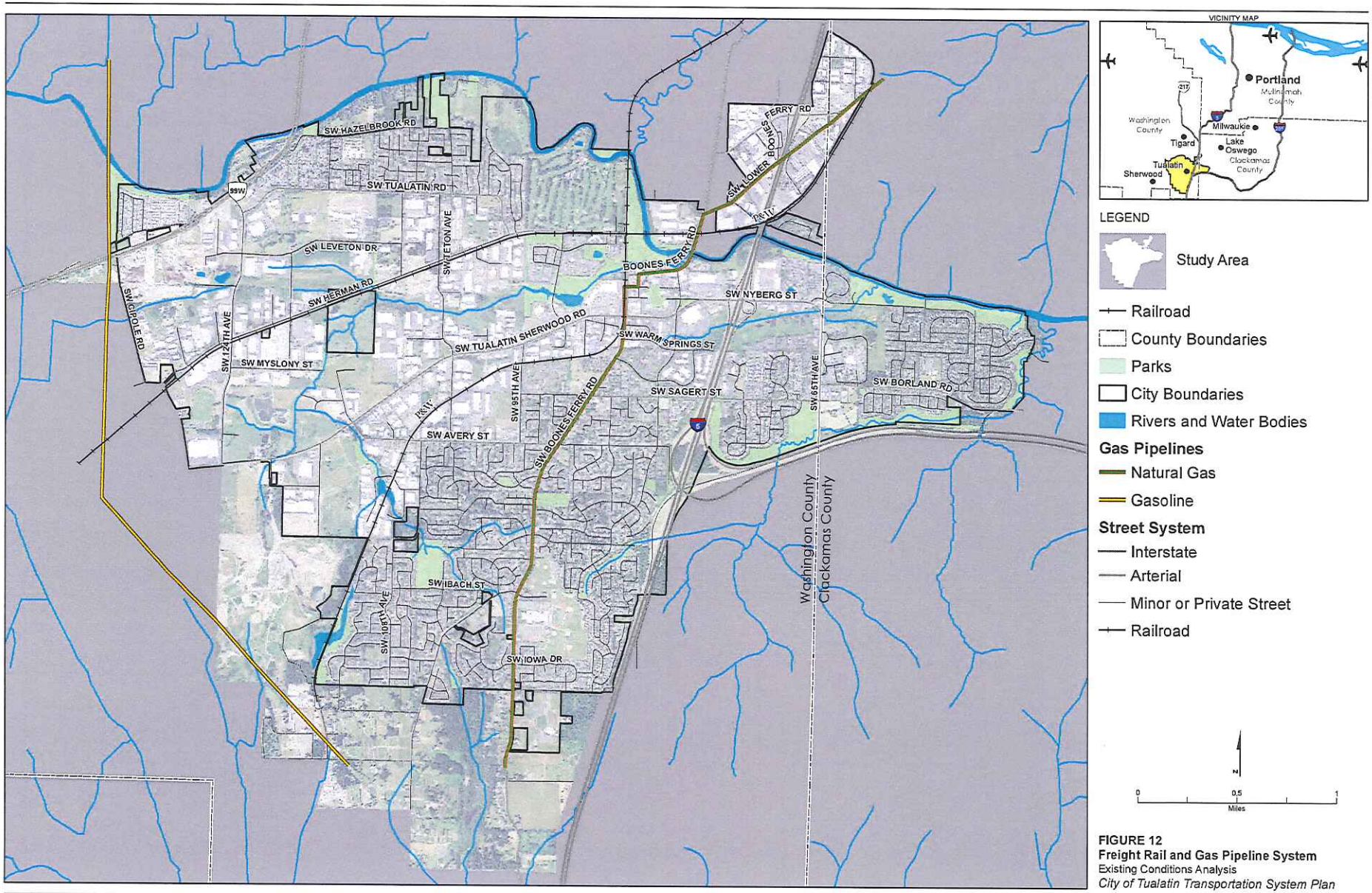


FIGURE 12
Freight Rail and Gas Pipeline System
Existing Conditions Analysis
City of Tualatin Transportation System Plan

Attachment A: Roadway Standards Assessment

Street Name	Classification	Abbreviation	Truck Route?	Skew Angle	Intersection Spacing	Median?	Travel Lanes	Bike Lanes	Sidewalks	On-Street Parking	Curb to Curb Width	Comments
SW 120TH AVE	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	M	N/A	M	N/A	M	
SW 63RD AVE	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	D	M	N/A	D	N/A	G	N/A	D	Tight skew, less than standard number of lanes, gaps in sidewalk
SW 65TH AVE	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	D	N/A	G	N/A	D	Less than standard number of lanes, gaps in sidewalk
SW 84TH AVE	LOCAL COMMERCIAL INDUSTRIAL	B-D	NO	M	M	N/A	M	N/A	M	N/A	M	
SW ITEL ST	LOCAL COMMERCIAL INDUSTRIAL	BC-I	NO	M	M	N/A	M	N/A	M	N/A	M	
SW MANHASSET DR	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	M	N/A	P	N/A	M	Narrow or curb tight sidewalk, no planter
SW NYBERG ST	LOCAL COMMERCIAL INDUSTRIAL	B-D	YES	M	M	N/A	M	N/A	P	N/A	M	Narrow or curb tight sidewalk, no planter
SW ROSEWOOD AVE	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	M	N/A	M	N/A	D	Curb to curb width less than standard
SW SENECA ST	LOCAL COMMERCIAL INDUSTRIAL	B-D	YES	M	M	N/A	M	N/A	M	N/A	M	
SW TONKA RD	LOCAL COMMERCIAL INDUSTRIAL	B-CI	NO	M	M	N/A	M	M	P	N/A	M	Narrow or curb tight sidewalk, no planter
SW 124TH AVE	MAJOR ARTERIAL	Eb&t	YES	M	M	M	M	M	M	N/A	M	
SW 90TH AVE	MAJOR ARTERIAL	Eb&t	NO	M	M	M	P	M	M	N/A	D	
SW BOONES FERRY RD	MAJOR ARTERIAL	Eb&t	YES	M	M	P	P	P	P	N/A	D	Narrow or curb tight sidewalk, no planter
SW HERMAN RD	MAJOR ARTERIAL	Eb&t	YES	D	M	P	P	G	G	N/A	D	Gaps in sidewalk and bike lane. Narrow median
SW LEVETON DR	MAJOR ARTERIAL	Eb&t	NO	M	M	P	M	M	M	N/A	P	Median width less than standard
SW MARTINAZZI AVE	MAJOR ARTERIAL	Eb&t	NO	P	M	M	M	G	P	N/A	D	Gaps in bike lane throughout and lack of planter strip
SW SAGERT ST	MAJOR ARTERIAL	Eb&t	NO	M	M	D	P	P	P	N/A	D	Gaps in sidewalk and bike lane across I-5 bridge
SW TUALATIN RD	MAJOR ARTERIAL	Eb&t	NO	M	M	M	D	M	P	N/A	P	Does not meet number of travel lanes for this class
SW 108TH AVE	MAJOR ARTERIAL	Eb&t	YES	M	M	P	D	M	P	N/A	P	Median is narrow. Sidewalks are curb tight with no planter.
SW BOONES FERRY RD	MINOR ARTERIAL	Db&t-D	YES	M	M	P	M	P	M	N/A	P	Section and bike lane narrow/removed at Tualatin River Bridge
SW MARTINAZZI AVE	MINOR ARTERIAL	Db&t-D	NO	M	M	D	M	D	P	N/A	P	No bike lane or planter near downtown core
SW TUALATIN RD	MINOR ARTERIAL	Db&t-D	YES	D	M	M	M	P	P	N/A	P	Narrow bike lane, 1/2 street sidewalk, some tight skews
SW 105TH AVE	MAJOR COLLECTOR	Cb&t	NO	M	M	D	M	P	P	N/A	P	Narrow bike lanes and sidewalk. No median.
SW 115TH AVE	MAJOR COLLECTOR	Cb&t	NO	P	M	P	P	P	P	N/A	P	Street only 1/2 built. Likely all M after property develops
SW 65TH AVE	MAJOR COLLECTOR	Cb&t	NO	M	M	N/A	M	P	P	N/A	P	Section altered at intersection. Sidewalk and Bike Lanes do not exist
SW AVERY ST	MAJOR COLLECTOR	Cb&t	NO	M	M	D	M	P	P	N/A	P	No median. Bike and sidewalk curb tight and narrow.
SW BLAKE ST	MAJOR COLLECTOR	Cb&t	NO	M	M	D	P	D	D	N/A	D	No sidewalk, bike lane or median. Narrow travel lanes
SW HERMAN RD	MAJOR COLLECTOR	Cb&t	YES	D	M	P	P	P	P	N/A	P	Gaps in bike lane and 1/2 street sidewalk due to rail.
SW MCEWAN RD	MAJOR COLLECTOR	Cb&t	NO	M	M	P	M	P	P	N/A	P	Gaps in bike lane and sidewalk. No median.
SW MYSLONY ST	MAJOR COLLECTOR	Cb&t	NO	M	M	P	P	P	P	N/A	P	Street only 1/2 built. Likely all M after property develops
SW SAGERT ST	MAJOR COLLECTOR	Cb&t	NO	M	M	D	M	P	P	N/A	P	Narrow bike lanes and curb tight sidewalk narrow sidewalk
SW TETON AVE	MAJOR COLLECTOR	Cb&t	YES	M	M	P	M	P	M	N/A	P	Narrow or missing median. Gaps in bike lane.
SW TUALATIN RD	MAJOR COLLECTOR	Cb&t	YES	M	M	P	M	M	M	N/A	P	Gaps in median width provided.

Street Name	Classification	Abbreviation	Truck Route?	Skew Angle	Intersection Spacing	Median?	Travel Lanes	Bike Lanes	Sidewalks	On-Street Parking	Curb to Curb Width	Comments
SW 103RD AVE	MINOR COLLECTOR	Cb&p	NO	M	M	N/A	M	M	M	M	P	
SW 108TH AVE	MINOR COLLECTOR	Cb	YES	M	M	N/A	M	M	M	P	P	Intermittent parking provided
SW 115TH AVE	MINOR COLLECTOR	Cb	NO	M	M	P	M	M	M	D	P	narrow median and lack of parking
SW 118TH AVE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	M	M	D	P	no street parking
SW 50TH AVE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	M	M	D	P	no street parking
SW 95TH PL	MINOR COLLECTOR	Cb&p	NO	M	M	N/A	M	P	P	P	P	narrow bike lane, no planter, parking south of Avery only
SW BLAKE ST	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	D	D	D	P	no parking, sidewalk or bike lanes
SW GRAHAMS FERRY RD	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	P	P	P	1/2 developed. Likely all M after developments
SW HAZELBROOK RD	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	P	P	P	Partially developed. Likely all M after developments
SW HELENIUS RD	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	P	P	P	Partially developed. Likely all M after developments
SW IBACH ST	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	M	M	D	P	no street parking
SW IOWA DR	MINOR COLLECTOR	Cs&2p	NO	M	M	N/A	M	M	M	M	M	
SW JURGENS AVE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	M	M	P	narrow or gaps in bike lane
SW LEVETON DR	MINOR COLLECTOR	Cb	NO	M	M	P	M	M	M	D	P	Narrow median. No street parking
SW MARTINAZZI AVE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	M	M	M	M	
SW NYBERG LANE	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	M	M	P	narrow bike lane or gaps
SW NYBERG ST	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	M	M	P	narrow bike lane or gaps
SW SAGERT ST	MINOR COLLECTOR	Cb&p	NO	M	M	N/A	M	M	M	M	M	
SW STONO DR	MINOR COLLECTOR	Cs&p	NO	M	M	N/A	M	M	M	M	P	full c-c width north provided
SW WARM SPRINGS ST	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	D	P	D	P	1/2 street sidewalk, no street parking, narrow bike or gap
SW WILKE RD	MINOR COLLECTOR	Cb	NO	M	M	N/A	M	P	P	D	P	no street parking, sidewalk and bike lane gaps
SW 112TH AVE	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	roadway not completed to Helenius
SW 56TH AVE	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	P	P	full width not provided
SW 99TH AVE	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	P	P	full width not provided
SW ALSEA DR	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	P	P	full width not provided
SW AVERY ST	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	
SW BLAKE ST	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	
SW COQUILLE DR	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	Narrow at intersection
SW HELENIUS RD	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	roadway not completed to 112th
SW MARILYN RD	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	
SW PAULINA DR	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	
SW PORT ORFORD ST	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	P	Narrow c-c width
SW SAGERT ST	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	P	Narrow c-c width
SW SWEEK DR	RESIDENTIAL COLLECTOR	Cr	NO	M	M	N/A	M	N/A	M	M	M	

M – Meets standard
P – Partially meets standard
D – Does not meet standard
G – Gap in feature

Attachment B: Bus Stops within the City of Tualatin

STOP ID	LOCATION	ROUTE	Direction	Shelter?	Lighting?
	Bus line 12: Barbur/Sandy Blvd				
4292	SW Pacific Hwy & SW Hazelbrook Rd	12	W	no	no
4260	SW Pacific Hwy & SW 124th Ave	12	W	no	no
4300	SW Pacific Hwy & SW Pacific Dr	12	W	no	no
4301	SW Pacific Hwy & SW Pacific Dr	12	E	no	no
4316	SW Pacific Hwy & SW 124th Ave	12	E	no	yes
4293	SW Pacific Hwy & SW Hazelbrook Rd	12	N	yes	yes
	Bus line 36: South Shore				
3821	7100 Block SW McEwan Rd	36	N	no	no
3820	SW McEwan Rd & NW Book Deposit	36	N	no	yes
3824	SW McEwan Rd & SW 65th Ave	36	N	no	yes
7879	Tualatin Park & Ride	36	N	yes	yes
9045	SW Lower Boones Ferry Rd & SW McEwan Rd	36	E	no	yes
3819	17900 Block SW McEwan Rd	36	W	no	yes
3822	7100 Block SW McEwan Rd	36	S	no	no
	Bus line 37: Lake Grove				
12852	SW Lower Boones Ferry Rd & SW 65th Ave	37	W	no	no
7879	Tualatin Park & Ride	37	N	yes	yes
13195	SW Lower Boones Ferry & SW McEwan Rd	37	E	no	no
	Bus line 38: Boones Ferry Road				
7880	Tualatin Park & Ride	38	All	yes	yes
	Bus line 76: Beaverton/Tualatin				
7880	Tualatin Park & Ride	76	All	yes	yes
558	18000 Block SW Lower Boones Ferry Rd	76	W	no	yes
514	SW Lower Boones Ferry Rd & SW Childs Rd	76	W	no	yes
495	18200 Block SW Boones Ferry Rd	76	S	no	yes
13078	SW Boones Ferry Rd & SW Martinazzi Ave	76	W	no	yes
13079	SW Boones Ferry Rd & SW Nyberg St	76	S	yes	no
13080	SW Warm Springs St & SW Boones Ferry Rd	76	E	no	yes
13081	SW Warm Springs St & SW Martinazzi Ave	76	E	no	no
8274	SW Martinazzi Ave & SW Mohawk St	76	S	no	yes
8506	SW Sagert St & SW Martinazzi Ave	76	E	no	no

STOP ID	LOCATION	ROUTE	Direction	Shelter?	Lighting?
4999	7800 Block SW Sagert St	76	E	no	yes
5003	SW Sagert St & SW 72nd Ave	76	E	no	yes
5002	SW Sagert St & SW 70th Ave	76	E	no	yes
5001	SW Sagert St & SW Wampanoag Dr	76	E	no	yes
7839	SW 65th Ave & SW Borland Rd	76	N	no	yes
3868	Meridian Park Hospital Main Stop	76	N	yes	yes
3867	Meridian Park Hospital Rd & SW 65th Ave	76	N	no	no
8944	19500 Block SW 65th Ave	76	S	yes	yes
8279	SW 65th Ave& SW Borland Rd	76	S	no	yes
8281	SW Sagert St & SW 68th Ave	76	W	no	yes
8282	SW Sagert St & SW 72nd Ave	76	W	no	yes
8283	7800 Block SW Sagert St	76	W	no	yes
8285	SW Martinazzi Ave & SW Mohawk St	76	N	yes	yes
13082	SW Warm Springs St & SW Martinazzi Ave	76	W	no	yes
13083	SW Warm Springs St & SW Boones Ferry Rd	76	W	no	no
13084	SW Boones Ferry Rd & SW Seneca St	76	N	yes	yes
13085	SW Boones Ferry Rd & SW Martinazzi Ave	76	E	no	yes
7880	Tualatin Park & Ride	96	All	yes	yes
	Bus line 96: Tualatin/I-5				
558	18000 Block SW Lower Boones Ferry Rd	96	W	no	yes
514	SW Lower Boones Ferry Rd & SW Childs Rd	96	W	no	yes
495	18200 Block SW Boones Ferry Rd	96	S	no	yes
3779	SW Martinazzi Ave & SW Seneca St	96	S	no	yes
5004	SW Sagert St & SW 86th Ave	96	E	no	yes
8278	SW Sagert St & SW Tillamook Ct	96	E	no	yes
9026	SW Martinazzi Ave & SW Tualatin-Sherwood Rd	96	S	no	yes
8252	SW Martinazzi Ave & Martinazzi Square	96	S	no	yes
8285	SW Martinazzi Ave & SW Mohawk St	96	N	yes	yes
8274	SW Martinazzi Ave & SW Mohawk St	96	S	no	yes
8276	SW Sagert St & SW Tillamook Ct	96	W	no	yes
8788	SW Sagert St & SW 86th Ave	96	W	no	yes
501	SW Boones Ferry Rd & SW Apache Dr	96	S	no	yes
9352	SW Boones Ferry Rd & SW Avery St	96	S	no	yes
563	SW Boones Ferry Rd & SW Siletz Dr	96	S	no	yes
535	SW Boones Ferry Rd & SW Killarney Ln	96	S	no	yes
500	SW Boones Ferry Rd & SW Alsea Dr	96	S	no	yes

STOP ID	LOCATION	ROUTE	Direction	Shelter?	Lighting?
530	SW Boones Ferry Rd & SW Ibach St	96	S	no	no
9512	SW Boones Ferry Rd & SW Iowa Dr	96	S	no	yes
542	SW Boones Ferry Rd & SW Norwood Rd	96	S	no	yes
543	SW Boones Ferry Rd & SW Norwood Rd	96	N	no	yes
9511	SW Boones Ferry Rd & SW Iowa Dr	96	N	no	yes
531	SW Boones Ferry Rd & SW Ibach St	96	N	no	yes
510	SW Boones Ferry Rd & SW Blake St	96	N	no	yes
503	SW Boones Ferry Rd & SW Arapaho Rd	96	N	no	yes
562	SW Boones Ferry Rd & SW Siletz Dr	96	N	no	yes
9353	SW Boones Ferry Rd & SW Avery St	96	N	no	yes
502	SW Boones Ferry Rd & SW Apache Dr	96	N	no	yes
5004	SW Sagert St & SW 86th Ave	96	E	no	yes
8278	SW Sagert St & SW Tillamook Ct	96	E	no	yes
8285	SW Martinazzi Ave & SW Mohawk St	96	N	yes	yes
8249	SW Martinazzi Ave & Martinazzi Square	96	N	yes	yes
8250	SW Martinazzi Ave & SW Tualatin-Sherwood Rd	96	N	no	yes
3778	SW Martinazzi Ave & SW Boones Ferry Rd	96	N	yes	yes
570	SW Lower Boones Ferry Rd & SW Boones Ferry Rd	96	E	no	yes
513	SW Lower Boones Ferry Rd & SW Childs Rd	96	E	no	yes
537	18000 Block SW Lower Boones Ferry Rd	96	E	no	yes
13069	Tualatin WES Station	WES	N/S	yes	yes
7879	Tualatin Park & Ride	96	All	yes	yes
	WES Commuter Rail				
13069	Tualatin WES Station	WES	N/S	yes	yes

Source: www.trimet.org

Appendix C
Future Transportation Conditions

This Appendix describes the future (2035) traffic conditions in the City of Tualatin and identifies areas where improvements will be necessary to serve expected future growth. This report details the forecasting process, including key assumptions about anticipated roadway improvements and development of land use. The information used to analyze the future traffic operations was provided by the City of Tualatin, Washington and Clackamas Counties, the Oregon Department of Transportation (ODOT), Metro, and the consultant team.

The information in this Appendix served to inform the discussion of the future state of the transportation system in Tualatin. This information was used to help inform the project ideas and alternatives developed into Tualatin's Transportation System Plan (TSP) to address motor vehicle deficiencies.

Travel Demand and Land Use

Land use is a key factor in the functionality of the transportation system. The amount of land that is developed, the type of land uses, and how the land uses are mixed together have a direct relationship to demands placed on the transportation system. Understanding the amount of land to be developed, and the type of land use is critical to understanding future operations and how improvements may best serve those land uses.

Traffic volume forecasts identified in this analysis are based on regional travel demand forecasting models coordinated with Metro and Washington County. Travel demand models translate assumed land uses into person trips, select travel modes and assign motor vehicles to the roadway network. The resulting traffic volume projections form the basis for identifying potential roadway deficiencies, and for evaluating alternative circulation improvements.

Projected Land Use Growth

Projected land uses were developed for the study area and reflect Tualatin's Comprehensive Plan and Metro's land use assumptions for the year 2035.[1] For transportation modeling purposes, Tualatin and the surrounding areas were divided into transportation analysis zones (TAZs). These TAZs represent the sources of vehicle trips being generated from land uses within the study area. For the Tualatin TSP, land use data sets were developed for 2010 (existing base travel forecast for the region) and 2035 future conditions. The land use summary for all TAZs in the Tualatin TSP study area is identified in Table 1.

TABLE 1
Study Area Land Use Totals

Land Use	2010	2035	Percent Growth
Households	10,340	11,270	9%
Employment	23,620	31,040	31%

Source: Metro/Consultant Team

Travel Demand Model Process

The objective of the transportation planning process is to provide the information necessary to make decisions on where and when improvements should be made to the transportation system to meet future travel demand. A determination of future traffic system needs in Tualatin requires the ability to accurately forecast travel demand resulting from estimates of future population and employment for the City.

Future travel demand forecasting can be divided into several distinct but integrated components that represent the logical sequence of travel behavior. These components and their general order in the traffic forecasting process are as follows:

- **Trip Generation** – This stage of the modeling process converts the land use into total person trips.

[1] Metro works cooperatively with local agencies to determine local existing and future land uses that incorporates existing land uses and reflects input from local agencies. These land uses are then regionally adopted and updated when new travel demand models are developed in the future.

- **Trip Distribution** – This step determines the locations that these trips would go to and come from within the region.
- **Mode Choice** – Once the total person trips are generated, this step in the modeling process determines which mode of travel (i.e. motor vehicle, bicycle, pedestrian, transit, carpool, etc.) that each trip will make.
- **Traffic Assignment** – The final step in the modeling process assigns the trips by mode to specific routes in the transportation network that match the trip distribution locations.

Trip Generation

The trip generation process translates land use quantities (number of dwelling units, retail employees, service employees and other employees) into vehicle trip ends (number of vehicles entering or leaving a TAZ). The Metro model trip generation process is elaborate, entailing detailed trip characteristics for various types of housing, retail, service, and other employment, and special activities. The model process is tailored to variations in travel characteristics and activities in the region, and is based on survey data from around the region.

Trip Distribution

This step estimates how many trips travel from one area in the model to any other area. Distribution is based on the number of trip ends generated in each TAZ zone pair, and on factors that relate the likelihood of travel between any two TAZs to the travel time between the zones.

In projecting long-range future traffic volumes, it is important to consider potential changes in regional travel patterns. Although the locations and amount of traffic generation in Tualatin are essentially a function of future land use in the city, the distribution of trips is influenced by expected congestion on roadways and regional growth. The model and trip distribution can also be used to help define the number of internal, external and through trips for the City of Tualatin. These types of trips are as follows:

- **Internal trips** are trips that start and end within the city limits of Tualatin;
- **External trips** are trips that either start in Tualatin and end outside the city, or start outside the city and end within the city; and
- **Through trips** are trips that pass through Tualatin and have neither an origin nor a destination in Tualatin.

Table 2 quantifies the internal, external, and through trips for all roadways within the City of Tualatin, as estimated for 2010 and 2035. The much larger number of external than internal trips reflects the majority of people who either live outside of Tualatin and work in the city, or people who live in Tualatin but work outside of the city. The significant number of through trips through the city indicates that the City of Tualatin acts as a conduit for people who both live and work outside the city limits. However, most trips occurring in the city either originate in or are destined to Tualatin.

TABLE 2
PM Peak Period Motor Vehicle Trip Activity

Trip Type	2010	2035	2010 Share	2035 Share
Internal (within Tualatin)	4,970	5,020	12%	9%
External (from/to Tualatin)	25,440	31,630	61%	56%
Through* (via Tualatin)	11,080	19,570	27%	35%

*Excludes through trips on I-5 and 99W

Source: DKS Associates

When comparing the trip types for the model year 2035 versus 2010, through trips make up the largest increase in trips and have a higher percentage share of overall trips in Tualatin. As can be seen in Table 2, the overall share of trips for both internal and external trips for the City of Tualatin appear to be in decline over the planning horizon year, but that is only due to the fact that through trips are growing at a much higher rate which reduces the overall share for those types of trips.

Mode Choice

This step in the modeling process determines how many trips will be made by various modes (single-occupant vehicle, transit, carpool, pedestrian, bicycle, etc.). The travel model provides estimates of the various modes of travel that can be generally assessed at the transportation analysis zone level. Base year mode splits are derived from travel surveys and incorporated into the base model. Adjustments to mode split may be made for future scenarios, depending on any expected changes in transit or carpool use. These considerations are built into the forecasts used for 2035. Figure 1 illustrates the 2010 Metro model daily mode share for Tualatin. While the total number of trips increases in 2035, the share by mode type is relatively unchanged. Mode share changes reflect a small shift (approximately 0.3 percent of trips) away from driving, primarily toward transit.

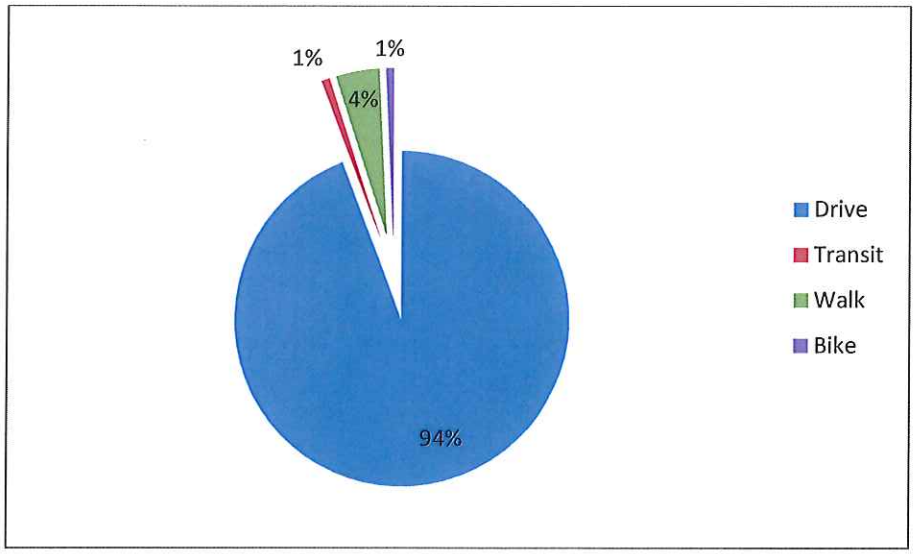


Figure 1: 2010 Metro Model Mode Share

Traffic Assignment

In this process, trips from one zone to another are assigned to specific travel routes in the network, and resulting trip volumes are accumulated on links of the network until all trips are assigned. Network travel times are updated to reflect the congestion effects of the traffic assigned through an equilibrium process. Congested travel times are estimated using what are called "volume-delay functions". There are different forms of volume/delay functions, all of which attempt to simulate the impact of congestion on travel times (greater delay) as traffic volume increases. The volume-delay functions take into account the specific characteristics of each roadway link, such as capacity, speed and facility type. This allows the model to reflect conditions somewhat similar to driver behavior.

The travel demand models represent PM peak period traffic flows for every major roadway segment within Tualatin and most minor arterials and collector streets. Some local streets were included in the model, but most neighborhood streets are represented by TAZ connectors in the model process.

Model Application to Tualatin

The modeling process for the Tualatin TSP update is based upon the 2010 and 2035 travel demand models developed by Metro for the PM peak period. The Metro model is built from travel survey data and is calibrated to traffic volume counts at specific locations on key arterials. Metro uses VISUM, a computer based transportation modeling program, to process the large amounts of data related to land use and person trips for all modes of travel for the Portland Metropolitan area.

From the regional model, Metro developed a subarea model representing the west side of the region, roughly split at the Willamette River. This model is used as a basis for creating the Washington County model, which includes refinements to include more locally significant details than the regional model typically requires. For the Tualatin TSP, additional refinements were made to the Washington County model roadway network, in consultation with Washington County staff. Base 2010 model traffic volumes were compared against actual traffic volumes at TSP study intersections and other key locations. For consistency, all local refinements are carried forward to future (2035) models.

Intersection turn movements were extracted from the model at study area intersections for both the base year 2010 and forecast year 2035 model scenarios. A "post processing" technique is utilized to refine model travel forecasts to the turn movement volume forecasts utilized for 2035 intersection analysis. Post processing is a methodology that uses existing 2011 count data, base year model data and future year model data to help determine future volumes. The methodology adds the increment of growth, the calculated difference in volumes between the future and base year models, to the existing count data. This methodology minimizes the effects of any model error by adding the increment of growth projected based on changes in land use to the base year counts.

Assumed Future Roadway Projects

The future 2035 roadway system includes projects that are considered reasonably likely to be funded and constructed by 2035. This roadway network is considered to represent the future 'no-build' scenario. The future 2035 roadway system in the Metro model consists of the 2035 Metro Regional Transportation Plan (RTP) financially constrained project list. The Washington County model includes a refined set of future roadway projects with additional modifications made for the Tualatin TSP. The locally-significant roadway projects assumed for the Tualatin TSP future 'no-build' scenario are:

- **Tualatin-Sherwood Road**- Widen to 5 Lanes (OR 99W to Teton Avenue)
- **124th Avenue Extension** (Tualatin-Sherwood Road to Tonquin Road)
- **Tonquin Road** - Widen to 3 lanes (Oregon Street to Grahams Ferry Road)
- **Myslony Street** - Widen to 3 lanes and extend (from 124th Avenue to 112th Avenue)
- **Durham Road** - Widen to 5 Lanes (OR 99W to Boones Ferry Road)
- **Herman Road** - Reconstruct (Cipole Road to 124th Avenue)
- **Herman Road** - Widen to 5 Lanes (108th Avenue to Teton Avenue)
- **Herman Road** - Widen to 3 Lanes (Teton Avenue to Tualatin Road)
- **I-5 Auxiliary Lanes** constructed between Elligsen and I-205 Interchange
- **Sagert Street/Martinazzi Avenue Intersection** - New Traffic Signal and grade improvements
- **Avery Street/105th Avenue Intersection** - New Traffic Signal, curve improvements
- **Cipole Street/Herman Road** - New Traffic Signal

Future Intersection Traffic Operations

Future intersection traffic operations are evaluated using 2035 turn movement volume forecasts developed with the methodology identified in previous sections. Since the forecasts are based on a growth increment added to the base year volumes, the future forecasts reflect the identified design hour (30th highest hour) traffic volumes. Table 3 identifies pm LOS and V/C for each study intersection under existing and future conditions. The applicable jurisdictional standard for minimum performance is identified as well.

TABLE 3
PM Peak Hour Intersection Traffic Operations

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 LOS	2035 V/C
Signalized						
SW 124th Ave & Hwy 99W	ODOT	0.99	C	0.69	D	0.99
SW 124th Ave & SW Tualatin Rd	Tualatin	D	B	0.66	C	0.91
SW 124th Ave & SW Herman Rd	Tualatin	D	C	0.53	C	0.83
SW 124th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.90	C	0.92
SW Avery St & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	B	0.71	D	0.92
SW Teton Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.79	E	**1.03**
SW 90th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.60	C	0.78
SW Boones Ferry Rd & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.93	F	**1.30**
SW Martinazzi Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.94	E	**1.05**
I-5 SB Ramps & SW Nyberg Rd	ODOT	0.99	D	0.79	D	0.90

TABLE 3
PM Peak Hour Intersection Traffic Operations

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 LOS	2035 V/C
I-5 NB Ramps & SW Nyberg Rd	ODOT	0.99	B	0.68	C	0.84
SW 65th Ave & SW Borland Rd	Wash. Co.	0.99	D	0.93	F	**1.47**
SW Teton Ave & SW Herman Rd	Tualatin	D	C	0.65	B	0.66
SW Tualatin Rd & SW Herman Rd	Tualatin	D	B	0.59	B	0.78
SW 90th Ave & SW Tualatin Rd	Tualatin	D	B	0.75	C	0.92
SW Tualatin Rd & SW Boones Ferry Rd	Wash. Co	0.99	B	0.62	C	0.86
SW Martinazzi Ave & SW Boones Ferry Rd	Wash. Co	0.99	D	0.89	F	**1.26**
SW Boones Ferry Rd & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.76	E	**1.11**
SW 72nd Ave & Lower Boones Ferry Rd & Bridgeport Rd	Wash. Co	0.99	C	0.66	D	0.88
I-5 SB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.75	D	0.97
I-5 NB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	B	0.74	D	0.98
SW Boones Ferry Rd & SW Avery St	Wash. Co.	0.99	C	0.87	F	**1.15**
SW Boones Ferry Rd & SW Sagert St	Wash. Co.	0.99	C	0.75	E	**1.11**
SW Boones Ferry Rd & SW Ibach St	Wash. Co.	0.99	B	0.70	D	0.98
SW 105th Ave & SW Avery St[2]	Tualatin	E	C	0.28	C	0.95
SW Martinazzi Ave & SW Sagert St[3]	Tualatin	E	F	0.95	D	0.91
All-way Stop-control						
SW Martinazzi Ave & SW Avery St*	Tualatin	E	B	0.55	D	0.83
SW Teton Ave & SW Avery St*	Tualatin	E	C	0.40	F	**0.76**
SW 65th Ave & SW Sagert St*[4]	Wash. Co.	0.99	F	0.98	F	**1.72**
*Minor Street Stop-control**						
SW Teton Ave & SW Tualatin Rd	Tualatin	E	F	0.98	F	**1.44**

SOURCE: Consultant Team

*LOS and V/C reported for highest delay movement.

BOLD and highlighted dark grey text indicates meet minimum performance standard is not met

[2] Existing Conditions operations evaluated with minor street stop control.

[3] Existing Conditions operations evaluated with minor street stop control. HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the three lanes (one dedicated to each movement) are combined into two: through-right and through-left lanes. Because of this approximation, actual performance may be slightly better than reported above.

[4] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the dedicated southbound left turn lane and through lane are combined, due to the relatively small volume on the left turn movement. Because of this approximation, actual performance may be slightly better than reported above.

City of Tualatin

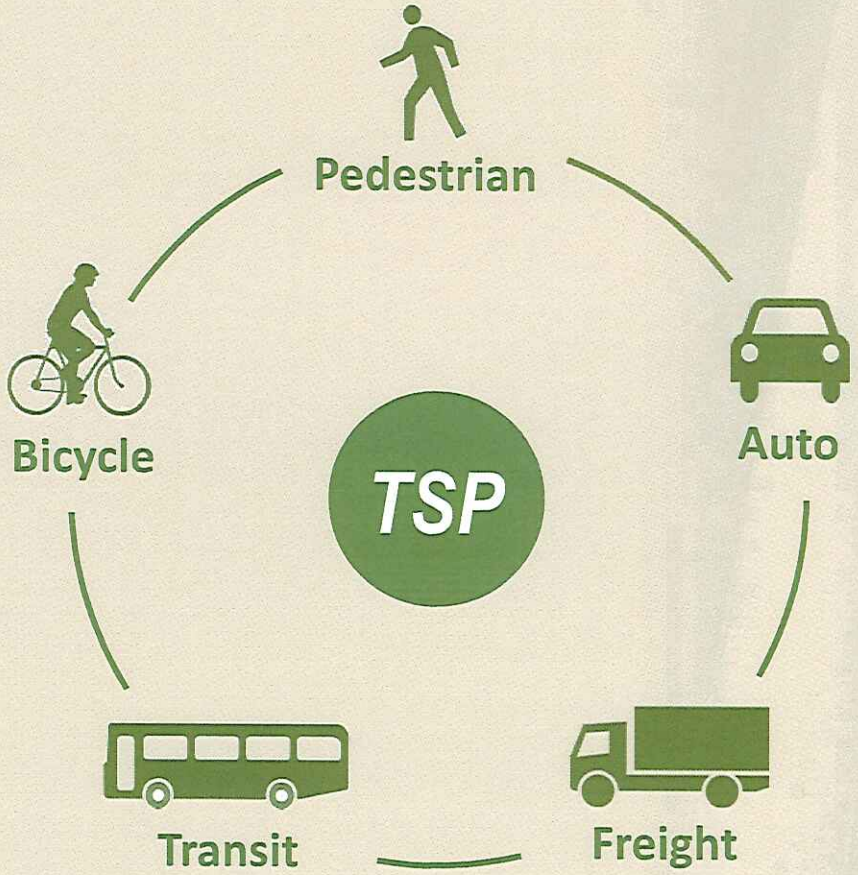
Virtual Tour of Future Conditions

Presentation to
Tualatin Transportation Task Force
February 2, 2012

What is Future Conditions?

- Assessment of conditions by mode in 2035
- Identifies future needs, opportunities, and constraints for all modes of travel
- Incorporates future planned land uses and expected projects/improvements
- Balances community needs with infrastructure needs
- Helps prioritize identified improvements

Major Elements of Future Conditions



- Mode Choice
- Land Use
- Future improvements
- Future forecasting
- Community values and inputs
- Prioritization

Land Use Overview

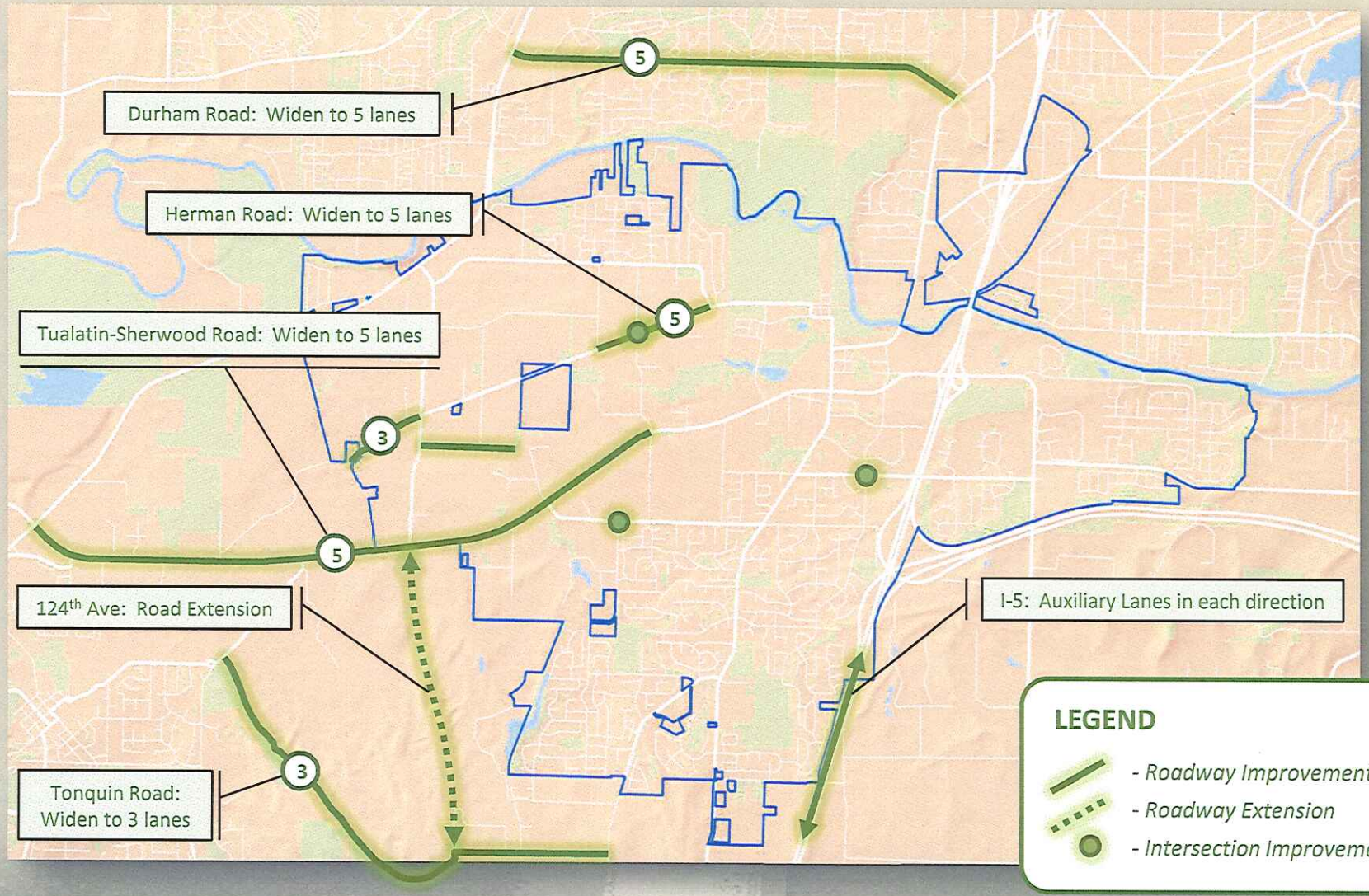
9%

Projected Housing Growth

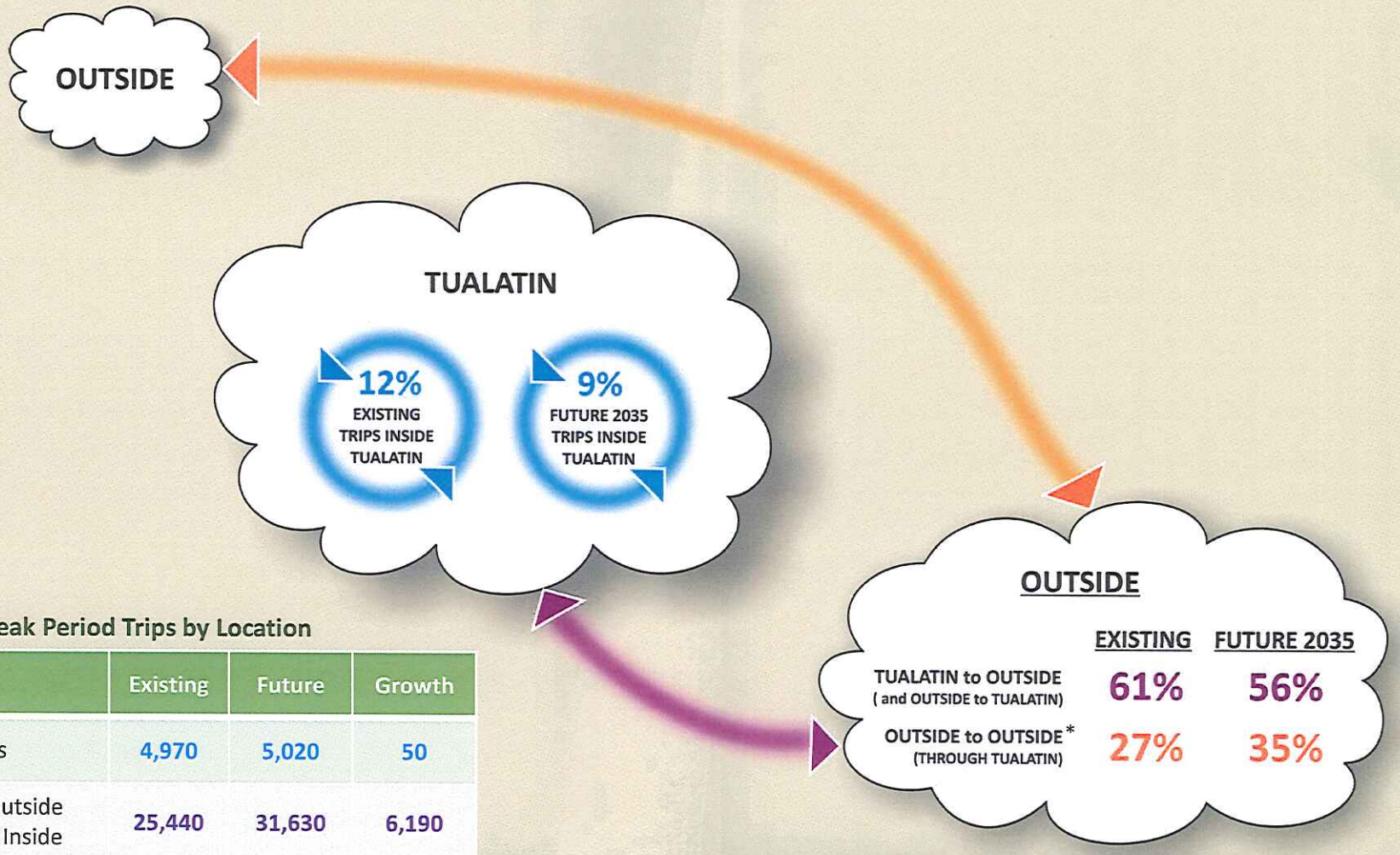
31%

Projected Employment Growth

Assumed Future 2035 Roadway Projects



PM Peak Period Motor Vehicle Trip Activity

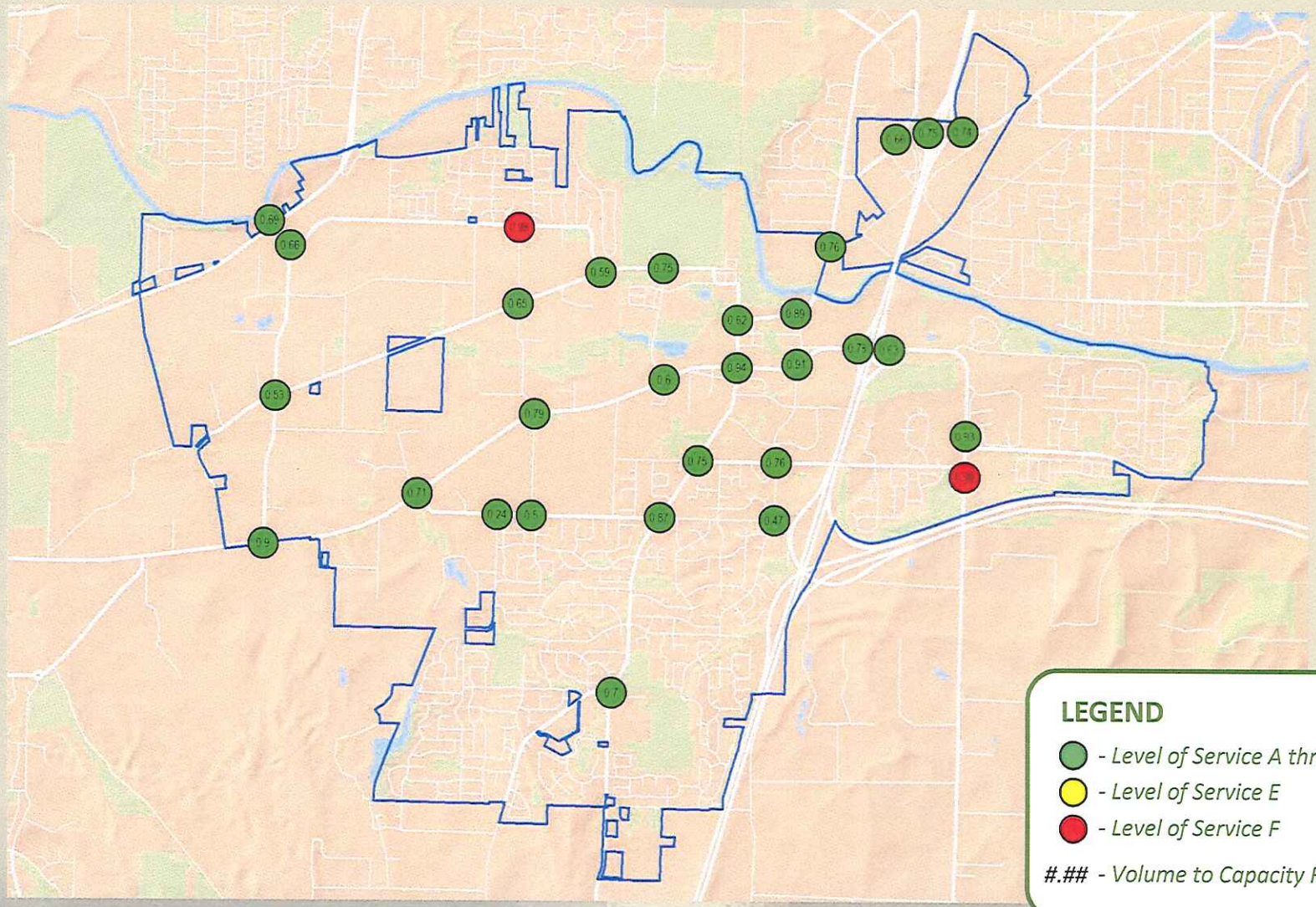


Total PM Peak Period Trips by Location

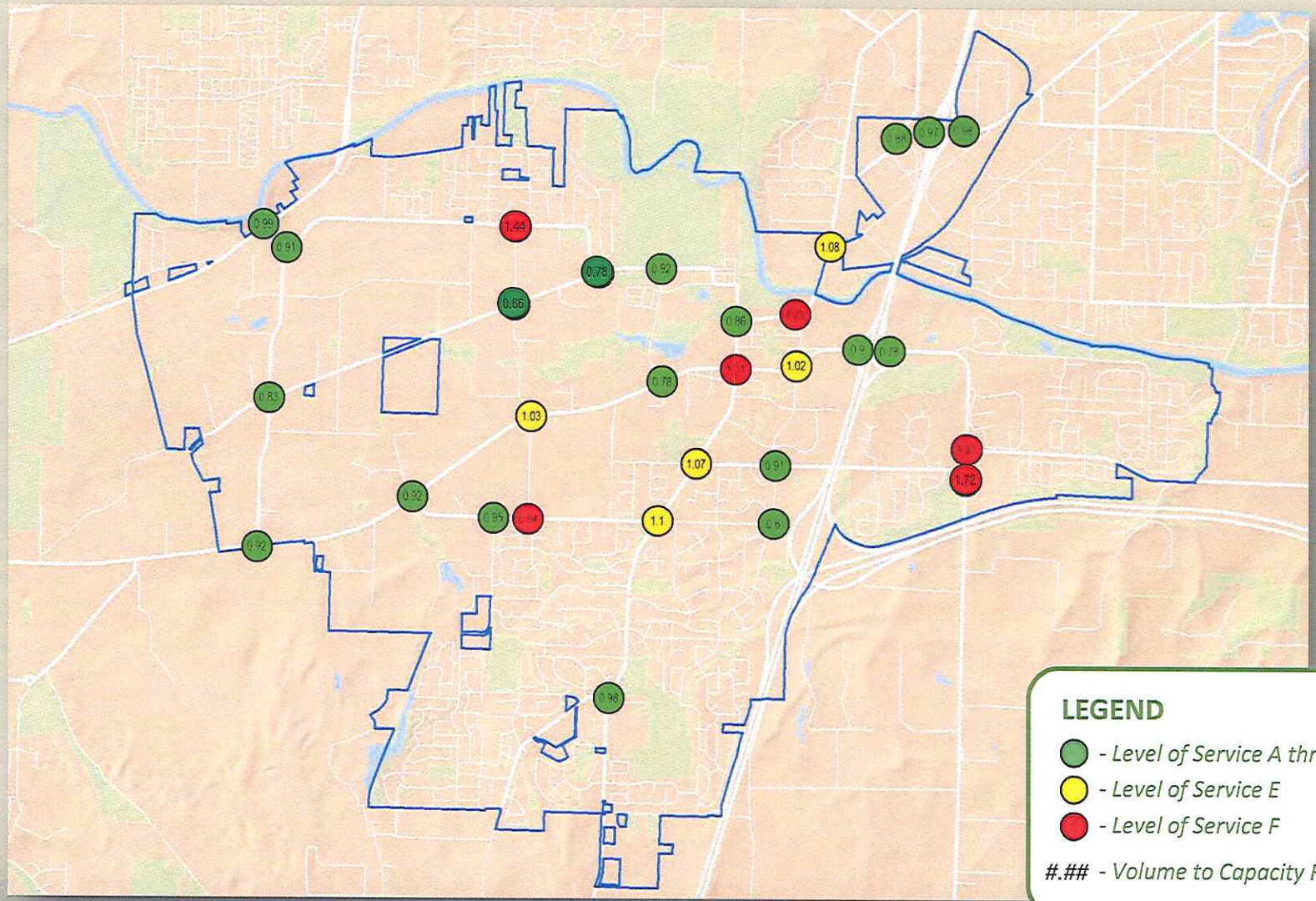
	Existing	Future	Growth
Inside Trips	4,970	5,020	50
Inside to Outside Outside to Inside	25,440	31,630	6,190
Outside to Outside	11,080	19,570	8,490

*Excludes through trips on I-5 and 99W

Existing PM Peak Intersection Operations

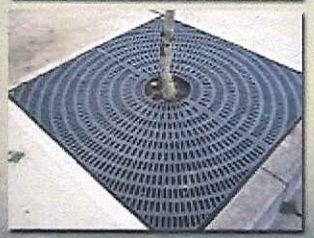


2035 PM Peak Intersection Operations



Appendix D
Alternatives Analysis

This Appendix provides an overview of the process used to develop Transportation System Plan recommendations and contains a comprehensive list of all the projects recommended. The first section of this Appendix lists all transportation improvement projects considered during the plan update process. Each project was evaluated based on the seven TSP goals and corresponding objectives adopted by the Transportation Task Force. Detailed project evaluations are included in the second section of this Appendix. Some projects were not recommended for inclusion and others were identified for further analysis as Refinement Areas. Analysis for each Refinement Area is included in the final section of this Appendix, with a variety of potential solutions offered for each problem.

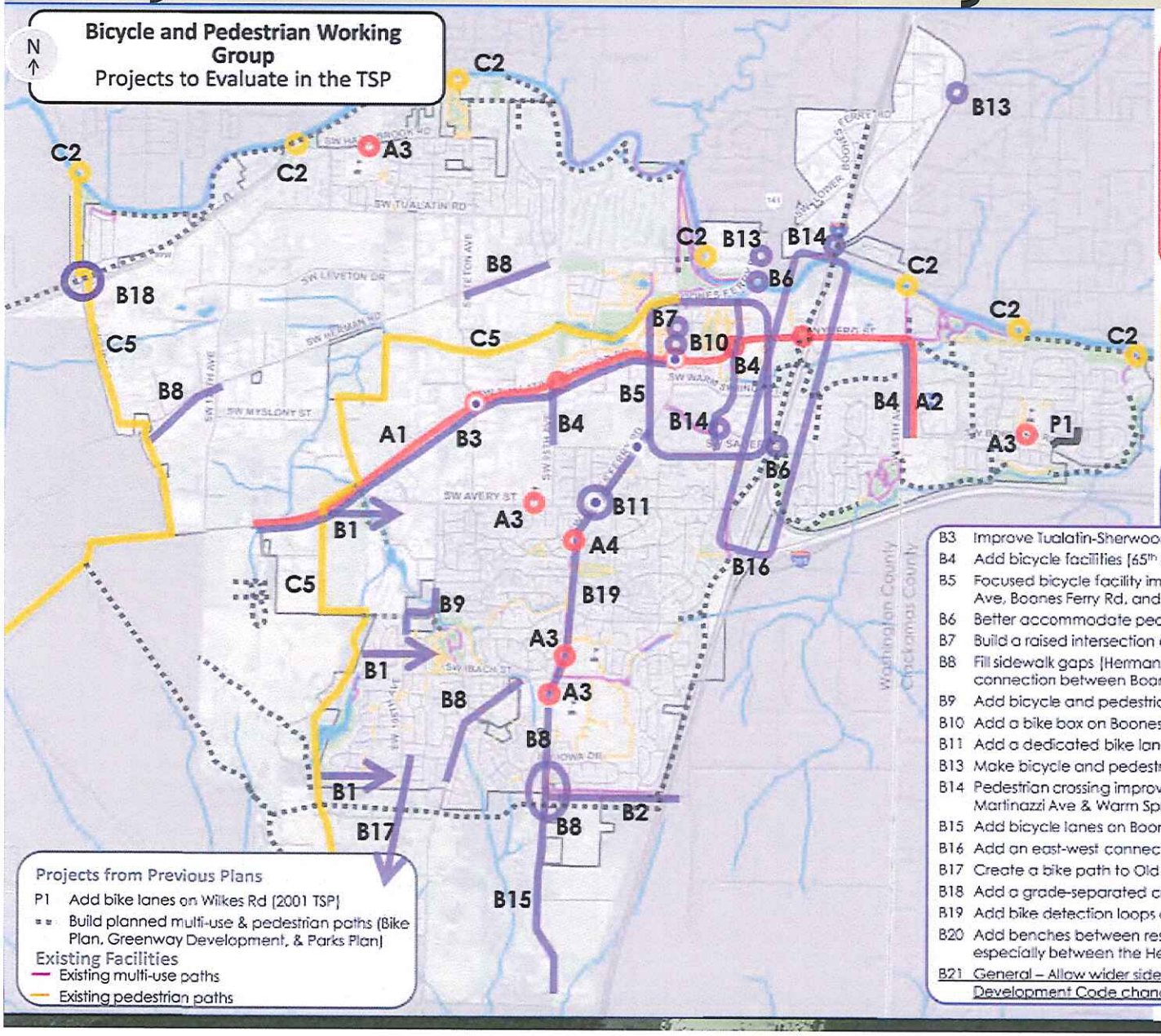


Screening Results

By Working Group Topic Area

Bicycle/Pedestrian

Bicycle and Pedestrian - Projects to Evaluate



Safety-Focused Ideas

- A1 Add pedestrian-focused crossing improvements at key crossings of Tualatin-Sherwood Rd & Nyberg St
- A2 Separate walking/bike area with plantings or barriers on 65th Ave between Borland Rd and Nyberg Ln including adding bicycle/pedestrian facilities on the bridge at 65th Ave
- A3 Improve visibility and safety near schools at crosswalks
- A4 Improve visibility at crosswalk at Siletz Dr & Boones Ferry Rd
- A6 General - Add wayfinding signs for Safe Routes to School

Trail-Focused Ideas

- C2 Build bridges for pedestrian and bicycle access over the Tualatin River
- C4 Create a system of bicycle boulevards (Bikeways on lower –volume streets) connecting all major areas including residential areas (Not on map)
- C5 Tonquin Trail

Facility-Focused Ideas

- B1 Connect Tonquin trail with neighborhoods
- B2 Add sidewalks & bicycle lanes on Norwood Rd
- B3 Improve Tualatin-Sherwood Rd to make it more bicycle and pedestrian friendly
- B4 Add bicycle facilities (65th Ave near the hospital, 95th Ave and Martinazzi Ave)
- B5 Focused bicycle facility improvements in heart of downtown, including Martinazzi Ave, Boones Ferry Rd, and Tualatin-Sherwood Rd
- B6 Better accommodate pedestrians on the bridges
- B7 Build a raised intersection at Seneca and Nyberg (crossing Boones Ferry Rd)
- B8 Fill sidewalk gaps (Herman Rd, Grahams Ferry Rd, Boones Ferry Rd, and the connection between Boones Ferry Rd and Norwood Rd)
- B9 Add bicycle and pedestrian facilities on 105th Ave, Blake St, 108th Ave
- B10 Add a bike box on Boones Ferry Rd near the Sweek House
- B11 Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd
- B13 Make bicycle and pedestrian facility improvements at railroad crossings
- B14 Pedestrian crossing improvements (Tualatin View Apartments, Boones Ferry Rd; Martinazzi Ave & Warm Springs St)
- B15 Add bicycle lanes on Boones Ferry Rd to Day Rd
- B16 Add an east-west connection across I-5
- B17 Create a bike path to Old Town Sherwood as this area develops
- B18 Add a grade-separated crossing over 99W
- B19 Add bike detection loops at major intersections (indicated by ●)
- B20 Add benches between residential and commercial areas throughout the city, especially between the Heritage Center and Haggens (not on map)
- B21 General – Allow wider sidewalks for strolling and outdoor cafes. (Potential Tualatin Development Code change)

Projects from Previous Plans

- P1 Add bike lanes on Wilkes Rd (2001 TSP)
- Build planned multi-use & pedestrian paths (Bike Plan, Greenway Development, & Parks Plan)

Existing Facilities

- Existing multi-use paths
- Existing pedestrian paths

Bicycle and Pedestrian - Ideas Screened Out

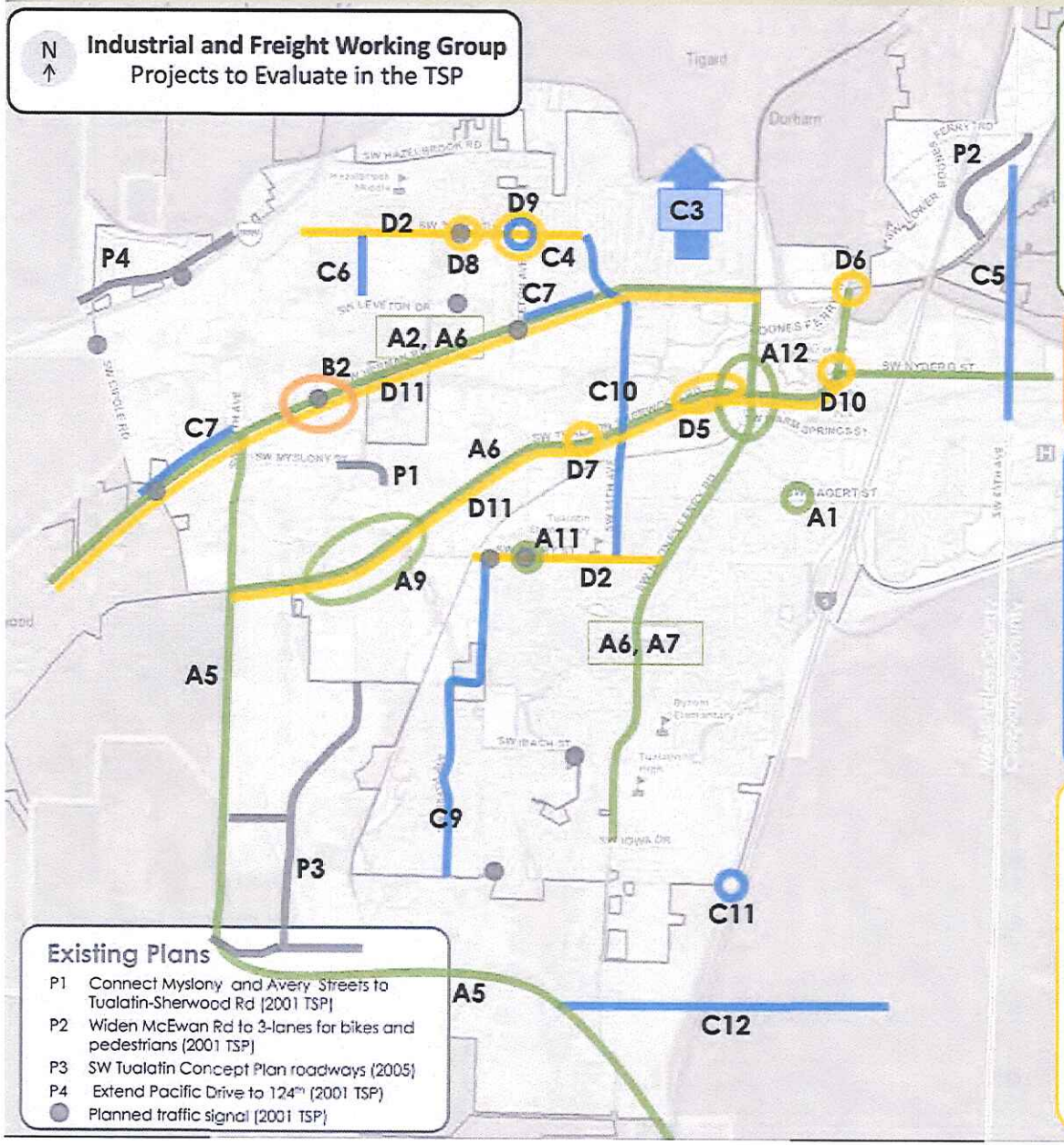
ID	Project	Based on what screening question?	Action to be taken
A5	Improve lighting at Jurgens Rd and Hazelbrook Rd	1 (transportation related, addressing an identified need)	Forward to engineering
B1	Add a pedestrian overcrossing between the Community park and Tualatin Commons	1 (transportation related), 4 (cost)	Consider upon future development
C3	Add a pedestrian shortcut between Hazelbrook Rd and 99W	1 (addressing an identified need)	Consider if a future development occurs at this location

Bicycle/Pedestrian

Discussion

Industrial and Freight

Industrial and Freight - Projects to Evaluate



Congestion-Focused Ideas

- A1 Add a signal or roundabout at Sagert St and Martinazzi Ave
- A2 Divert truck traffic from Tualatin Rd to Herman Rd
- A5 Extend 124th Ave and connect to I-5 south of Tualatin
- A6 Provide coordinated signal timing and access management along major arterials. ~~Restrict trucks to right lane.~~ Widen travel lanes.
- A7 ~~Widen Boones Ferry Rd. Remove right turn light at Tualatin-Sherwood Rd.~~ Remove right turn light in the northbound direction on Boones Ferry Rd.
- A9 Improvements to help mobility of through-traffic (Tualatin-Sherwood Rd)
- A11 Improve turn radius at Avery St and Teton Ave, look at congestion
- A12 Synchronize turn signals to/from Boones Ferry Rd to Tualatin-Sherwood Rd; coordinate with the train signal

Transit-Focused Ideas

- B1 General - Add Saturday, Sunday, late evening transit shuttle
- B2 Add rail station with easy offload and access for industry
- B3 General - Provide local loop bus

Connectivity-Focused Ideas

- C3 ~~North-south connection to Hall Blvd~~ Look for ways to provide north-south connectivity over Tualatin River for vehicles
- C4 Add a left turn from Teton Ave to Tualatin Rd
- C5 Extend 65th Ave north
- C6 Improve 115th Ave
- C7 Improve cross-section on Herman Rd
- C9 Balance the needs of neighborhood with local truck movement along 108th/105th Aves. Consider removing trucks/adding truck info signs.
- C10 Extend 95th Ave north to Tualatin Rd
- C11 Add an interchange on I-5 at Norwood Rd
- C12 Create an east/west connection across I-5 (near Greenhill Rd)

Other Ideas

- D1 General – Coordinate freight receiving/shipping times
- D2 Add vision & sound walls; reduce cut-through traffic.
- D3 General – Improve safety and reduce congestion by education and incentivizing telecommuting
- D5 Add a lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Add traffic camera for red light violations.
- D6 Improve signs to direct traffic to correct street
- D7 Add traffic signal at 97th Ave and Tualatin-Sherwood Rd
- D8 Improve visibility, restrict left turns from 108th Ave onto Tualatin Rd
- D9 Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd
- D10 Improve Tualatin-Sherwood Rd/Martinazzi Ave signal timing/add a red light camera
- D11 Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd
- D12 General - Make "Truck Route" signs larger

Existing Plans

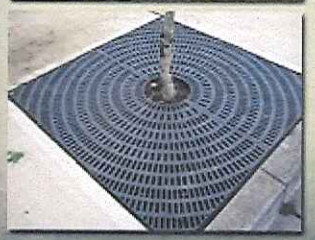
- P1 Connect Myslony and Avery Streets to Tualatin-Sherwood Rd (2001 TSP)
- P2 Widen McEwan Rd to 3-lanes for bikes and pedestrians (2001 TSP)
- P3 SW Tualatin Concept Plan roadways (2005)
- P4 Extend Pacific Drive to 124th (2001 TSP)
- Planned traffic signal (2001 TSP)

Industrial and Freight - Ideas Screened Out

ID	Project Idea	Based on what screening question?	Action to be taken
A3	Provide an undercrossing for Nyberg through traffic under I-5 to avoid signal/conflicts. Create an urban interchange	2 (ability to implement), 4 (cost)	None
A4	Reconsider the connection between 99W and Tualatin-Sherwood Rd (note: in Sherwood)	2 (ability to implement)	Forward to City of Sherwood
A8	Close 90th Ave to 18-wheel trucks	1 (addressing a transportation problem)	Reassess during review of functional classification plan
A10	Create a loop road around central downtown, with a turn radius that works for trucks	1 (addressing a transportation problem), 4 (cost)	None
B3	General – Provide bus from Clackamas MAX stop to WES for employees	1 (addressing a transportation problem)	Forward to TriMet

Industrial and Freight - Ideas Screened Out (cont'd)

ID	Project Idea	Based on what screening question?	Action to be taken
C1	Add connection and entry to I-205	3 (technical feasibility)	None
C2	Provide direct connection between Herman Rd & Boones Ferry Rd. Consider a tunnel	2 (ability to implement), 4 (cost)	None
C1	Add interchange at Norwood Road	3 (technical feasibility)	None
D4	Move industrial area to the SW area, change to multi-family residential, or buffer existing neighborhood better from industrial area	1 (transportation-related)	Forward to Planning

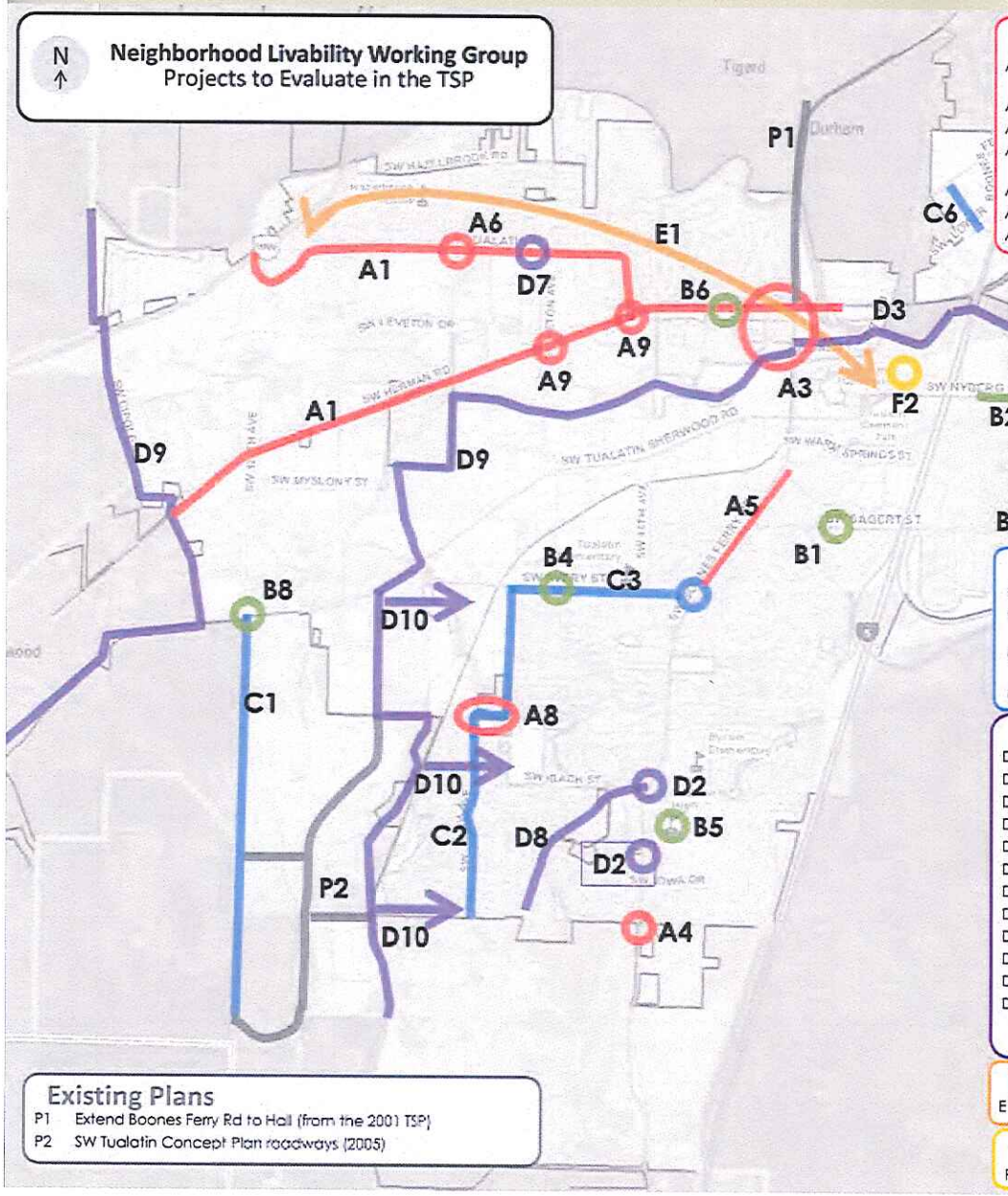


Industrial and Freight

Discussion

Neighborhood Livability

Neighborhoods - Projects to Evaluate



Safety-Focused Ideas

- A1 Discourage/restrict through & truck traffic along Tualatin Rd while encouraging a shift to Herman Rd & Leveton Rd. Make residential access along Tualatin Rd easier.
- A3 Reroute school buses away from Tualatin Community Park and two railroad crossings
- A4 Add a roundabout at Boones Ferry Rd &Norwood Rd
- A5 Explore ways to make Boones Ferry Rd more pedestrian-friendly, including the creation of one consistent speed limit, without widening
- A6 Improve intersection at 108th Ave and Tualatin Rd
- A8 Reduce speed, add sidewalks and bike lanes on Blake St curves. Possibly add trail through wooded area.
- A9 Eliminate free right turns

Congestion-Focused Ideas

- B1 Add a signal or roundabout at Sagert St and Martinazzi Ave
- B2 Add a dedicated right turn lane into Nyberg Woods Apartments
- B3 Realign Sagert St and Borland Rd intersection (roundabout or signal)
- B4 Improve intersection at Avery St and Teton Ave
- B5 Address congestion caused by high school
- B6 Adjust signal timing to reflect traffic needs
- B8 Add right turn lane from Tualatin-Sherwood Rd to northbound 124th Ave

Connectivity-Focused Ideas

- C1 Connect 124th Ave to Tonquin Rd
- C2 Balance neighborhood needs with trucks along 108th/105th Aves. Consider disallowing trucks/truck info signs. Add traffic calming.
- C3 Balance the needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school
- C6 Create a street between Boones Ferry Rd and Bridgeport Rd

Bicycle/Pedestrian-Focused Ideas

- D2 Consider pedestrian islands on Boones Ferry Rd, near Byrom Elementary and Tualatin High schools
- D3 Provide a multi-use path along the river
- D4 Connect sidewalk on east side of 65th Ave
- D5 Repair gap in sidewalk on the south side of Borland Rd
- D6 Add multi-use path as part of Tualatin Trail
- D7 Provide focused pedestrian crossing improvements (may need signal)
- D8 Add bike facilities & continuous sidewalks; reduce speed limit
- D9 Build the Tonquin Trail
- D10 Provide neighborhood connections to Tonquin Trail
- D11 Connect to Tualatin Path
- D12 General – add benches around the city for pedestrians, especially between Heritage Center and Haggens
- D13 ~~General – Provide 3 loop walking paths that connect all Tualatin Neighborhoods.~~ Create a system of bicycle boulevards (bikeways on lower-volume streets) connecting all major areas including residential areas (Not on map)

Transit-Focused Ideas

- E1 Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin

Other Ideas

- F2 ~~Consider changing "no right on red" sign~~ Remove northbound right turn light in Boones Ferry Rd

Existing Plans

- P1 Extend Boones Ferry Rd to Hall (from the 2001 TSP)
- P2 SW Tualatin Concept Plan roadways (2005)

Neighborhood Livability - Ideas Screened Out

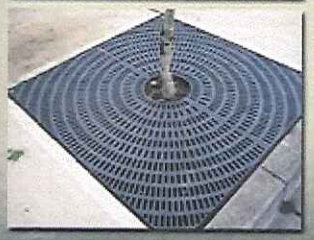
ID	Project	Based on what screening question?	Action to be taken
A2	Improve lighting on Hazelbrook Rd	1 (transportation-related)	Forward to Engineering
A7	Improve sight distance and reduce speeds at Boones Ferry Rd and Arapaho Rd	1 (does not address a transportation problem)	Forward to Engineering
A10	Require a stop before vehicles turn right onto Boones Ferry Rd between Mohawk St and Greenhill Lane	3 (technical feasibility)	None
B7	Add two right turns onto I-5 northbound from Nyberg St	2 (ability to implement)	Forward to ODOT
C4	Add I-5 Interchange with Norwood Rd	3 (technical feasibility)	None
C5	Limit Siletz to exit only at Boones Ferry Rd and 105th Ave to minimize cut-through traffic.	1 (not included in TSP analysis)	Revisit upon completion of Boones Ferry Road analysis and recommendations
D1	Consider a pedestrian overcrossing on Boones Ferry Rd	4 (cost)	Assess more effective, lower cost solutions to pedestrian safety

Neighborhood Livability - Ideas Screened Out (Cont.)

ID	Project	Based on what screening question?	Action to be taken
F1	Consider ways to lessen noise from 99W and I-5 on nearby residences	1 (transportation related)	Forward to Engineering
F3	Intersection of Ibach/Grahams Ferry is confusing; rename road or better signs; need better lighting	1 (transportation related, addressing a transportation problem)	Forward to Engineering
F4	General – Add gateway signs to announce CIOs	1 (transportation related)	Forward to CIOs
F5	Move industrial area to the SW area (no direct truck route), change to multifamily residential, or buffer existing neighborhood better from industrial area	1 (transportation related)	Forward to Planning
F6	Create small, neighborhood commercial for residents to walk to	1 (transportation related)	Forward to Planning

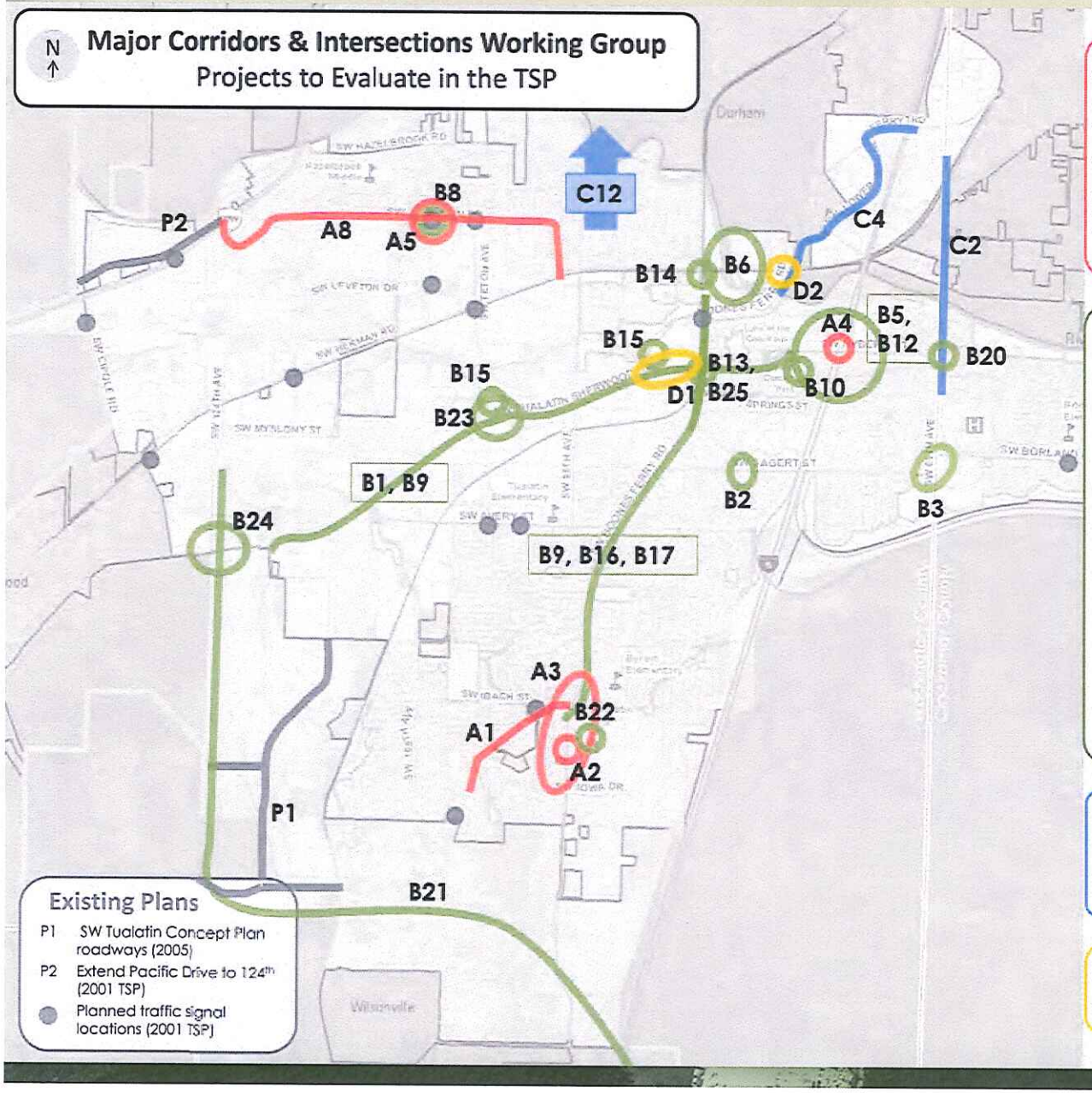
Neighborhood Livability

Discussion



Major Corridors and Intersections

Major Corridors - Projects to Evaluate



Safety-Focused Ideas

- A1 Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd
- A2 Add traffic signal at Tualatin High School
- A3 Consistent speed zones for both Tualatin High School & Byrom Elementary School
- A4 ~~Raise the southbound off-ramp to allow a better view of traffic on~~ Improve the sight distance at the I-5-Nyberg Rd interchange
- A5 Add traffic signal on Tualatin Rd at 108th Ave or on Teton Ave
- A6 General – consistent use of yellow turn signals on all traffic signals
- A8 Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd. Make residential access easier.

Congestion-Focused Ideas

- B1 Widen Tualatin-Sherwood Rd
- B2 Signal or roundabout at Sagert St and Martinazzi Ave
- B3 Realign Sagert St/Borland Rd intersection
- B5 Restrict right turn on red at Nyberg Interchange
- B6 Rethink access in vicinity of Tualatin Community Park
- B8 Prohibit left turns out of 108th Ave or remove trees in the southwest corner
- B9 Coordinate signal timing on Boones Ferry Rd and Tualatin-Sherwood Rd; widen Boones Ferry Rd
- B10 Redesign the intersection at the Fred Meyer (from Nyberg Rd)
- B12 Make two right turn lanes from I-5 north onto Nyberg Rd
- B13 Extend the northbound left turn lane and create a southbound right turn lane on Boones Ferry Rd at Tualatin-Sherwood Rd to reduce backup from WES train; add red light cameras
- B14 Reconfigure Boones Ferry Rd at Tualatin Rd
- B15 Add a 4-way stop by 90th Ave at Kaiser
- B16 Add bus pullouts on Boones Ferry Rd
- B17 Widen Boones Ferry Rd
- B20 Roundabout at Nyberg Rd/65th Ave; keep Nyberg Rd 2 lanes
- B21 Extend 124th Ave and connect to I-5 and Tonquin Rd
- B22 Address congestion caused by high school
- B23 Add a dedicated right turn lane on Teton Ave at Tualatin-Sherwood Rd
- B24 Add right turn lane on Tualatin-Sherwood Rd at 124th Ave

Connectivity-Focused Ideas

- C2 Extend 65th Ave north
- C4 Improve traffic flow on Lower Boones Ferry Rd near Bridgeport Village into downtown Tualatin
- C12 ~~Extend Boones Ferry Rd to Hall Blvd~~ Look for ways to provide north-south connectivity over Tualatin River for vehicles

Other Ideas

- D1 Add lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Install traffic camera for signal violations.
- D2 Better signs needed to direct traffic to correct street

Major Corridors - Ideas Screened Out

ID	Project	Based on what screening question?	Action to be taken
A7	Improve sight distance and reduce speeds at Boones Ferry Rd and Arapaho Rd	1 (does not address a transportation problem)	Forward to Engineering
B4	Consider a traffic loop in downtown (one way, right turn only)	1 (addressing a transportation problem), 4 (cost)	Look at other options to address downtown circulation
B7	Consider removing ramp signals at Nyberg interchange	1 (does not address a transportation problem), 2 (Ability to Implement)	Look at other options to address congestion at Nyberg interchange
B1	Consider redesigning the Nyberg interchange into a full cloverleaf	2 (ability to implement), 4 (cost)	Look at other options to address congestion at Nyberg interchange
B1	Add a southbound left turn and right turn lane to Nyberg interchange	1 (does not address a transportation problem), 4 (cost)	Look at other options to address congestion at Nyberg interchange
B1	Restrict trucks to right lane, widen travel lanes	2 (ability to implement)	None

Major Corridors - Ideas Screened Out (cont'd)

ID	Project	Based on what screening question?	Action to be taken
B25	Limit access and grade separate the intersection of Tualatin-Sherwood Rd and Boones Ferry Rd	1 (addressing a transportation problem), 4 (cost)	None
C3	Construct a new road between Tualatin High School and Byrom Elementary School	1 (does not address a transportation problem)	Look at other options to address school congestion
C5	Improve intersection at 99W and Tualatin Rd	1 (does not address a transportation problem)	None
C6	Extend Tualatin Rd to Lower Boones Ferry Rd	3 (technical feasibility)	None
C8	Add on/off ramps from I-5 to Norwood Rd	3 (technical feasibility)	None
C9	Widen Sagert St to 2 lanes each way with pedestrian median	1 (does not address a transportation problem)	None

Major Corridors - Ideas Screened Out (cont'd)

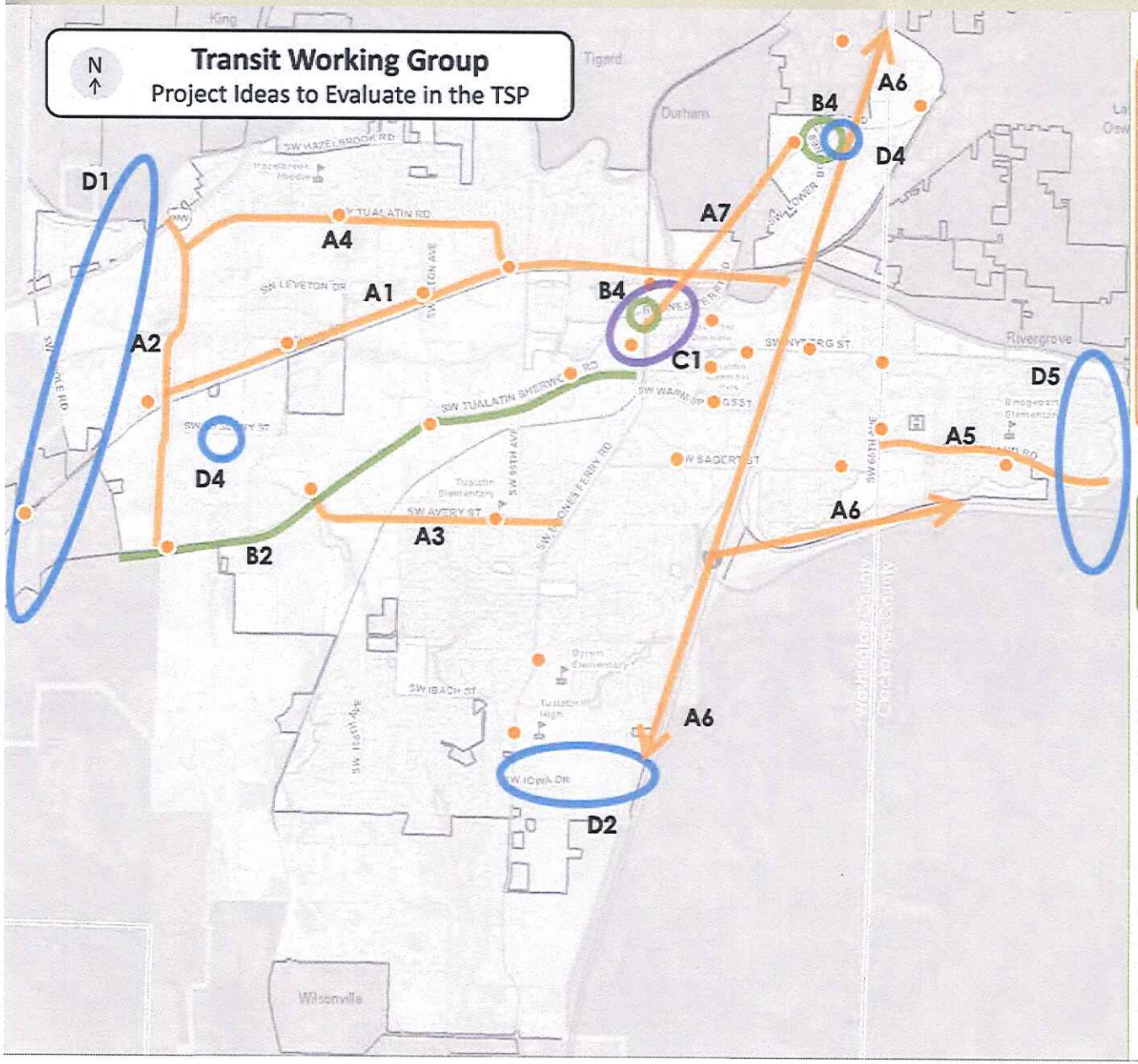
ID	Project	Based on what screening question?	Action to be taken
C10	Extend Helenius Road (Grahams Ferry Rd to Norwood Rd)	3 (technical feasibility)	None
C11	Create street grid in Bridgeport	1 (does not address a transportation problem), 2 (ability to implement)	None
D3	Tualatin-Sherwood Rd/Martinazzi Ave – Adjust signal timing, add a red light camera	2 (ability to implement)	Forward to Washington County – potential project already underway
D4	Adjust signal Timing	2 (ability to implement)	Forward to Washington County – potential project already underway

Major Corridors and Intersections

Discussion

Transit

Transit - Projects to Evaluate



Bus Service-Focused Ideas

- A1 Provide bus transit service on Herman Road
- A2 Provide bus transit service on 124th Street
- A3 Provide bus transit service on Avery Street
- A4 Provide bus transit service on Tualatin Road between downtown and 99W
- A5 Extend bus service to east Tualatin
- A6 Improve bus service between Tualatin and Salem
- A7 Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
- A8 Provide a loop bus route around the city*
- A10 Expand existing on-call shuttle and charge fares*
- A12 General – need extended service hours for all transit*
- A13 General – use more energy efficient buses*
- A14 Coordinate bus schedules with WES schedule*
- A16 Add stops on higher-volume routes*

● Potential bus stop locations connecting major employers and activity centers

*not shown on map

Rail Service-Focused Ideas

- B2 Provide rail or high capacity bus transit service on Tualatin-Sherwood Road (towards Sherwood)
- B4 Build elevated pedestrian bridge to connect park-and-ride with shopping at Bridgeport Village
- B10 General – Add more spaces for bicycles on WES trains*

Land Use-Focused Ideas

- C1 Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Park-and-Ride-Focused Ideas

- D1 Look for potential park-and-ride locations in west Tualatin
- D2 Look for potential park-and-ride locations in south Tualatin
- D3 Add parking capacity at Tualatin Park-and-Ride (near Bridgeport Village)
- D4 Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots
- D5 Add a park-and-ride location in east Tualatin

Transit - Ideas Screened Out

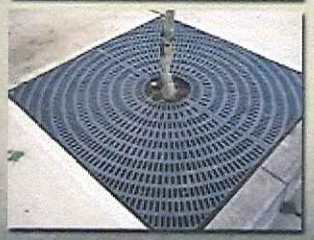
ID	Project	Screening Question	Moving forward into evaluation?
A9	Add bus line from Yamhill Transit District to WES	2 (Ability to Implement)	Forward to Yamhill Transit District and TriMet
A11	General –leave TriMet service area	3 (Technical Feasibility)	Assess ability to improve transit service in Tualatin first, and then reconsider the need for this idea
A15	Provide transit service to Lake Oswego	1 (Addressing a need)	None
B1	Eliminate freight rail trips during rush hours, to avoid interrupting bus and WES service	2 (Ability to implement)	Participate in future regional discussions around increasing WES frequency (B3)
B3	Increase WES frequency	2 (Ability to implement)	Participate in future regional discussions around increasing WES frequency
B5	Extend WES to Salem	2 (Ability to implement)	Participate in future regional discussions on this topic

Transit - Ideas Screened Out (Cont.)

ID	Project	Screening Question	Moving forward into evaluation?
B6	Oregon Passenger Rail between Portland and Eugene	2 (Ability to implement)	Participate in future regional discussions on this topic
B7	SW corridor High Capacity Transit	2 (Ability to implement)	Participate in ongoing regional discussions on this topic
B8	Add a WES Station in south Tualatin	1 (Addressing a need)	Reconsider upon future buildout of Basalt Creek area
B9	General – Add more spaces for bicycles on WES trains	2 (Ability to implement)	Forward to TriMet
B11	Follow the existing rail line with High Capacity Transit	2 (Ability to implement)	Forward to Metro for ongoing SW Corridor and other regional transit discussions

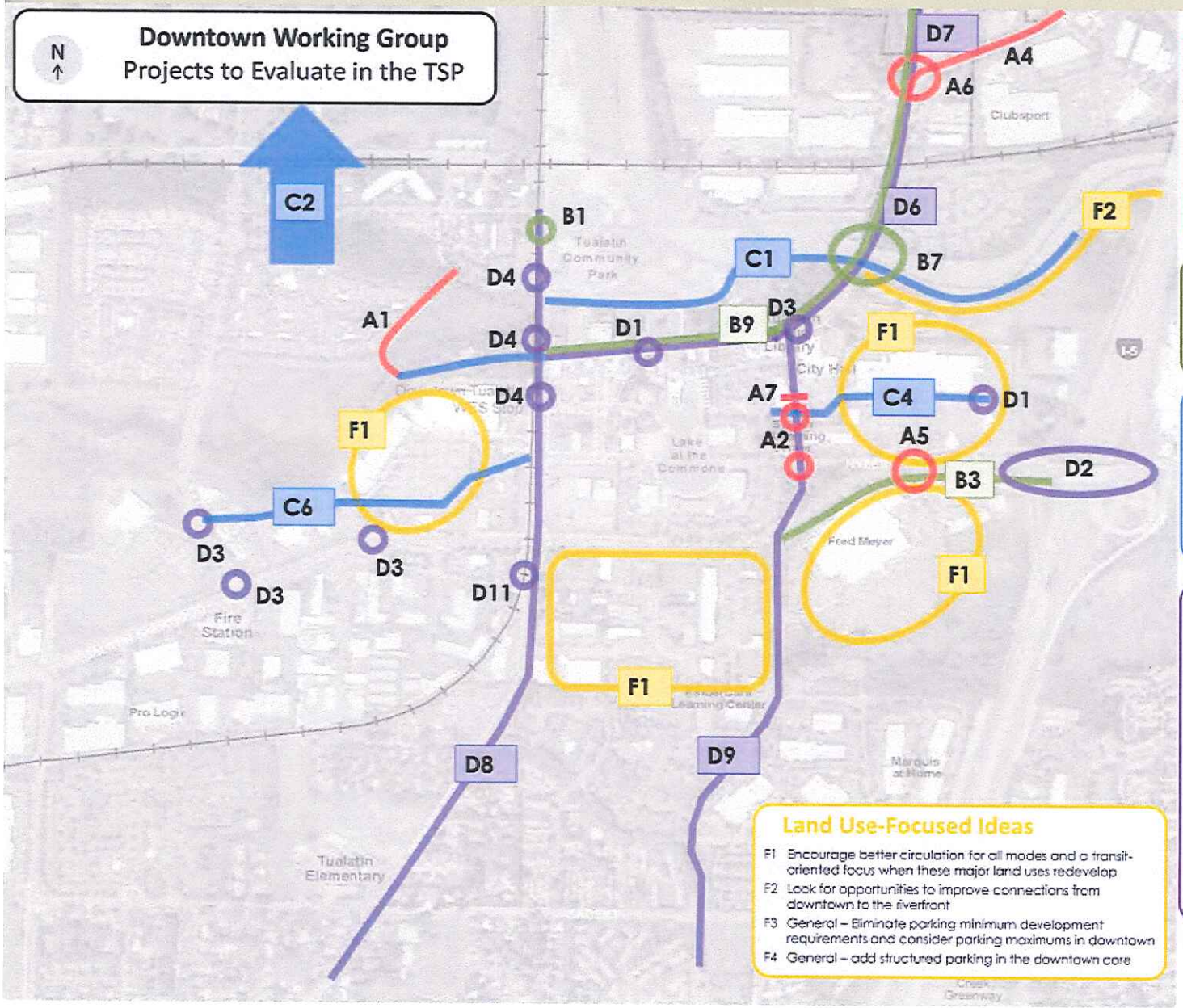
Transit

Discussion



Downtown

Downtown - Projects to Evaluate



Land Use-Focused Ideas

- F1 Encourage better circulation for all modes and a transit-oriented focus when these major land uses redevelop
- F2 Look for opportunities to improve connections from downtown to the riverfront
- F3 General – Eliminate parking minimum development requirements and consider parking maximums in downtown
- F4 General – add structured parking in the downtown core

Safety-Focused Ideas

- A1 Upgrade bridge surface and improve illumination along path near Hedges Creek
- A2 Consider raised intersections for pedestrians at Seneca St and Nyberg St
- A4 Reduce speeds near Bridgeport Village
- A5 Redesign Fred Meyer & Kmart intersection – upgrade the pedestrian connection
- A6 Add a roundabout at Lower Boones Ferry Rd and Boones Ferry Rd
- A7 Add a pedestrian island on Martinazzi Ave north of Seneca St

Congestion-Focused Ideas

- B1 Improve circulation into and out of the park
- B3 Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi Ave to I-5
- B7 Replace/widen bridge on Boones Ferry Rd
- B9 Widen Boones Ferry Rd to 5 lanes

Connectivity-Focused Ideas

- C1 Build a trail from Boones Ferry Rd to the downtown core along the river to the Tualatin River Greenway
- C2 Look for ways to provide north-south connectivity over Tualatin River for vehicles
- C4 Create a grid system near the Kmart, connect to Seneca St
- C5 General–improve street connectivity in downtown
- C6 Create a public road between Boones Ferry Rd and SW 90th Ave

Bicycle/Pedestrian-Focused Ideas

- D1 Redesign pedestrian crossing, consider flashing lights
- D2 Upgrade Nyberg interchange to improve the crossing experience for bicyclists
- D3 Optimize intersections to reduce conflicts between cars and pedestrians (Tualatin-Sherwood Rd & Martinazzi Ave and Boones Ferry Rd)
- D4 Add pedestrian crossings along Boones Ferry Rd
- D6 Improve sidewalks and bicycle lanes Boones Ferry Rd
- D7 Improve bicycle and pedestrian facilities near Bridgeport Village
- D8 Provide "Share the Road" signage and/or other visual cues to motorists to accommodate bicycles on Boones Ferry Rd
- D9 Add bicycle lane or "Share the Road" signs on Martinazzi Ave
- D10 General – coordinate traffic signal timing to accommodate pedestrians in downtown
- D11 Focused pedestrian crossings

Downtown - Ideas Screened Out

ID	Project	Based on what screening question?	Action to be taken
A3	Add a grade separated railroad crossing on Tualatin-Sherwood Rd	1 (addressing a transportation problem), 4 (cost)	None
B2	Provide secondary exit from park, and provide additional parking	3 (technical feasibility)	Look at other options to improve circulation at park
B4	Add a travel lane on I-5 northbound (between Tualatin and OR 217)	2 (ability to implement)	Forward to ODOT
B5	Create a one-way circulator loop roadway around downtown	1 (addressing a transportation problem), 4 (cost)	Look at other options to address downtown circulation
B6	Reduce ambient noise along Boones Ferry Rd in downtown	1 (transportation-related)	None

Downtown - Projects to Screen (Cont.)

ID	Project	Based on what screening question?	Action to be taken
B8	Add HOV lanes on Tualatin-Sherwood Rd	2 (ability to implement), 3 (technical feasibility)	None
C3	Connect Nyberg Rd through the Commons	1 (addressing a transportation need)	Look at other options to address downtown circulation
C7	Extend Lower Boones Ferry Rd across Tualatin River	3 (technical feasibility)	None
D5	Create a pedestrian skybridge that connects downtown retail businesses and the park	1 (transportation-related), 4 (cost)	Consider upon future development

Downtown

Discussion

I. Tualatin Transportation System Plan Recommendations

This section provides a brief overview of the process used to identify preliminary project recommendations for the Tualatin Transportation System Plan (TSP), as presented to the Transportation Task Force (TTF) at its June 21st meeting. Evaluation summaries for each project idea, with the preliminary recommendations, are included at the end of this memo. Maps identifying the location of each project idea are also included.

In May 2012, the TSP's technical team reviewed each of the projects identified as feasible against a set of evaluation criteria. The evaluation criteria are quantitative or qualitative measures that help the team identify how well the project idea is at meeting the TSP's goals and objectives (see Preliminary Evaluation Results memo dated May 25, 2012 for more information on this evaluation) These results were discussed at the May 24th TTF meeting, and with each of the six Working Groups at their third round of meetings, as follows:

- Downtown (June 4)
- Transit (June 5)
- Bicycle and Pedestrian (June 6)
- Industrial and Freight (June 13, mid-day)
- Neighborhood Livability (June 13, evening)
- Major Corridors and Intersections (June 14)

The attached evaluations have been refined to reflect modest changes made during these meetings.

In late May, the technical team conducted a preliminary assessment of whether each project idea should be moved forward into the TSP. All Working Group participants also had this discussion, and participants at Working Group meetings were asked to place dots next to project ideas they thought should or should not move forward, as follows:

- Green dots (participants were given five total) denoted the projects that would provide the greatest value to the community
- Red dots (participants were given five total) denoted projects that should not move forward into the TSP

Working Group participants did not need to use all dots provided. Photos of this dot exercise are on the project website at www.tualatintsp.org. Following the third round of meetings the technical team incorporated feedback from the Working Groups into the attached preliminary recommendations. The attached tables are organized to illustrate the following:

1. Projects that should be included in the TSP
2. Projects that should only be included as part of an urban upgrade, consistent with design standards for that roadway's functional classification
3. Projects that should not be included in the TSP
4. Projects that are topics for further refinement in the summer months

(Please note: Many project ideas were discussed at more than one Working Group meeting. The project team strives for consistency in wording, evaluation, and recommendations, but do allow these cross-cutting project ideas to be reported under each Working Group topic area.)

At its June 21st meeting, the TTF will review developments from this third round of Working Group meetings, and TTF members will be asked to accept or refine the preliminary recommendations before they are forwarded to the community as a whole for review over the summer months.

Six areas have been identified for further refinement over the summer months:

1. Tualatin-Sherwood Road options
2. Nyberg Interchange options
3. Boones Ferry Road options
4. North to South connectivity options
5. Herman Road and Tualatin Road options
6. Downtown connectivity options

For each of the six areas above, the traffic analysis and conceptual design teams will be evaluating up to three alternatives to be discussed with the Task Force during July and August and with the community over the summer months and at a larger meeting in September. Tradeoffs will be discussed related to traffic, connectivity, right of way, environmental, and cost.

II. Bicycle and Pedestrian Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A1	Add pedestrian crossing treatments at key locations on Tualatin-Sherwood and Nyberg	◒	●	●	◒	◒	●	◒	Yes
A2	Multi-use path on 65th Ave between Borland and Nyberg	●	◒	●	●	◒	●	◒	Yes
A3	Improve visibility and safety near schools at crosswalks	◒	●	◒	○	◒	◒	◒	Yes
A4	Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd	○	●	○	○	◒	◒	◒	Yes
A6	Provide wayfinding for Safe Routes to School	◒	◒	◒	◒	◒	○	◒	Yes
B1	Connect Tonquin trail with neighborhoods	●	◒	◒	●	●	●	◒	Yes
B8	Fill sidewalk gaps on Grahams Ferry, Boones Ferry, and Herman	●	●	●	N/A	●	◒	◒	Yes
B9	Add bicycle and pedestrian facilities on 15th Ave, Blake St, and 18th Ave	◒	●	◒	◒	●	◒	◒	Yes
B11	Add dedicated bike lane through Avery and Boones Ferry intersection	◒	◒	N/A	N/A	◒	◒	◒	Yes
B13	Improve bicycle and pedestrian treatments at railroad crossings	◒	●	N/A	N/A	●	◒	○	Yes
B16	Add I-5 multi-use crossing – connect to planned and existing multi-use paths	●	○	●	●	◒	◒	◒	Yes
B20	Add benches for walkers throughout the city	N/A	N/A	●	N/A	●	●	●	Yes
C4	Create a bicycle boulevard system connecting major areas	◒	●	◒	◒	●	●	◒	Yes
C5	Build the Tonquin Trail	●	●	●	●	●	●	●	Yes
B2	Add sidewalks and bicycle lanes on Norwood	◒	●	◒	◒	●	◒	◒	Only upon urban upgrade

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
B4	Add bicycle facilities near the hospital, 95th and Martinazzi	◒	●	●	◒	●	◒	◒	Only upon urban upgrade, or as part of A2
B6	Better accommodate pedestrians on the bridges	●	◒	◒	◒	●	●	○	Only upon urban upgrade
B15	Add bicycle lanes on Boones Ferry Rd to Day Rd	◒	●	●	N/A	●	●	◒	Only upon urban upgrade
B3	Improve Tualatin-Sherwood Rd for bicyclists and pedestrians	◒	◒	N/A	◒	●	●	○	No – Tonquin Trail
B7	Build a raised intersection at Seneca and Nyberg	○	○	◒	○	◒	◒	○	No
B10	Add bike box on Boones Ferry Rd near the Sweek House	○	◒	◒	○	◒	○	●	No
B17	Create a bike path to Old Town Sherwood as this area develops	●	●	◒	◒	◒	●	○	No
B18	Add a grade-separated crossing over 99W	◒	●	○	○	◒	○	○	No
B19	Add bike detection loops at major intersections	◒	N/A	◒	N/A	◒	◒	●	No
B5	Improve bicycle facility treatments in downtown core	◒	●	●	●	●	●	◒	Refinement topic area
B14	Improve pedestrian crossing along Boones Ferry Rd	◒	◒	●	●	◒	N/A	●	Refinement topic area
B21	Allow wider sidewalks for strolling and outdoor cafes	N/A	◒	●	●	◒	N/A	◒	Refinement topic area
C2	Build pedestrian and bicycle bridges over the Tualatin River	◒	●	●	◒	●	◒	○	Refinement topic area

Downtown Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A1	Upgrade bridge surface and improve illumination along path in back of Haggens	–	●	●	–	●	–	–	Yes
A5	Redesign Fred Meyer to Kmart intersection (including pedestrian crossing)	●	●	–	–	–	–	–	Yes
B1	Rethink access between Tualatin Road and Tualatin Community Park	●	–	–	●	●	●	–	Yes
B3	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5	●	–	○	●	○	–	–	Yes
B7	Replace/widen Boones Ferry Road bridge over Tualatin River	●	●	–	●	–	●	–	Yes
C1	Build trail along river from Boones Ferry to downtown, extend to greenway	●	–	–	–	●	–	–	Yes
C4	Create grid system near Kmart upon redevelopment with connection to Seneca	●	–	●	–	●	–	–	Yes
D2	Upgrade Nyberg interchange for bicyclist safety	●	●	–	○	–	–	○	Yes
D6	Improve sidewalks and bicycle lane at Boones Ferry to Lower Boones Ferry	●	●	–	–	●	–	–	Yes
D7	Bike and pedestrian treatments near Bridgeport Village	–	–	–	–	–	○	–	Yes
D8	Provide signage to accommodate bicycles on Boones Ferry	–	–	–	–	●	–	–	Yes
D9	Add bicycle lane on Martinazzi north of Warm Springs	–	–	–	–	●	–	–	Yes
F1	Encourage multimodal circulation and transit-oriented redevelopment	●	–	●	–	●	–	–	Yes
F2	Look for opportunities to open downtown's connection to the riverfront	●	–	●	–	●	–	–	Yes

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
F4	Add structured parking in the downtown core	▬	▬	▬	▬	N/A	N/A	▬	Yes
A2	Consider raised intersections on Martinazzi	○	▬	●	○	▬	●	▬	No
A4	Reduce speeds near Bridgeport Village	○	●	○	○	▬	N/A	○	No
A7	Add pedestrian island on Martinazzi Ave north of Seneca	○	▬	○	●	▬	▬	●	No
C6	Create road connections between Boones Ferry Rd and SW 90th Ave	▬	○	N/A	▬	○	▬	○	No
D4	Add pedestrian crossing at the WES stop (Seneca)	○	○	▬	○	▬	▬	○	No
D10	Coordinate traffic signal timing to accommodate pedestrians	○	N/A	●	○	○	▬	○	No
D11	Add focused pedestrian crossing over Boones Ferry Road at Tonka	○	▬	▬	○	▬	▬	○	No
F3	Eliminate parking minimum development requirements and consider parking maximums	N/A	▬	○	○	N/A	N/A	○	No
A6	Add roundabout at Boones Ferry and Lower Boones Ferry Road	▬	○	○	▬	▬	▬	○	Refinement topic area
B9	Widen Boones Ferry Rd	●	▬	▬	▬	○	▬	○	Refinement topic area
B10	Widen Tualatin-Sherwood Rd	▬	▬	○	●	○	●	○	Refinement topic area
C2	Provide north-south connectivity over Tualatin River for vehicles	●	▬	▬	●	▬	▬	○	Refinement topic area
C5	Improve downtown core street connectivity	●	▬	●	○	●	▬	○	Refinement topic area
D1	Redesign pedestrian crossings, consider flashing lights	○	●	▬	○	▬	▬	▬	Refinement topic area
D3	Optimize intersections to reduce conflicts along Boones Ferry and Tualatin Sherwood Roads	▬	●	▬	○	▬	▬	▬	Refinement topic area

Industrial and Freight Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A1	Add a signal or roundabout at Sagert/ Martinazzi	●	▬	▬	●	▬	○	▬	Yes
A5	Extend 124th Ave to the south	●	▬	▬	●	▬	●	▬	Yes
A6	Provide coordinated signal timing and access management along major arterials	●	●	▬	▬	N/A	N/A	▬	Yes
A11	Address congestion on Avery and Teton	●	●	N/A	▬	N/A	N/A	▬	Yes
A12	Synchronize turn signals to/from Boones Ferry to Tualatin-Sherwood; coordinate with the train signal	●	N/A	▬	▬	N/A	N/A	▬	Yes
B1	Expand shuttle for industrial and manufacturing workers during the day – consider charging fares	●	N/A	●	▬	▬	●	▬	Yes
B3	Provide a loop bus route serving local residents	●	N/A	●	▬	▬	●	○	Yes
C5	Extend 65th Ave north	●	▬	○	●	○	▬	○	Yes
C9	Consider removing trucks/adding truck info signs along 108th/105th Aves	○	N/A	●	○	●	○	▬	Yes
C12	Create an east/west connection across I-5 (near Greenhill Rd)	●	●	▬	▬	▬	▬	▬	Yes (with Basalt Creek)
D1	Coordinate freight receiving/ shipping times	●	●	●	▬	N/A	N/A	▬	Yes
D3	Provide incentives to telecommute	▬	▬	N/A	▬	▬	▬	▬	Yes
D5	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5	●	▬	○	●	▬	N/A	▬	Yes
D11	Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd	▬	N/A	N/A	▬	●	N/A	▬	Yes
D14	Add measures to reduce truck traffic on local and minor collectors	○	●	●	○	▬	●	▬	Yes
D22	Improve 65th Ave south across I-205; widen and address dip in the roadway	▬	▬	N/A	▬	N/A	N/A	▬	Yes

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
D23	Ensure that future roundabout designs can accommodate larger trucks	▬	●	N/A	▬	N/A	N/A	▬	Yes
C14	Widen Myslony St to standards - reduce on-street parking	▬	●	N/A	▬	N/A	▬	▬	Only with urban upgrade
C15	Upgrade Cipole Rd to standards with sidewalks and bike lanes	▬	▬	●	●	▬	▬	▬	Only with urban upgrade
C16	Improve Tonquin Rd between Oregon St and Waldo Way	▬	▬	N/A	▬	N/A	▬	▬	Only with urban upgrade
A7	Remove NB right turn light on Boones Ferry	▬	○	▬	▬	N/A	N/A	▬	No
C4	Add a left turn from Teton to Tualatin Rd	N/A	N/A	N/A	N/A	N/A	N/A	○	No
C6	Improve 115th Ave	●	▬	○	▬	▬	▬	▬	No
C8	Add signal to Tualatin and Boones Ferry intersection	●	●	N/A	▬	○	▬	○	No
C10	Extend 95th Ave north to Tualatin Rd	●	▬	○	▬	○	○	○	No
C13	Provide travel options by improving connectivity in the roadway system	▬	●	●	▬	▬	▬	▬	No
D2	Add vision and sound walls; reduce cut-through traffic	○	○	●	○	○	○	○	No
D6	Improve signs to direct traffic to correct street	▬	N/A	N/A	N/A	N/A	N/A	○	No
D10	Improve Tualatin-Sherwood and Martinazzi signal timing	▬	N/A	N/A	▬	N/A	N/A	▬	No
D12	Make "Truck Route" signs larger	N/A	N/A	▬	▬	N/A	N/A	▬	No
D16	Increase speed limit to 40 or 45 MPH on 124th Ave	▬	N/A	N/A	▬	N/A	N/A	▬	No
D20	Improve southbound left turns at 63rd and Lower Boones Ferry	▬	▬	N/A	▬	N/A	N/A	▬	No
B2	Add rail station with easy offload and access for industry in the west part of town	●	N/A	●	▬	●	●	▬	Needs Refinement
C17	Improve circulation east of the Bridgeport/ I-5 Interchange	▬	▬	▬	▬	▬	▬	▬	Needs Refinement

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A2	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	●	N/A	▬	▬	▬	▬	▬	Refinement Topic Area
A9	Improvements to help mobility of through-traffic on Tualatin-Sherwood Rd	●	▬	▬	●	○	●	▬	Refinement Topic Area
A13	Widen Boones Ferry Rd through downtown	●	▬	▬	▬	○	▬	○	Refinement Topic Area
C3	Provide north-south vehicle connectivity over Tualatin River	●	▬	▬	●	▬	▬	○	Refinement Topic Area
C7	Improve cross-section on Herman Rd	●	●	○	●	●	▬	▬	Refinement Topic Area
D7	Add traffic signal at 97th Ave and Tualatin-Sherwood Rd	▬	▬	▬	▬	▬	N/A	▬	Refinement Topic Area
D8	Improve visibility, add signal restrict left turns from 108th onto Tualatin	▬	▬	▬	○	▬	▬	▬	Refinement Topic Area
D9	Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd	▬	N/A	▬	▬	▬	▬	▬	Refinement Topic Area
D13	Add traffic calming on Tualatin Road	○	○	●	○	▬	●	▬	Refinement Topic Area
D15	Improve turning radius from Herman Rd northbound onto 108th Ave	▬	▬	N/A	▬	N/A	N/A	▬	Refinement Topic Area
D17	Reconfigure the intersection of 115th and Tualatin-Sherwood	▬	▬	N/A	▬	N/A	N/A	▬	Refinement Topic Area
D18	Improve turning radius from Tualatin-Sherwood to Cipole	▬	▬	N/A	▬	N/A	N/A	▬	Refinement Topic Area
D19	Improve NB right and left turns onto Herman	▬	▬	N/A	●	N/A	N/A	▬	Refinement Topic Area
D21	Improve SB left turns from Jurgens and 106th onto Tualatin	▬	▬	N/A	▬	N/A	N/A	▬	Refinement Topic Area

Major Corridors and Intersections Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A1	Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd	◒	●	●	N/A	◒	◒	◒	Yes
A3	Consistent speed zones for Tualatin High School and Byrom Elementary School	N/A	●	N/A	N/A	N/A	N/A	●	Yes
A6	Consistent use of yellow turn signals at traffic signals	◒	●	N/A	◒	N/A	N/A	●	Yes
B2	Signal or roundabout at Sagert and Martinazzi	●	◒	◒	●	◒	○	◒	Yes
B6	Rethink access between Tualatin Road and Tualatin Community Park	◒	◒	●	N/A	◒	●	◒	Yes
B8	Prohibit left turns out of 108th Ave or remove trees in the southwest corner	○	◒	○	◒	◒	○	◒	Yes
B9	Coordinate signal timing on Boones Ferry Rd	●	●	N/A	●	N/A	◒	●	Yes
B10	Redesign Nyberg/Fred Meyer intersection and improve pedestrian crossing	◒	●	◒	●	◒	◒	◒	Yes
B16	Add bus pullouts on Boones Ferry Rd	●	◒	○	◒	○	●	◒	Yes
B21	Extend 124th Ave to south	●	◒	◒	●	◒	●	◒	Yes
B23	Add a dedicated right turn lane on Teton at Tualatin-Sherwood	●	◒	N/A	◒	◒	◒	●	Yes
C2	Extend 65th Ave to the north	●	◒	○	●	○	◒	○	Yes
C4	Improve traffic flow on Lower Boones Ferry Rd between Bridgeport Village and downtown	●	●	◒	●	◒	◒	◒	Yes
D1	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5	●	●	○	●	○	◒	◒	Yes
A2	Add traffic signal at Tualatin High School	◒	◒	◒	N/A	◒	○	○	No
B3	Realign Sagert /Borland to one intersection	●	◒	○	○	○	○	○	No
B14	Reconfigure Boones Ferry at Tualatin Road	◒	◒	○	◒	○	◒	○	No

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
B15	Add a 4-way stop by 90th Ave at Kaiser	○	◒	◒	○	◒	◒	◒	No
B20	Roundabout or signal at Nyberg and 65th intersection	◒	N/A	○	○	○	○	○	No
B22	Address congestion caused by high school	◒	◒	◒	◒	◒	○	◒	No
C7	Revise connection between Tualatin and Boones Ferry near the railroad tracks	◒	◒	○	◒	○	◒	○	No
C9	Widen Sagert to 2-lanes each way	●	●	○	●	○	○	○	No
D2	Better signs needed to direct traffic to correct street	N/A	N/A	N/A	N/A	N/A	N/A	○	No
A4	Improve sight distance at I-5 and Nyberg Rd interchange	N/A	●	N/A	◒	◒	◒	◒	Refinement Topic Area
A5	Add traffic signal on Tualatin Rd at 108th	◒	◒	◒	◒	◒	◒	◒	Refinement Topic Area
A8	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	●	◒	●	◒	◒	◒	○	Refinement Topic Area
B1	Widen Tualatin-Sherwood Rd	●	◒	○	●	○	●	○	Refinement Topic Area
B5	Restrict right turn on red at Nyberg Interchange	○	●	N/A	○	◒	●	○	Refinement Topic Area
B12	Make two right turn lanes from I-5 north onto Nyberg Rd	●	◒	N/A	◒	○	●	◒	Refinement Topic Area
B13	Extend NB left turn and create a SB right turn lane on Boones Ferry at Tualatin-Sherwood to reduce backup from WES train	●	◒	◒	●	◒	◒	◒	Refinement Topic Area
B17	Widen Boones Ferry Rd at the south end of the City	●	◒	◒	◒	○	◒	○	Refinement Topic Area
B24	Add right turn lane on Tualatin-Sherwood at 124th	◒	◒	N/A	◒	◒	○	◒	Refinement Topic Area
C12	Look for ways to provide north-south connectivity over Tualatin River for vehicles	●	◒	◒	◒	◒	◒	○	Refinement Topic Area

Neighborhood Livability Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A3	Reroute school buses away from Tualatin Community Park and railroad crossings	◒	●	◒	N/A	◒	◒	◒	Yes
A8	Reduce speed, possibly add trail through wooded area	○	◒	●	○	◒	◒	◒	Yes
B1	Add signal or roundabout at Sagert and Martinazzi	●	◒	◒	●	◒	○	◒	Yes
B4	Improve intersection at Avery and Teton	●	●	N/A	◒	N/A	N/A	◒	Yes
C1	Extend 124th Ave to south	●	◒	◒	●	◒	●	◒	Yes
C2	Consider removing trucks/adding truck info signs along 108th/105th Aves	○	N/A	●	○	●	●	◒	Yes
C3	Balance needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school	●	◒	◒	◒	◒	◒	◒	Yes
C7	Extend 65th Ave to the north	●	◒	○	●	○	◒	○	Yes
D3	Provide a multi-use path along the river	●	●	●	◒	●	●	◒	Yes
D4	Multi-use path on 65th Ave between Borland and Nyberg	●	◒	●	●	◒	●	◒	Yes
D5	Repair sidewalk gap on south side of Borland	●	●	●	N/A	●	◒	●	Yes
D6	Add multi-use path as part of Tualatin Trail	●	●	●	◒	●	◒	◒	Yes
D9	Build the Tonquin Trail	●	●	●	●	●	●	●	Yes
D10	Connect Tonquin trail with neighborhoods	●	◒	◒	●	●	●	◒	Yes
D11	Connect to Tualatin Path	●	◒	●	N/A	◒	◒	◒	Yes
D12	Add benches for walkers throughout city	N/A	N/A	●	N/A	●	●	●	Yes
D13	Create a bicycle boulevard system connecting major areas	◒	●	◒	◒	●	●	◒	Yes
E1	Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin	●	N/A	◒	◒	◒	◒	○	Yes

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
D8	Add bike facilities and continuous sidewalks along Graham's Ferry Road	●	●	◒	N/A	◒	◒	◒	Only with urban upgrade
B3	Realign Sagert /Borland to one intersection	●	◒	○	○	○	○	○	No
B5	Address congestion caused by high school	◒	◒	◒	◒	◒	○	◒	No
C6	Create a street between Boones Ferry Rd and Bridgeport Rd	●	◒	○	○	○	○	○	No
F2	Remove right turn light in the northbound direction on Tualatin Rd out of the Police Station	○	○	N/A	N/A	N/A	N/A	◒	No
A1	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	●	◒	●	◒	◒	◒	○	Refinement Topic Area
A4	Add a roundabout at Boones Ferry Rd and Norwood Rd.	◒	◒	○	○	○	◒	◒	Refinement Topic Area
A5	Make Boones Ferry Rd more pedestrian-friendly	◒	●	●	◒	●	○	◒	Refinement Topic Area
A6	Improve intersection at 108th and Tualatin	◒	◒	◒	◒	◒	◒	◒	Refinement Topic Area
A9	Eliminate free right turns – on Herman Rd at Teton Ave and Tualatin Rd	○	●	●	○	◒	◒	●	Refinement Topic Area
B2	Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center	◒	◒	◒	○	◒	◒	◒	Refinement Topic Area
B6	Adjust signal timing to give priority to Tualatin Road through traffic	●	◒	○	◒	○	○	◒	Refinement Topic Area
B8	Add right turn lane on Tualatin-Sherwood at 124th	◒	◒	N/A	◒	◒	○	◒	Refinement Topic Area
D2	Add pedestrian islands on Boones Ferry, near Byrom ES and Tualatin HS	○	◒	◒	○	◒	◒	◒	Refinement Topic Area
D7	Provide focused pedestrian crossing improvements along Tualatin Road	○	●	●	○	●	◒	◒	Refinement Topic Area

Transit Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A2	Provide bus transit service on 124th Street	●	N/A	●	◒	◒	●	◒	Yes
A3	Provide bus transit service on Avery Street	●	N/A	●	◒	◒	●	◒	Yes
A5	Extend bus service to east Tualatin	●	N/A	●	◒	◒	●	◒	Yes
A7	Explore a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service	●	N/A	●	●	◒	●	◒	Yes
A8	Provide a loop bus route serving local residents	●	N/A	●	◒	◒	●	○	Yes
A10	Expand shuttle for industrial and manufacturing workers during the day – consider charging fares	●	N/A	●	◒	◒	●	◒	Yes
A12	General – need extended service for all transit	●	N/A	●	◒	◒	◒	○	Yes/ Focus on 96
B2	Provide high capacity transit service on Tualatin-Sherwood Road	●	N/A	◒	●	◒	●	◒	Yes (combine with South Corridor conversation)
C1	Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections	●	N/A	●	●	◒	●	◒	Yes
D1	Look for potential park-and-ride locations in west Tualatin	◒	N/A	●	◒	●	●	◒	Yes
D2	Look for potential park-and-ride locations in south Tualatin	◒	N/A	●	N/A	●	●	◒	Yes
D3	Add parking capacity at Tualatin Park-and-Ride - Potential structure	◒	N/A	◒	●	○	●	◒	Yes
A6	Provide express bus service between Tualatin and Salem	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A13	General – use more energy efficient buses	N/A	N/A	N/A	N/A	N/A	N/A	○	No
A14	Coordinate bus schedules with WES schedule	N/A	N/A	N/A	N/A	N/A	N/A	○	No
A16	Add stops on higher volume routes	○	N/A	●	N/A	◒	◒	○	No
B1	Add more bicycle storage at the WES station	◒	N/A	N/A	N/A	N/A	N/A	○	No
B4	Build an elevated pedestrian bridge to connect the Tualatin park-and-ride with shopping	◒	N/A	○	N/A	N/A	○	○	No
D4	Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots and transfer spaces to higher utilized areas	◒	N/A	●	◒	◒	●	◒	No
D5	Add a park-and-ride in east Tualatin	◒	N/A	●	N/A	●	●	◒	No
A1	Provide bus transit service on Herman Road	●	N/A	●	◒	◒	●	◒	Refinement Topic Area
A4	Provide bus transit service on Tualatin Road between downtown and 99W	●	N/A	●	◒	◒	●	◒	Refinement Topic Area

PRELIMINARY

Working Group Topic Area	Project ID	Geographic Area	Project idea	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
Bike/Ped	A1	Downtown	Add pedestrian crossing treatments at key locations of Tualatin-Sherwood Rd and Nyberg St.	Pedestrian safety concerns on Nyberg St and Tualatin-Sherwood Rd	▬	▬	▬			▬	▬	▬	●	●
Bike/Ped	A2	CID-2	Multi-use path on 65th Ave between Borland and Nyberg	Gaps in the multi-use path network	●	● Would improve access/mobility for all modes	▬			▬	●	▬	●	●
Bike/Ped	A3	CID-1	Improve visibility and safety near schools at crosswalks	Pedestrian crossing safety concerns near schools.	▬	▬	▬			▬	▬	▬	▬	▬
Bike/Ped	A4	Boones Ferry Road	Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd	Pedestrian crossing safety concerns at the intersection of Boones Ferry Rd and Siletz Dr	○	▬		○ Increases vehicle delay				▬	▬	▬
Bike/Ped	A6	City-wide	Provide wayfinding signs for Safe Routes to School	Reduces confusion for students to use safest pedestrian and bike routes	▬						▬	▬		
Bike/Ped	B1	CID-5	Connect Tonquin trail with neighborhoods	Gaps in the multi-use path network	●	▬	▬			●	●	▬	●	●
Bike/Ped	B10	Boones Ferry Road	Add a bike box on Boones Ferry Rd near the Sweet House	Bicycle safety concerns at the intersection of Boones Ferry Road and Sweek Dr	▬	○ Increases travel time for vehicles		○ Increases vehicle delay			▬	▬	▬	▬
Bike/Ped	B11	Boones Ferry Road	Add a dedicated bike lane through Avery and Boones Ferry Rd	Bicycle facilities gap on Avery St	▬	▬	▬				▬	▬	●	▬
Bike/Ped	B13	Bridgeport Village, Downtown	Improve bicycle and pedestrian treatments at railroad crossings	Rough railroad crossings that are difficult for pedestrians and bicyclists	▬						▬	▬	▬	▬
Bike/Ped	B14	Bridgeport Village/Downtown/CID-4	Improve pedestrian crossings along Boones Ferry Rd	Lack of a marked pedestrian crossing on Boones Ferry Road at the Tualatin View Apartments, safety concern for pedestrians	▬	▬	▬			●	▬	▬	▬	▬
Bike/Ped	B15	Boones Ferry Road	Add bicycle lanes on Boones Ferry Rd to Day Rd	Bicycle facilities gap on Boones Ferry Rd	▬	▬	▬				▬	▬	●	▬
Bike/Ped	B16	Interstate 5	Add I-5 multi-use crossing– connect to planned and existing multi-use paths.	Lack of safe pedestrian and bicycle crossing facilities over I-5	●	▬	▬			●	●	▬	●	●
Bike/Ped	B17	CID-5	Create a bike path to Old Town Sherwood as this area develops	Bicycle and multi-use path gap between Tualatin and Sherwood	●	▬				▬	●	▬	●	●
Bike/Ped	B18	CID-1	Add a grade-separated crossing over 99W	Pedestrian crossings safety concerns on 99W	▬	▬	▬			▬	▬	▬	▬	▬
Bike/Ped	B19	Boones Ferry Road, Manufacturing	Add bike detection loops at major intersections	Improve mobility for bicyclists at major intersections	▬	▬	▬	▬			▬	▬	●	▬
Bike/Ped	B2	CID-6	Add sidewalks and bicycle lanes on Norwood Rd	On street bicycle and pedestrian facilities gap on Norwood Rd	▬	▬	▬			●	●	▬	●	▬
Bike/Ped	B20	City-wide	Add benches for walkers throughout the city	Lack of facilities to accommodate aging and mobility-limited pedestrians	N/A									
Bike/Ped	B21	City-wide	Allow wider sidewalks for strolling and outdoor cafes	Narrow sidewalks and lack of a pedestrian-oriented streetscape downtown	N/A									
Bike/Ped	B3	Downtown	Improve Tualatin-Sherwood Rd for bicyclists and pedestrians	Pedestrian and bicycle safety and comfort concerns on Tualatin-Sherwood Rd	▬					▬	▬	▬	●	▬
Bike/Ped	B4	Manufacturing, Downtown, CID-2	Add bicycle facilitiesnear the hospital, 95th Ave and Martinazzi	Bicycle facilities gaps on 65th Ave., 95th Ave., and Martinazzi Ave	▬	▬	▬				▬	▬	●	▬

Working Group Topic Area	Project ID	Geographic Area	Project Idea	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
Bike/Ped	B5	Downtown	Improve bicycle facility treatments in downtown core	Bicycle facility gaps in downtown	◒	◒	◒			◒	◒	◒	●	◒
Bike/Ped	B6	Downtown	Better accommodate pedestrians on the bridges	Narrow and sub-standard pedestrian and bicycle crossings over I-5 and the Tualatin River	●	◒				●	●	◒	◒	●
Bike/Ped	B7	Boones Ferry Road	Build a raised intersection at Seneca and Nyberg	Pedestrian safety crossing concerns on Boones Ferry Rd	○	○		○				◒	◒	
Bike/Ped	B8	CID-6	Fill sidewalk gaps on Grahams Ferry, Boones Ferry and Herman	Lack of pedestrian facilities	●	●				◒	●	◒	◒	◒
Bike/Ped	B9	CID-3, CID-5	Add bicycle and pedestrian facilities on 105th Ave, Blake St, and 108th Ave	Pedestrian and bicycle facilities gap on 105th Ave., Blake St., and 108th Ave.	◒	◒				◒	◒	◒	◒	◒
Bike/Ped	C2	Downtown	Build pedestrian and bicycle bridges over the Tualatin River	Lack of pedestrian and bicycle crossings over the Tualatin River.	◒	◒	◒	◒		◒	◒	◒	●	●
Bike/Ped	C4	City-wide	Create a bicycle boulevard system connecting major areas	Lack of low volume, low speed signed bikeway alternatives to major corridors throughout the city	◒	◒					◒	◒	●	◒
Bike/Ped	C5	Manufacturing	Build the Tonquin Trail	Gaps in the multi-use path network	●	◒	◒	◒		●	●	◒	●	●
Corridors/Intersections	A1	Grahams Ferry Road	Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd	Grahams Ferry Rd does not meet City standards	N/A									
Corridors/Intersections	A2	Boones Ferry Road	Add traffic signal at Tualatin High School	Traffic delay and congestion on Boones Ferry Rd	◒		◒			◒	◒		●	◒
							Will smooth traffic flow							
Corridors/Intersections	A3	Boones Ferry Road	Consistent speed zones for Tualatin High School and Byrom Elementary School	Traffic delay and congestion on Boones Ferry Rd	N/A									
Corridors/Intersections	A4	Interstate 5	Improve the sight distance at the I-5 and Nyberg St interchange	Safety concerns at a known high-crash location.	N/A									
Corridors/Intersections	A5	Tualatin Road	Add traffic signal on Tualatin Rd at 108th Ave	Congestion on Tualatin Rd, safety concerns for vehicles turning from 108th Ave	◒	◒	◒			◒	◒		●	◒
Corridors/Intersections	A6	City-wide	Consistent use of yellow turn signals on all traffic signals	System-wide delay and driver confusion at intersections	◒						◒		◒	
Corridors/Intersections	A8	Tualatin Road	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	Through and freight traffic cut-through on neighborhood streets. Congestion on Tualatin Rd	●						●		●	
Corridors/Intersections	B1	Downtown, Manufacturing	Widen Tualatin-Sherwood Rd	Congestion on Tualatin-Sherwood Rd	●	●	●	●	●	◒	●			
Corridors/Intersections	B10	Interstate 5	Redesign Nyberg/Fred Meyer intersection and improve pedestrian crossings	Congestion and crossing safety concerns on Nyberg St	◒	◒	◒		◒	●	◒			
Corridors/Intersections	B12	Interstate 5	Make two right turn lanes from I-5 north onto Nyberg St.	Congestion on the northbound I-5 off ramp to Nyberg St	●	●		◒	●		●		◒	
								Adds capacity at congested intersection						
Corridors/Intersections	B13	Downtown	Extend NB left turn and create a SB right turn lane on Boones Ferry at Tualatin-Sherwood to reduce backup from WES train	Congestion at Tualatin-Sherwood Rd and Boones Ferry Rd	●	◒	●		◒					
Corridors/Intersections	B14	Downtown	Reconfigure Boones Ferry Rd at Tualatin Rd	Congestion and an intersection with tight turns	◒	◒								

Working Group Topic Area	Project ID	Geographic Area	Project Ideas	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Number/types of connections between destinations and origins
Corridors/Intersections	B15	Manufacturing	Add a delay stop by 90th Ave at Kaiser	Congestion at the intersection of 90th Ave and Kaiser	○	○		○	○		▬			
					Project may result in further congestion									
Corridors/Intersections	B16	Boones Ferry Road	Add bus pullouts on Boones Ferry Rd	Congestion on Boones Ferry Rd from buses	●	●		▬	▬		▬		▬	
						Reduces traffic delay								
Corridors/Intersections	B17	Boones Ferry Road	Widen Boones Ferry Rd at the south end of the city	Boones Ferry Rd does not meet roadway standards	●	●	●		●	●	●			▬
Corridors/Intersections	B2	CIO-4	Signal or roundabout at Sagert St and Martinazzi Ave.	Intersection safety and congestion concerns for all modes at Sagert St and Martinazzi Ave	●	●	▬			▬	●		▬	▬
						Improves traffic flow								
Corridors/Intersections	B20	CIO-1	Roundabout or signal at Nyberg St and 65th Intersection	Congestion on Nyberg St at 65th Ave	▬	▬	▬							
Corridors/Intersections	B21	Manufacturing	Extend 124th Ave to south	Lack of north-south connectivity between Boones Ferry Rd and 99W	●	▬	▬			▬	▬		●	●
													Increases connectivity	
Corridors/Intersections	B22	Boones Ferry Road	Address congestion caused by high school	Traffic delay and congestion on Boones Ferry Rd	▬		▬	▬	▬		▬		▬	
Corridors/Intersections	B23	Manufacturing	Add a dedicated right turn lane on Teton Ave at Tualatin-Sherwood Rd.	Congestion and delay on Teton Ave at Tualatin-Sherwood Rd	●	▬	●	●	▬					
								Will help address congestion at intersection						
Corridors/Intersections	B24	Manufacturing	Add right turn lane on Tualatin-Sherwood Rd at 124th Ave	Anticipated congestion on Tualatin-Sherwood Rd as the area develops	▬	▬	▬	▬	▬					
Corridors/Intersections	B3	CIO-2	Realign Sagert/Borland to one intersection	Safety concerns at Sagert St and Borland Rd	●	●	▬	●	▬					
Corridors/Intersections	B5	Interstate 5	Restrict right turn on red at Nyberg Interchange	Safety concerns at a known high-crash location	○	○		○	○					
					Would increase delay at interchange									
Corridors/Intersections	B6	Downtown	Rethink access between Tualatin Road and Tualatin Community Park	Delay and difficulty of turning into and out of Tualatin Community Park	▬								▬	
Corridors/Intersections	B8	CIO-1	Prohibit left turns out of 105th Ave or remove trees in the southwest corner	Congestion on Tualatin Rd, safety concerns for vehicles turning from 105th Ave	○	○							▬	
					Will reduce turning movements; increase travel time for vehicles									
Corridors/Intersections	B9	Boones Ferry Road	Coordinate signal timing on Boones Ferry Rd	Congestion on Boones Ferry Rd	●	▬	▬	●	●		▬		●	▬
Corridors/Intersections	C12	Downtown	Look for ways to provide north-south connectivity over Tualatin River for vehicles	Boones Ferry Rd across the Tualatin River is currently congested. Limited connectivity over the river.	●	●	●	●	●	●	●		●	●
					Will significantly reduce congestion			Will expand capacity						
Corridors/Intersections	C2	CIO-2	Extend 65th Ave to the north	Congestion on the current Boones Ferry Rd connection across the Tualatin River, lack of north-south roadway connectivity	●	●	●	▬	▬	●	●	●	●	●
Corridors/Intersections	C4	Bridgeport Village	Improve traffic flow on Lower Boones Ferry Rd between Bridgeport Village and downtown	Congestion near Bridgeport Village	●	▬	●	▬	▬		▬		●	
Corridors/Intersections	C7	Downtown	Revise connection between Tualatin Rd and Boones Ferry Rd near the railroad tracks	Confusion and sharp curves connecting Tualatin Road and Boones Ferry Road	▬						▬			
Corridors/Intersections	C9	CIO-3, CIO-4	Widen Sagert St to 3-lanes each way	Sagert Street is not built to city standards	●	▬	●	▬	▬	●	▬			
Corridors/Intersections	D1	Downtown	Add eastbound lane on Tualatin-Sherwood from Martinzaal to I-5	Congestion on Tualatin-Sherwood Rd	●		▬		●					
									Adds capacity on T-S Road					

Working Group Topic Area	Project ID	Geographic Area	Project Ideas	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles Traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
Corridors/Intersections	D2	Downtown	Better signs needed to direct traffic to correct street	Congestion and driver confusion on Boones Ferry Rd	N/A									
Downtown	A1	CIO-1	Upgrade bridge surface and improve illumination along path in back of taggers	Pedestrian and bicycle safety and comfort concerns on the boardwalk	●	●				●	●	●	●	●
Downtown	A2	Downtown	Consider raised intersections on Martinazzi	Pedestrian crossing safety concerns on Martinazzi Ave.	○	○		○			●	●	●	●
Downtown	A4	Bridgeport Village	Reduce speeds near Bridgeport Village	Speeding and congestion concerns near Bridgeport Village	○	○					●		●	
Downtown	A5	Downtown	Redesign Fred Meyer to Kmart intersection (include pedestrian crossing)	Safety concerns on Tualatin-Sherwood Rd near Fred Meyer	●	●	●		●	●	●		●	
Downtown	A5-1	Downtown	Upgrade the pedestrian connection at Fred Meyer/Kmart intersection	Pedestrian crossing safety concerns on Tualatin-Sherwood Rd near Fred Meyer										
Downtown	A6	Downtown	Add roundabout at Boones Ferry Road and Lower Boones Ferry Road	Congestion at the intersection of Boones Ferry and Lower Boones Ferry Roads	●	●	●				●		●	
Downtown	A7	Downtown	Add a pedestrian island on Martinazzi Ave north of Seneca St	Pedestrian crossing safety concerns downtown	○	○	○	○	○	●	●	●	●	●
Downtown	B1	Downtown	Rethink access between Tualatin Road and Tualatin Community Park	Delay and difficulty of turning into and out of Tualatin Community Park	●						●			
Downtown	B10	Downtown	Widen Tualatin-Sherwood Rd	Congestion on Tualatin-Sherwood Rd in downtown	●	●	●			Project would enhance accessibility of park to all modes	●		●	●
Downtown	B3	Downtown	Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi to I-5	Congestion on Tualatin-Sherwood Rd	●	●	●			●	●		●	
Downtown	B7	Downtown	Replace/widen Boones Ferry Road bridge over Tualatin River	Will decrease travel time Congestion and lack of bicycle and pedestrian facilities on Boones Ferry Rd over the Tualatin River.	●	●	●				●		●	●
Downtown	B9	Boones Ferry Road	Widen Boones Ferry Rd	Congestion on Boones Ferry Rd	●	●	●				●		●	●
Downtown	C1	Downtown	Build trail along river from Boones Ferry to downtown, extend to greenway	Gaps in the multi-use path network	●	●	●			●	●	●	●	●
Downtown	C2	Downtown	Provide north-south connectivity over Tualatin River for vehicles	Boones Ferry Rd across the Tualatin River is currently congested. Limited connectivity over the river.	●	●	●	●	●	●	●	●	●	●
Downtown	C4	Downtown	Create grid system near Kmart upon redevelopment with connection to Seneca	Lack of connectivity and vehicle cut-through in downtown parking lots	●	●	●			●	●		●	
Downtown	C5	Downtown	Improve downtown core street connectivity	Lack of connectivity downtown	●	●	●	●	●	●	●		●	●
Downtown	C6	Manufacturing	Create road connections between Boones Ferry Rd and SW 90th Ave.	Lack of public road connection between Boones Ferry Road and SW 90th Ave	●	●	●			●			●	●
Downtown	D1	Downtown	Redesign pedestrian crossing, consider flashing lights	Pedestrian delay waiting at signals downtown, pedestrian crossing concerns	○		○	○		●	●	●	●	
Downtown	D10	Downtown	General – coordinate traffic signal timing to accommodate pedestrians in downtown.	Pedestrian delay waiting at signals downtown	○	●		○			●			○

Working Group Topic Area	Project ID	Geographic Area	Project Ideas	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
Downtown	D11	Boones Ferry Road	Add focused pedestrian crossing over Boones Ferry Road at Tonka Road	Safety concerns at pedestrian crossings on Boones Ferry Rd	○		○	○		●	●	●		●
					A signalized crossing already exists nearby			Will cause delay for most road users						
Downtown	D2	Interstate 5	Upgrade Nyberg interchange for bicyclist safety	Bicycle safety concerns at this high crash location over I-5	●	●					●	●	●	●
Downtown	D3	Downtown, Manufacturing	Optimize intersection to reduce conflicts along Boones Ferry and Tualatin-Sherwood Roads	Pedestrian crossings safety concerns on Boones Ferry and Tualatin-Sherwood Roads	●	●				●	●		●	
Downtown	D4	Boones Ferry Road	Add pedestrian crossing at the WES stop (Seneca)	Pedestrian crossing safety concerns in downtown	○	○	●	○		●	●		●	
					Railroad constraints, lack of sidewalks complicate this crossing									
Downtown	D6	Boones Ferry Road	Improve sidewalks and bicycle lane at Boones Ferry to Lower Boones Ferry	Pedestrian and bicycle safety concerns on Boones Ferry Rd	●	●				●	●	●	●	●
Downtown	D7	Bridgeport Village	Bike and pedestrian treatments near Bridgeport Village	Pedestrian and bicycle safety concerns near Bridgeport Village	●	●	●			●	●	●	●	●
Downtown	D8	Boones Ferry Road	Provide signage to accommodate bicycles on Boones Ferry Rd	Bicycle safety and comfort concerns on Boones Ferry Rd	●						●	●	●	●
Downtown	D9	Downtown	Add bicycle lane on Martinazzi north of Warm Springs	Bicycle safety and comfort concerns downtown	●	●					●	●	●	●
Downtown	F1	Downtown	Encourage multimodal circulation and transit-oriented redevelopment	Lack of connectivity and transit-oriented development downtown	●						●		●	●
Downtown	F2	Downtown	Look for opportunities to open downtown's connection to the riverfront	Lack of connection between downtown and the river	●	●				●	●	●	●	●
Downtown	F3	Downtown	General – Eliminate parking minimum development requirements and consider parking maximums in downtown.	Large surface parking lots downtown detract from the "small town" feel, make it difficult for pedestrians	N/A									
Downtown	F4	Downtown	Add structured parking in the downtown core	Traffic congestion and limited parking availability downtown	N/A									
Industrial/Freight	A1	OR-43	Add a signal or roundabout at Sagert/ Martinazzi	Intersection safety and congestion concerns for all modes at Sagert St and Martinazzi Ave	●	●	●			●	●		●	●
Industrial/Freight	A11	Manufacturing	Address congestion on Avery and Teton	Delay and congestion at Avery St and Teton Ave	●	●	●							
Industrial/Freight	A12	Boones Ferry Road	Synchronize turn signals to/from Boones Ferry Rd to Tualatin-Sherwood Rd; coordinate with the train signal	Congestion and delay on Boones Ferry Rd at the Tualatin-Sherwood Road intersection	●	●	●	●			●		●	
Industrial/Freight	A13	Boones Ferry Road	Widen Boones Ferry Rd through downtown	Congestion on Boones Ferry Rd	●	●	●				●		●	●
Industrial/Freight	A2	Manufacturing	Divert truck traffic from Tualatin Road to Herman Road	Through and freight traffic cut-through on neighborhood streets. Congestion on Tualatin Rd	●	●	●	●	●					
Industrial/Freight	A5	Manufacturing	Extend 124th Ave to the south	Lack of north-south connectivity between Boones Ferry Rd and I99W	●	●	●			●	●		●	●
													Increases north-south connectivity	
Industrial/Freight	A6	Manufacturing	Provide coordinated signal timing and access management along major arterials	Congestion and delay on major arterials city-wide	●	●	●	●					●	○
Industrial/Freight	A7	Boones Ferry Road	Remove right turn light in the northbound direction on Boones Ferry Road	Congestion concerns on Boones Ferry Rd at the intersection with Tualatin-Sherwood Rd	●	●		●	●					

Working Group Topic Area	Project ID	Geographic Area	Project Ideas	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles Traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
Industrial/Freight	A9	Manufacturing	Improvements to help mobility of through-traffic on Tualatin-Sherwood Rd	Congestion on Tualatin-Sherwood Rd	◒	●		◒	◒					
Industrial/Freight	B1	City-wide	Expand shuttle for industrial and manufacturing workers during the day - consider charging fares	Lack of local transit connections between regional transit lines and employment areas, lack of transit service on evenings and weekends	●	◒	◒			●	●	◒		
Industrial/Freight	B2	Manufacturing	Add rail station with easy offload and access for industry in the west part of town	Freight traffic congestion	●		●	●	●	●				
Industrial/Freight	B3	City-wide	Provide a loop bus route serving local residents	Lack of local transit connections between regional transit lines and employment areas	●	◒	◒			●	●	◒	●	●
Industrial/Freight	C1	Manufacturing	Extend 95th Ave north to Tualatin Rd	Lack of north-south connectivity between Tualatin and Herman Roads	●	●	●	◒	◒	●	●	●	●	●
Industrial/Freight	C12	Interstate 5	Create an east/west connection across I-5 (near Greenhill Rd)	Lack of east-west connectivity across I-5 south of Tualatin-Sherwood Rd	●	◒	●	●	●		●	○	◒	
Industrial/Freight	C13	City-wide	Provide travel options by improving connectivity in the roadway system	System-wide congestion, lack of connectivity	◒	◒	◒	◒	◒	◒	◒	◒	◒	◒
Industrial/Freight	C14	Manufacturing	Widen Mystery St to standards - reduce on-street parking	Mystery St is not built to city standards	◒	◒	◒				◒		◒	
Industrial/Freight	C15	Manufacturing	Upgrade Cipole Rd to standards with sidewalks and bike lanes	Lack of bicycle and pedestrian facilities on Cipole Rd	◒	◒	◒			◒	◒	◒	◒	◒
Industrial/Freight	C16	Manufacturing	Improve Tonquin Rd between Oregon St and Webb Way	Lack of east-west connectivity south of Tualatin-Sherwood Rd	◒	◒	◒				◒		◒	
Industrial/Freight	C17	Bridgeport Village	Improve circulation east of the Bridgeport/I-5 interchange	Congestion near Bridgeport Village	◒	◒	◒				◒		◒	◒
Industrial/Freight	C3	Downtown	Provide north-south vehicle connectivity over Tualatin River	Boones Ferry Rd across the Tualatin River is currently congested. Limited connectivity over the river.	●	●	●	●	●	●	●		●	●
Industrial/Freight	C4	Tualatin Road	Add left turn lane from Teton to Tualatin Rd	Congestion and delay on Teton Ave at Tualatin-Sherwood Road	N/A									
Industrial/Freight	C5	CIO-2	Extend 65th Ave north	Congestion on the current Boones Ferry Rd connection across the Tualatin River, lack of north-south roadway connectivity	●	●	●	◒	◒	●	●	●	●	●
Industrial/Freight	C6	Manufacturing	Improve 115th Ave	115th Ave is not fully built to city standards	●	●		◒	◒	◒	●	◒	◒	●
Industrial/Freight	C7	Manufacturing	Improve cross-section on Herman Rd	Congestion on Herman Road - Herman is not fully built to standard	●	●	●	◒	◒	◒	●	◒	◒	◒
Industrial/Freight	C8	Downtown	Add signal to Tualatin and Boones Ferry intersection	Difficult intersection geometry, sight distance concerns, and railroad conflict concerns	●	◒	◒	◒	◒	●	●		◒	●
Industrial/Freight	C9	CIO-3, CIO-5	Consider removing trucks/adding truck no signs along 108th/105th Aves	Freight and high speed traffic on local and minor streets instead of on freight routes	○						○		◒	◒
Industrial/Freight	D1	City-wide	General – Coordinate freight receiving/shipping times	Rush hour traffic concerns	N/A Should be addressed in plan outside of TSP									
Industrial/Freight	D10	Downtown	Improve Tualatin-Sherwood Rd and Martinazzi Ave signal timing	Congestion and safety concerns on Tualatin-Sherwood Rd	◒	◒	◒		◒		◒		●	

Working Group Topic Area	Project ID	Geographic Area	Project Ideas	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
Industrial/Freight	D11	Manufacturing	Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd	Rush hour congestion on Tualatin-Sherwood and Herman roads	●	●	●	●	●					
Industrial/Freight	D12	City-wide	General - Make "Truck Route" signs larger	Freight traffic on local and minor streets instead of on freight routes	N/A									
Industrial/Freight	D13	Tualatin Road	Add traffic calming on Tualatin Road	Traffic safety and speed concerns on Tualatin Rd	○	○								
Industrial/Freight	D14	City-wide	Add measures to reduce truck traffic on local and minor collectors	Freight and high speed traffic on local and minor streets instead of on freight routes	○	○								
Industrial/Freight	D15	Manufacturing	Improve turning radius from Herman Rd northbound onto 108th Ave	Difficult intersection angle for trucks	●	●	●				●		●	
Industrial/Freight	D16	Manufacturing	Increase speed limit to 40 or 45 MPH on 124th Ave	Concern with slow travel along 124th Avenue	●	●					●		●	
Industrial/Freight	D17	Manufacturing	Reconfigure the intersection of 115th Ave and Tualatin-Sherwood Rd	Congestion and delay on Tualatin-Sherwood Rd and 115th Avenue	●	●	●				●		●	
Industrial/Freight	D18	Manufacturing	Improve turning radius from Tualatin-Sherwood Rd to Cipole Rd	Difficult intersection angle for trucks	●	●	●				●		●	
Industrial/Freight	D19	Manufacturing	Improve northbound right and left turns onto Herman Rd	Difficult intersection angle for trucks - conflicts with the railroad	●	●	●				●		●	
Industrial/Freight	D2	Tualatin Road	Add vision and sound walls; reduce cut-through traffic.	Truck traffic impacts on surrounding neighborhoods	○	○		○				○		○
Industrial/Freight	D20	Bridgeport Village	Improve southbound left turns at 63rd Ave and Lower Boones Ferry Rd	Difficult intersection angle for trucks	●	●	●				●		●	
Industrial/Freight	D21	CIO-1	Improve southbound left turns from Jurgens and 100th Aves onto Tualatin Rd	Congestion on Tualatin Road, safety concerns for vehicles making left turns	●	●	●				●		●	
Industrial/Freight	D22	CIO-2	Improve 65th Ave south across I-205; widen and address dip in the roadway	65th Ave is not built to city standards	●	●	●				●		●	
Industrial/Freight	D23	City-wide	Ensure that future roundabout designs can accommodate larger trucks	Future freight traffic mobility	●	●	●	●			●		●	●
Industrial/Freight	D3	City-wide	Provide incentives to telecommute	System-wide rush hour traffic congestion concerns	●	●	●	●	●			●		
Industrial/Freight	D5	Downtown	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5	Congestion on Tualatin-Sherwood Rd near I-5	●	●	●							
Industrial/Freight	D6	Downtown	Improve signs to direct traffic to correct street	Confusion around which lane connects to which roadway - safety concerns	●							●		
Industrial/Freight	D7	Manufacturing	Add traffic signal at 97th Ave and Tualatin-Sherwood Rd	Congestion and intersection delay on Tualatin-Sherwood Rd and 97th Ave	●	●	●			●	●		●	●
Industrial/Freight	D8	Tualatin Road	Improve visibility, add signal, restrict left turns from 108th Ave onto Tualatin Rd;	Congestion on Tualatin Rd, safety concerns for vehicles turning from 108th Ave	●								●	
Industrial/Freight	D9	Tualatin Road	Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd	Delay and safety concerns at intersection of Tualatin Rd and Teton Ave/Jurgens Road and Tualatin Road	●	●	●			●	●		●	●

Working Group Topic Area	Project ID	Geographic Area	Project Ideas	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles Traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
NH Livability	A1	CIO-1	Discourage/restrict through and truck traffic along Tualatin Rd while encouraging a through and truck traffic along Herman Rd.	Through and freight traffic cut-through on neighborhood streets. Congestion on Tualatin Rd	●						●		●	
NH Livability	A3	Downtown	Reroute school buses away from Tualatin Community Park and railroad crossings	Congestion on Tualatin Road caused by buses stopping at each railroad crossing	◒	◒	◒	◒						
NH Livability	A6	Boones Ferry Road	Add a roundabout at Boones Ferry Rd and Norwood Rd.	Congestion and safety concerns at Boones Ferry Rd and Norwood Rd	◒	◒	◒	◒	◒					
NH Livability	A5	Boones Ferry Road	Make Boones Ferry Rd more pedestrian-friendly	Pedestrian facility gaps on Boones Ferry Rd	◒	◒	◒			◒	◒	◒	◒	◒
NH Livability	A6	Tualatin Road	Improve intersection at 108th Ave and Tualatin Rd	Congestion on Tualatin Rd, safety concerns for vehicles turning from 108th Ave	◒	◒		◒						
NH Livability	A8	CIO-3	Reduce speed, possibly add trail through wooded area.	Safety concerns and lack of pedestrian and bicycle facilities on 105th Ave., Blake St., and 108th Ave.	○	○		○				◒	◒	◒
NH Livability	A9	Manufacturing	Eliminate free right turns – on Herman Rd at Teton Ave and Tualatin Rd	Intersection safety for all users	○	○		○	○					
NH Livability	B1	CIO-4	Add a signal or roundabout at Sagert St and Martinazzi Ave	Intersection safety and congestion concerns for all modes at Sagert St and Martinazzi Ave	●	●	◒			◒	●		◒	◒
NH Livability	B2	CIO-2	Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center	Congestion and crossing safety concerns on Nyberg St	◒									◒
NH Livability	B3	CIO-2	Realign Sagert St and Borland Rd to one intersection	Intersection safety concerns for all modes at Sagert St and Borland Rd	●	●	●	◒	◒					
NH Livability	B4	Manufacturing	Improve intersection at Avery St and Teton Ave	Intersection delay and difficult angle for trucks at Avery St and Teton Ave	●	◒	●							
NH Livability	B5	Boones Ferry Road	Address congestion caused by high school	Traffic delay and congestion on Boones Ferry Rd	◒		◒	◒	◒		◒		◒	
NH Livability	B6	Tualatin Road	Adjust signal timing to reflect traffic needs – give priority to Tualatin Road through traffic.	Congestion on Tualatin Rd	●		●	◒						
NH Livability	B8	Manufacturing	Add right turn lane from Tualatin-Sherwood Rd at 124th Ave	Congestion on Tualatin-Sherwood Rd	◒	◒	◒	◒	◒					
NH Livability	C1	Manufacturing	Extend 124th Ave south	Lack of north-south connectivity between Boones Ferry Rd and 99W	●	●	●	●						
NH Livability	C2	CIO-3, CIO-5	Consider removing trucks/adding truck ine sign along 108th/105th Aves	Freight traffic on local and minor streets instead of on freight routes	○						○		◒	◒
NH Livability	C3	CIO-3	Balance the needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school	Freight traffic and congestion on Avery	●								◒	
NH Livability	C6	Bridgeport Village	Create a street between Boones Ferry Rd and Bridgeport Rd	Congestion and lack of connectivity near Bridgeport Village	●	●	●	◒	●	◒	◒		◒	◒
NH Livability	C7	CIO-2	Extend 65th Avenue north	Congestion on the current Boones Ferry Rd connection across the Tualatin River; lack of north-south roadway connectivity	●	●	●	◒	◒	◒	●	●	●	●
NH Livability	D10	CIO-3, CIO-5	Connect Tonquin trail with neighborhoods	Gaps in the multi-use path network	●	◒	◒			◒	●	◒	●	●

Working Group Topic Area	Project ID	Geographic Area	Project Idea	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles Traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
NH Livability	D11	CID-2	Connect to Tualatin Path	Lack of connections to multi-use path network	●	●				●	▬	▬	▬	▬
NH Livability	D12	City-wide	Add benches for walkers throughout the city	Lack of facilities to accommodate aging and mobility-limited pedestrians	N/A									
NH Livability	D13	City-wide	Create a bike boulevard system connecting major areas	Lack of low volume, low speed signed bikeway alternatives to major corridors throughout the city	▬	▬					▬	▬	●	▬
NH Livability	D2	Boones Ferry Road	Add pedestrian islands on Boones Ferry, near Byrom ES and Tualatin HS	Pedestrian crossing safety concerns on Boones Ferry Rd	○			○			▬		▬	
NH Livability	D3	Downtown	Provide a multi-use path along the river	Gaps in the multi-use path network	●	▬	●			●	●	▬	▬	▬
NH Livability	D4	CID-2	Multi-use path on 65th Ave between Borland and Nyberg	Sidewalk gaps on 65th Ave	●	●	▬			▬	●	▬	●	●
NH Livability	D5	CID-2	Repair gap in sidewalk on the south side of Borland Rd	Sidewalk gaps on Borland Rd	●					●		▬	▬	
NH Livability	D6	CID-2	Add multi-use path as part of Tualatin Trail	Gaps in the multi-use path network	●	▬				●	●	▬	●	▬
NH Livability	D7	Tualatin Road	Provide focused pedestrian crossing improvements along Tualatin Rd	Pedestrian crossing safety concerns on Tualatin Road	○			○					▬	▬
NH Livability	D8	Grahams Ferry Road	Add bike facilities and continuous sidewalks along Graham's Ferry Road	Lack of pedestrian facilities on Grahams Ferry Rd.	●	●				●	▬	▬	▬	▬
NH Livability	D9	Manufacturing	Build the Tonquin Trail	Gaps in the multi-use path network	●	▬	▬	▬		●	●	▬	●	●
NH Livability	E1	CID-1	Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin	Lack of east-west transit service in north Tualatin	●	▬	●			▬	●	▬	●	●
NH Livability	F2	Tualatin Road	Remove right turn light in the northbound direction on Tualatin Rd out of the Police Station	Congestion at the intersection of Tualatin Rd and the Police Station	○	○		▬						
Transit	A1	Manufacturing	Provide bus transit service on Herman Road	Lack of east-west transit service	●	▬	●			▬	●	▬	●	●
Transit	A10	Manufacturing	Expand shuttle for industrial and manufacturing workers during the day - consider charging fares	Lack of local transit connections between regional transit lines and employment areas	●	▬	▬			●	●	▬		
Transit	A12	City-wide	General – need extended service for all transit	Limited transit service on the weekends and evenings	●	▬	●				●	▬	●	
Transit	A13		General – use more energy efficient buses	Air quality concerns	N/A									
Transit	A14	Downtown	Coordinate bus schedules with WES schedule	Long transfer times between buses and WES	N/A	▬								
Transit	A16	City-wide	Add stops on higher volume routes	Long distances between stops, few stops near residential areas	○	○		○		▬				▬
Transit	A2	Manufacturing	Provide bus transit service on 124th Avenue	Lack of transit service in west Tualatin	●	▬	●			▬	●	▬	●	●

Working Group Topic Area	Project ID	Geographic Area	Project Idea	Problem addressed	Access and Mobility average score	Travel time for all modes	Reliability - consistent trip times between origins and destinations	Amount of delay (in minutes or seconds)	V/C ratio	Number of connections for all modes within 2 miles of important destinations	Availability of travel modes	Vehicle Miles traveled (VMT)	Availability and quality of facilities or alternate routes/modes	Numbers/types of connections between destinations and origins
Transit	A3	Manufacturing, CIO-3, CIO-4	Provide bus transit service on Avery Street	Lack of east-west transit service	●	▬	●			▬	●	▬	●	●
Transit	A4	Tualatin Road	Provide bus transit service on Tualatin Road between downtown and 99W	Lack of east-west transit service in north Tualatin	●	▬	●			▬	●	▬	●	●
Transit	A5	CIO-2	Extend bus service to east Tualatin	Lack of transit service in eastern Tualatin	●	▬	●			▬	●	▬	●	●
Transit	A6	Interstate 5	Provide express bus service between Tualatin and Salem	Limited transit service to Salem	N/A									
Transit	A7	Bridgeport Village	Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service	Lack of transit connections between Bridgeport Village and the Commons, limited transit on the weekends	●	▬				●	●	▬	●	●
Transit	A8	City-wide	Provide a loop bus route serving local residents	Lack of local transit connections between regional transit lines and employment areas	●	▬	▬			●	●	▬	●	●
Transit	B1	Downtown	Add more bicycle storage at the WES station	Lack of bicycle parking at WES station	▬						▬	▬	▬	
Transit	B2	Downtown	Provide rail or high capacity bus transit service on Tualatin-Sherwood Road	Lack of east-west high capacity transit in Tualatin	●	●	▬			●	●	▬	●	●
Transit	B4	Bridgeport Village	Build an elevated pedestrian bridge to connect the Tualatin park-and-ride with shopping	Pedestrian crossing safety concerns near Bridgeport	▬						▬	▬	●	
Transit	C1	Downtown	Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections	Lack of land use support for WES, lack of a "sense of place" near downtown	●								●	
Transit	D1	CIO-1, Manufacturing	Look for potential park-and-ride locations in west Tualatin	Lack of park-and-ride lots in west Tualatin	▬	▬					▬	▬	●	▬
Transit	D2	CIO-6	Look for potential park-and-ride locations in south Tualatin	Lack of park-and-ride lots in south Tualatin	▬	▬					▬	▬	●	▬
Transit	D3	Bridgeport Village	Add parking capacity at Tualatin Park-and-Ride - Potential structure	Heavy use and capacity concerns at the Bridgeport park-and- ride facility	▬	▬					▬	▬	●	▬
Transit	D4	Manufacturing, Bridgeport Village	Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots and transfer spaces to higher utilized areas	Underutilized park-and-ride lots in Tualatin	▬	▬					▬	▬	●	▬
Transit	D5	CIO-2	Add a park-and-ride in east Tualatin	Lack of park-and-ride lots east of I-5	▬	▬					▬	▬	●	▬

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
A1	●		●				▬	●	▬	●			●
			There are three pedestrian crash locations on Tualatin Sherwood Road and Nyberg Road										
A2	▬	●		▬			▬	●	●	●			●
		Separated path eliminates unsafe intersection geometry concerns											
A3	●		●				▬	▬		▬	▬		▬
	There are two bicycle crashes near Byrom and Tualatin HS												
A4	●	●	▬	▬			●	○				○	▬
		Significant improvement in pedestrian crossing safety											
A5	▬			▬				▬			▬		▬
B1	▬			▬			▬	▬					▬
B10	○		○					▬		▬			
B11	▬		▬					N/A					
B13	●	●		▬			▬	N/A					▬
		Addresses multiple crossing locations											
B14	▬		●	▬			▬	●	▬	▬			●
B15	●		●	▬				●	▬	●			
			Lack of bicycle facilities on Boones Ferry is significant safety hazard										
B16	○			▬			○	●	▬	●			
								Creates new ped/bike connection					
B17	●	●		▬				▬	▬	▬			▬
		Creates low-stress alternative to on-road routes											
B18	●	●		▬			▬	○	▬		○		
		Grade-separated crossing eliminates unsafe intersection geometry									Allows for greater vehicle speeds		
B19	N/A							▬	▬	▬			
B2	▬	●		▬			▬	▬	▬	●			▬
B20	N/A						▬	●					●
B21	▬						▬	●					●
													Significantly improves pedestrian environment
B3	▬	▬	●	▬			▬	●					●
			There are a large number of bicycle and pedestrian crashes reported on T-S Road					Would increase multi-modal access on major arterial					
B4	●		▬	▬	●			●	▬	●			

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
B5	●		●	◒				◒	◒	●			◒
										Improves cycling environment downtown			
B6	◒	●		◒			◒	◒	◒	●			◒
B7	○			○			◒	◒	◒	◒			◒
B8	◒	●		◒			◒	◒	◒	●			◒
B9	◒	●	◒	◒			●	◒		●	◒	◒	◒
C2	●			◒			●	●		●			◒
										Enhances multi-modal access across river			
C4	●		●					◒	◒	●	◒	◒	◒
			Creates safe bike routes on low-traffic roads										
C5	●			◒			◒	●					●
A1	●	◒		◒			●	●			●	●	◒
A2	◒		◒					◒	◒	◒			
A3	●		●					N/A					
A4	●	◒	●	●	◒	◒	◒	N/A					
A5	◒		◒					◒	◒	◒			
A6	●		●					N/A					
			Ensures signal consistency										
A8	◒			◒				●			●	●	
B1	◒			◒	◒	●	◒	○					○
B10	●	●	◒	◒			●	◒	◒				◒
B12	◒						◒	N/A					
B13	◒		◒	◒	◒	◒		◒	◒				
B14	◒			◒				○					○

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
B15	●			●				●				●	
B16	●		●					○				○	
B17	●		●	●	●	◉		●	●				
B2	●	●		●	●	●	●	●					●
B20	N/A A signal already exists at this intersection							○					○
B21	●			●	●	◉	●	●	●				
B22	●		●					●			●	●	●
B23	●		●	●	●	●		N/A					
B24	●		●	●		●		N/A					
B3	●			●	●	●	●	○					○
B5	◉		◉ Will improve safety at high-crash location.					N/A					
B6	●	●	●	●				◉					◉ Improves connection between downtown and the park
B8	●	●	●	●			●	○			●		○
B9	◉					◉		N/A					
C12	●		●	●	●	◉		●	●	●			
C5	●		●	●	●	◉	●	○	●			○	
C4	◉		●			◉		●				●	
C7	●			●	●			○		○			●
C9	◉		◉	●		●		○					
D1	◉		●			◉		○					○

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
D2	N/A							N/A					
A1	●			▬			●	●					●
							Lighting enhances path safety						
A2	▬		●			○	▬	●		▬			●
A4	●		●					○		○			▬
A5	▬	●	▬	▬			●	▬	▬				
AS-1													
A6	○				○		▬	○	▬			○	
				Increases response time for emergency vehicles									
A7	▬	○	●	▬			▬	○		▬		○	▬
B1	▬			▬	▬			▬	▬				▬
B10	▬		▬			▬	▬	○	▬				○
B3	●		▬	▬	○		●	○					○
B7	▬	●		▬			●	▬	▬				▬
B9	●					▬	▬	▬	▬				▬
C1	○			▬			▬	▬					▬
C2	▬			▬	▬		▬	▬	●				○
C4	▬	▬		▬			▬	●	▬				
C5	▬			▬	▬	▬	▬	●		▬		▬	●
													Will increase walkability of downtown
C6	○	○	○	▬	▬	▬	▬	N/A					
D1	●		▬	▬			●	▬		▬			▬
D10	N/A							●					●

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
D11													
D2													
D3													
D4													
D6													
D7													
D8													
D9													
F1													
F2													
F3													
F4													
A1								N/A					
A11								N/A					
A12	N/A												
A13													
A2	N/A												
A5													
A6													
A7													

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
A9	◒		◒					●				◒	
B1	N/A							●	●				◒
B2	N/A							●				◒	●
B3	N/A							●	●				●
C1	◒			◒	◒	◒	◒	○					○
C12	◒			◒	◒	●		○		●	○	●	○
C13	●	◒		◒	◒	◒	◒	○		○			●
C14	●	●		◒		◒		N/A					
C15	◒	●		◒			0	●	◒	●			
C16	◒	◒				◒		N/A					
C17	◒					◒		◒				◒	
C3	●	●	●	●	●	●	●	●	◒	◒			
C4	N/A							N/A					
C5	●		◒	◒	◒	●	◒	◒	◒			○	
C6	●			◒	◒	●	◒	○				○	
C7	●	●	◒	◒			◒	○		◒			○
C8	●	◒	●	◒		◒	●	N/A					
D9	N/A							●			●	●	◒
D1	N/A							N/A					
D10	N/A							N/A					

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
D11	N/A							N/A					
D12	N/A												
D13													
D14													
D15								N/A					
D16	N/A							N/A					
D17								N/A					
D18								N/A					
D19								N/A					
D2													
D20								N/A					
D21								N/A					
D22								N/A					
D23								N/A					
D3								N/A					
D5													
D6	N/A							N/A					
D7													
D8													
D9	N/A												

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
A1	●					●		●			●	●	
A3	●					●		●					●
A4	●			●			●	○					○ Roundabouts can be difficult for active modes to navigate
A5	●	●	●				●	●		●			●
A6	●	●						●					●
A8	●	●	●	●			●	●		●			●
A9	●	●		●			●	●			●	●	
B1	●	●		●	●	●	●	●					●
B2	●			●			●	●			●		
B3	●			●	●	●	●	○					○
B4	●	●		●				N/A					
B5	●				●			●			●	●	●
B6	●	●						○					○
B8	●		●	●		●		N/A					
C1	●			●	●			●				●	
C2	N/A							●			●	●	●
C3	●			●				●			●	●	
C6	●			●			●	○					○
C7	●		●	●	●	●	●	○	●			○	
D10	●			●			●	●					●

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
D11	◒			◒				●		●			◒
D12	N/A							●					●
D13	●		●					◒	◒	●	◒	◒	◒
D2	◒			◒			◒	◒					◒
D3	●	●		◒				●		●			◒
D4	◒	◒		◒			◒	●	●	●			●
D5	●	●		◒			◒	●		●			◒
D6	●	●		◒			◒	●		●			◒
D7	●	●		◒			◒	●					●
D8	●	●		◒			◒	◒		●			◒
D9	●	●		◒			◒	●					●
E1	N/A							◒	◒				
F2	○		○					N/A					
A1	N/A							●	●				
A10	N/A							●	●				◒
A12	N/A							●	●				
A13	N/A							N/A					
A14	N/A							N/A					
A16	N/A							●	●				◒
A2	N/A							●	●				

Project ID	Safety Average Score	Number of geometric deficiencies addressed	Number of high crash locations addressed	Does the potential option improve an existing facility to meet design standards? Does a new facility meet adopted policies and standards?	Does the potential option increase the number of alternate routes/connections for emergency vehicles?	Emergency vehicle response time	Qualitative assessment of security issues (eyes on the street, lighting, etc)	Vibrant Community Average Score	Access to transit within a reasonable distance for residential and employment centers, streets that include pedestrian and bike facilities	Number of streets that include pedestrian and bike facilities	Maintain slow speeds and low traffic volumes on neighborhood streets	Minimize cut-through traffic	Provides opportunities to support the small town feel (consider the scale of the potential option, traffic impacts, types of traffic, etc)
A3	N/A							●	●				
A4	N/A							●	●				
A5	N/A							●	●				
A6	N/A							N/A					
A7	N/A							●	●				●
A8	N/A							●	●				●
B1	N/A							N/A					
B2	N/A							◒	●				○
B4	N/A							○					○
C1	N/A							●					●
D1	N/A							●	●				◒
D2	N/A							●	●				◒
D3	N/A							◒	●				○
D4	N/A							●	●				◒
D5	N/A							●	●				◒

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle an pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
A1															
						Could reduce freight mobility									
A2															
									Could impact wetlands if a new bridge is required over the slough on 65th Ave.						
A3															
A4															
A6															
B1															
B10															
						May reduce freight mobility									
B11	N/A														
B13	N/A														
									Addresses critical crossings on multiple ped/bike routes						
B14															
B15	N/A														
B16															
									Significantly improves bike/ped connectivity across I-5						
B17															
B18															
B19	N/A														
B2															
						Provides active transportation options for residents on Norwood Rd									
B20	N/A														
									Enhances the pedestrian env. city wide						
B21															
B3															
B4															

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle or pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
B5	●	●	●	●	▬	●			●	▬	●	●	●		
B6	●	●	●	▬	●	▬	○	○	▬		●	●	▬		▬
						May reduce freight mobility			Potential for some environmental impacts, depending on project design						
B7	○	▬	▬	▬	○	▬	○	○	▬		▬			▬	▬
						May reduce traffic mobility									
B8	N/A								●	●	●	●	▬		▬
B9	○		▬	▬	○	▬			▬		●	●	▬	▬	○
				Increases multi-modal options for residents											
C2	▬	▬			▬	▬			●		●	●	▬	●	▬
									Addresses lack of bike/ped facilities across the river						
C4	▬	▬	▬	▬	▬	▬			●	●	●	▬	▬		
C5	●	●	●	●	▬	●			●		●	●	▬	●	●
A1	N/A								▬					▬	▬
A2	N/A								▬	▬	▬	▬			
A3	N/A								N/A						
A4	▬	▬	▬	▬	▬	▬	▬	●	▬				▬		
A5	▬					▬			▬	▬	▬	▬			
A6	▬		▬			▬	▬	▬	N/A						
A8	▬				▬	▬			▬	▬	▬				
B1	●	●	●	●	▬	▬	●	●	○		▬		▬		○
B10	●	●	●	●	▬	●	●	●	▬						▬
B12	▬		▬			▬	▬	▬	○			○			
B13	●	▬	▬		▬	▬	●	●	▬				▬	▬	▬
B14	▬	▬	▬	▬	○				○					▬	▬

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle an pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
B15															
B16															
B17															
B2															
B20															
B21															
B22															
B23															
B24															
B3															
B5															
B6	N/A														
B8															
B9									N/A						
C12															
C1									Improves north-south connectivity						
C4															
C7															
C9															Could impact the Tualatin River
D1															

Will positively impact businesses at Bridgeport Village

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle or pedestrian system	Qualitative assessment of air quality impacts (linked to taxation and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
D2	N/A								N/A						
A1	●	●	●		●	●			●		●		●	●	●
A2	○	●	●		●	●	○	○	●			●	●		
A4	○		●				○	○	●			●	●		
A5	●	●	●	●	●	●	●	●	●						●
A5-1															
A6	●	●	●		●	●	●	●	●						●
A7	●	●	●		○	○	○	●	●				●		
B1	●	●			●				●			●	●	●	●
B10	●	●	●	●	●	●	●	●	○			●		●	○
B3	●	●	●	●	○	●	●	●	○			●		●	●
B7	●	●	●		●	●	●	●	●			●		●	○
B9	●	●	●	●	○	●	●	●	○					●	○
C1	●	●	●	●	●	●			●		●	●	●	●	●
C2	●	●	●	●	○	●		●	○			●	●	●	○
C4	●	●			●	●	○	○	●		●	●		●	●
C5	○	●	●	●	○		○	●	●		●	●	●		●
C6	●	●	●	●	●	●			○				●		○
D1	○	●	●	●		●	○	○	●		●		●		●
D10	○	●	●	●		●	○	○	○				○		

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle an pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
D11	○	◒			◒	◒	○	○	◒				◒		◒
D2	○		◒	◒	◒	◒	○	○	◒		◒	◒	◒		
D3	○	◒	◒	◒			○	○	◒		◒	◒			◒
D4	○	◒	◒	◒		◒	○	○	◒		◒		◒		◒
D5	◒	◒	◒	◒	◒	◒			●		●	●	◒		◒
D7	◒		◒	◒	◒	◒			◒				◒		◒
D8	◒				◒	◒			●	●	●	◒	◒		
D9	◒	◒	◒	◒	◒	◒			●	●	●	●	●		
F1	◒	◒	◒	◒	◒	◒			●		●		◒		◒
F2	◒	◒	◒	◒	◒	◒			●		◒	●	◒	●	◒
F3	○	○							N/A						
F4	◒	◒				◒			N/A						
A1	◒	◒	◒	◒	●	●	●	◒	◒			●		●	◒
A11	◒	◒	◒		◒	◒	●		N/A						
A12	◒	◒	◒		◒	◒	◒	◒	N/A						
A13	◒	◒	◒	◒	○	◒	◒	●	◒					●	○
A2	◒		◒			◒			◒				◒		
A5	●	●	●	●	◒	◒	●	●	◒	◒	◒	●	◒		
A6	◒	◒	◒		○		●	●	N/A						
A7	◒				◒				N/A						

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle an pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
A9									N/A						
B1															
B2															
B3															
C1															
C12									Significant impacts to nearby wetlands						
C13															
C14									N/A						
C15															
C16									N/A						
C17															
C3															
C4	N/A								N/A						
C5															
C6															
C7															
C8															
C9															
D1									N/A						
D10									N/A						

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle an pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
D11															
D12									N/A						
D13															
D14															
D15									N/A						
D16									N/A						
D17									N/A						
D18									N/A						
D19									N/A						
D2															Project may have significant visual impacts
D20									N/A						
D21									N/A						
D22									N/A						
D23									N/A						
D3															
D5															
D6									N/A						
D7															
D8															
D9															

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle an pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
A1	○			●	●	●	○		●	●	●				
A2	N/A								●				●		
A4	○				○		●	●	○	●	●			○	
A5	●	●		●	○	○			●	●	●	●	●		●
A6	●					●	●		●						
A8	○				○	○			●		●	●	●	○	○
A9	○				○	●	○		●				●		
B1	●	●	●	●	●	●	●	●	●			●		●	●
B2	○	●	○			●			●					●	
B3	○	●	●	●	○	○	●		○		●		●	○	○
B4	●	●	●		●	●	●		N/A						
B5	●				●	●			●				●		
B6	●					●			●				●		
B8	●		●	●	●	●	●	●	●				●		
C1	●		●	●			●	●	○				●		
C2	○	○	○	○	○		○		●				○	●	●
C3	●	●	●	●	●	●	●		●	●	●		●	●	●
C6	○				○	●	●		○				●		○
C7	●	●	●	●			●		○		●	●			○
D10	●	●	●	●	●	●			●	●	●	●	●	●	●

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle or pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, open spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
D11	N/A														
D12	N/A														
D13															
D2															
D3															
D4									Could have negative impacts on wetlands						
D5	N/A														
D6															
D7															
D8	N/A														
D9															
E1															
E2	N/A								N/A						
A1															
A10															
A12															
A13	N/A								N/A						
A14	N/A								N/A						
A16	N/A														
A2															

Project ID	Economy Average Score	Availability and quality of transportation access to the City Center	Availability and quality of transportation access to employment centers	Number of transportation options to major employers/employment centers	Minimize and/or avoid negative impacts on residential and business areas	Maximize and/or create positive impacts on residential and business areas	Ability for freight traffic to move efficiently and quickly to destinations both in and outside of Tualatin	Improved traffic conditions and access through Tualatin to regional destinations	Health/Environment Average Score	Number of bike lanes and pedestrian facilities within 1 mile of schools	Number and frequency of active transportation choices near residential areas	Number of network gaps addressed in bicycle an pedestrian system	Qualitative assessment of air quality impacts (linked to location and congestion)	Preserves or enhances natural areas, opens spaces, trails, and parks	Avoid/minimize negative impacts on the natural environment
A3	◒	◒	◒	◒					◒		◒		◒		◒
A4	◒	◒	◒	◒					◒		◒		◒		◒
A5	◒	◒	◒	◒					◒		◒		◒		◒
A6	N/A								N/A						
A7	●	●		●					◒				◒		
A8	◒	◒	◒	◒					◒		●		◒		
B1	N/A								N/A						
B2	●	●	●	◒					◒		◒		◒		
B4	N/A								N/A						
C1	●	●							◒				◒		
D1	◒		◒	◒					●		●		◒		
D2	N/A								●		●		◒		
D3	●		●	●					○				◒		○
D4	◒		◒	◒					◒		◒		◒		
D5	N/A								●		●		◒		

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependant populations (vehicle-limited, under 16, over 65, etc), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the actions	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
A1	●	●	-	-	●	-	-	-	-	-	-	-	Yes
A2	●	●		-	-	-	-	-	-	-	-	-	Yes
A3	●	-		-	●	-	-	-	-	-	-	-	Yes
A4	-	-		-	●	-	-	-	-	-	-	-	Yes
A5	○	○		-	●	-	-	-	-	-	-	-	Yes
		Benefits primarily those immediately adjacent to schools											
B1	●	●	-	○	-	-	-	-	-	-	-	○	Yes
				Would require railroad crossing permits, etc.									
B10	-	○		-	●						-		No
				Project would be inexpensive to implement									
B11	-	-		-		-	-	-	-		-		Yes
B13	-	-		○	○	-	-	-	-	○	-	-	Yes
				Requires coordination with railroad									
B14	N/A			●	●	-	-	-	-	-	●	-	Refinement topic area
				Relatively inexpensive to implement									
B15	●	●	-	-	-	-	-	-	-		-		Only upon urban upgrade
B16	-	-		○	-	-	-	-	-	-	-	○	Yes
B17	●	●		-	○	-	-	-	-	○	-	○	No - Tonquin Trail
										No strong advocate identified currently		Would require new right-of-way	
B18	○	○	-	○	○	-	-	-	○	○	○	○	No
				Project is very expensive									
B19	-	-		-	-	-	-	-	-		●		No
B2	-	-		-	●	-	-	-	-	-	-	-	Only upon urban upgrade
B20	-	-		N/A									Yes - as a policy item
B21	N/A			-		-	-	-	-	-		-	Refinement topic area
B3	●	●		○	-	○	○	○	-	-	-	-	No - Tonquin Trail
		Increases multi-modal access on major through route		Project is redundant with Tonquin Trail development goals									
B4	-	-	-	-	-	-	-	-	-		-		Only upon urban upgrade, or as part of A2

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependant populations (vehicle-limited, under 16, over 65, etc), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
B5	●	◒	●	◒	◒	◒	◒	◒	◒		◒		Refinement topic area
B6	●	◒		○	○	◒	◒	◒	◒	◒	◒	○	Only upon urban upgrade
				Project could be very expensive.									
B7	◒	◒		○	○	◒	◒	◒	◒	◒	○	◒	No
B8	◒	◒		◒	●	◒	◒	◒	◒	◒	◒	◒	Yes
B9	●	◒		○	◒	◒	◒	◒	◒	◒	◒	○	Yes
C2	◒	◒		○	○	◒	◒	◒	◒	◒	◒	○	Refinement topic area
				Project could be very expensive									
C4	●	●	◒	◒	◒	◒	◒	◒	◒		◒	◒	Yes
		Increases access to bicycling city-wide											
C5	●	●		●	●	◒	◒	◒	◒	◒	●	○	Yes
A1	◒	◒		◒	◒	◒	◒	◒	◒	◒	◒	◒	Yes
A2	●	●		○	○	◒			◒	◒		○	No
				Unclear if intersection meets signal warrant.						Requires new traffic light infrastructure.			
A3	N/A			●	◒	◒			◒		◒		Yes
A4	◒	◒		◒	○	◒	◒	◒	◒	◒	◒	◒	Refinement topic area
A5	◒	◒	◒	◒	○				◒	◒	◒		Refinement topic area
A6	N/A			●	◒	◒			◒		◒	◒	Yes
A8	◒	◒		○		○	○	○	○	○		◒	Refinement topic area
B1	●	●	◒	○	○	◒	◒	◒	◒	◒		○	Refinement topic area
B10	◒	◒		◒	◒	◒	◒	○	◒	◒	◒	◒	Yes
B12	●	●		◒	○	◒		◒				◒	More analysis needed
B13	◒	◒		◒	◒	◒	◒	◒	◒	◒		○	Refinement topic area
B14	◒	◒		○		○	◒	◒	◒	◒		◒	No
				Project area recently upgraded by city									

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependant populations (vehicle-limited, under 16, over 65, ect), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
B15													No
B16													Yes
B17													Refinement topic area
B2													Yes
B20				Project is potentially costly due to presence of new wastewater infrastructure.									No
B21													Yes
B22													No
B23													Yes
B24													Refinement topic area
B3													No
B5													Refinement topic area
B6													Yes
B8													Yes
B9													Yes
C12													Refinement topic area
C2													Yes
C4							Community support uncertain						Yes
C7													No
C8				Project is likely to be costly									No
D1													Yes

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependant populations (vehicle-limited, under 16, over 65, etc), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
D2	N/A												No
A1													Yes
A2													No
A4	N/A			Need approval/justification for lowering speeds									No
A5													Yes
A5-1													Yes
A6													Refinement topic area
A7													No
B1				Project is potentially expensive									Yes
B10													Refinement topic area
B3													Yes
B7													Yes
B9													Refinement topic area
C1				Project is potentially expensive									Yes
C2													Refinement topic area
C4													Yes
C5													Refinement topic area
D2													No
D1													Refinement topic area
D10													No

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependant populations (vehicle-limited, under 18, over 65, etc), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
D11													No
D2													Yes
D3													Refinement topic area
D4													No
D6													Yes
D7	Project benefits not widely distributed												Yes
D8													Yes
D9													Yes
F1													Yes
F2													Yes
F3	N/A									No project advocate			No
F4	N/A												Yes
A1													Yes
A11	N/A												Yes
A12	N/A			Project already completed									No
A13													Refinement topic area
A2													Refinement topic area
A5													Yes
A6	N/A												Yes
A7	N/A												No

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependant populations (vehicle-limited, under 18, over 65, etc), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
A9	N/A												Refinement topic area
B1	●	●	●										Yes
B2	●	●											Refinement topic area
B3	●	●	●		○					○			Yes
C1	○	○		○	○	○	○	○	○	○		○	No
C12	N/A			○	●	○			○	○		○	Yes (with Basalt Creek)
C13													No
C14	N/A												Only with urban upgrade
C15	N/A							0		0	●		Only with urban upgrade
C16	N/A												Only with urban upgrade
C17													Needs Refinement
C3				○	○				○	○	●	○	Refinement topic area
C4	N/A			○	○	○	○	○	○	○		○	No
				Turn lane already exists									
C5				○		○	○	○	○	○		○	Yes
C6												○	No
C7											●		Refinement topic area
C8				○		○	○	○	○	○	○	○	No
C9	●	●									●		Yes
D1	N/A												No
D10	N/A												No
				Project is already under construction									

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependent populations (vehicle-limited, under 18, over 65, etc), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
D11	N/A												Yes
D12	N/A												No
D13													Refinement topic area
D14													Yes
D15	N/A												Refinement topic area
D16	N/A												No
D17	N/A												Refinement topic area
D18	N/A												Refinement topic area
D19	N/A												Refinement topic area
D2													No
D20	N/A												No
D21	N/A												Refinement topic area
D22	N/A												Yes
D23	N/A												Yes
D3				Project is relatively low cost									Yes
D5													Yes
D6	N/A												No
D7	N/A												Refinement topic area
D8													Refinement topic area
D9													Refinement topic area

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependent populations (vehicle-limited, under 16, over 65, etc), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded.	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
A1	●	●		○		○	○	○	○	○		●	Refinement topic area
A3	●	●		●		●			●	●	●	●	Yes
A4	●	●		●	●	●	●	●	●	●		●	Refinement topic area
A5	●	●		●	●	●	●	●	●	●	●	●	Refinement topic area
A6	●	●		●	●	●	●	●	●				Refinement topic area
A8	●	●		○	●	●	●	●	○	●	●		Yes
A9	●	●		●	●	●	●	●	●	●		●	Refinement topic area
B1	○	○		●		●	●	●	●	●	●	●	Yes
B2	●	●		●	●	●	●	●	●	●	●	●	Refinement topic area
B3	○	○		○		●	●	●	○	○		○	No
B4	N/A			●	●	●	●	●	●	●	●	●	Yes
B5	○	○		●	●	●	●	●	●		●	●	No
B6	○	○		●	●							●	Refinement topic area
B8	○	○		●	●	●	●	●	●	●	●		Refinement topic area
C1	●	●		●	●	●	●	●				○	
C2	●	●		●	●	●	●	●	●	●	●	●	Yes
C3	●	●		●	●	●	●	●	●	●	●	●	Yes
C6	○	○		○	○	●	●	●	●	●			No
C7	●	●	●	●		○	○	○	○	○	●	○	Yes
C10	●	●	●	○	●	●	●	●	●	●	●	○	Yes

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependant populations (vehicle-limited, under 18, over 65, etc), and other groups	**Ability to be implemented average score**	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	**Recommend?**
D11													Yes
D12													Yes
D13													Yes
D2													Refinement topic area
D3													Yes
D4													Yes
D5													Yes
D6													Yes
D7													Refinement topic area
D8													Only with urban upgrade
D9													Yes
E1													Yes
F2	N/A												No
A1													Refinement topic area
A10													Yes
A12													Yes
A13	N/A												No
A14	N/A												No
A1C													No
A2													Yes

Project ID	Equity Average Score	Qualitative assessment of the relative benefits and impacts on population groups within the City	Availability of transit adjacent to areas with low incomes, transit dependent populations (vehicle-limited, under 16, over 65, etc), and other groups	Ability to be implemented average score	Qualitative assessment of ability for the project idea to be funded	Is the option consistent with existing community goals/policies	Is the option consistent with existing regional goals/policies?	Is the option consistent with existing state goals/policies?	Is the option supported by the community and political leadership?	Does the option have a champion willing to advocate?	Qualitative assessment of the life cycle and benefits of the options	Does the option consider using existing infrastructure before proposing new roads?	Recommend?
A3	●	●	●	●	●	●	●	●	●	●	●		Yes
A4	●	●	●	●	●	●	●	●	●	●	●		Refinement topic area
A5	●	●	●	●	●	●	●	●	●	●	●		Yes
A6	N/A			●	●								No
A7	●	●	●	●	●	●	●	●	●	●	●		Yes
A8	●	●	●	●	○	●	●	●	●	●	●	○	Yes
B1	N/A			○	●	●	●	●	●	○	●		No
B2	●	●	●	●	○	●	●	●	●	●	●		Yes
B4	○	○	●	○	○	●	○	●	●	●	○		No
C1	●	●		●	●	●	●	●	●	●	●		Yes
D1	●	●	●	●	●	●	●	●	●	●	●		Yes
D2	●	●		●	●	●	●	●	●	●	●		Yes
D3	●	●	●	●	●	●	●	●	●	●	●		Yes
D4	●	●	●	●	●	●	●	●	●	●	●		No
D5	●	●	●	●	●	●	●	●	●	●	●		No

Refinement Area Analysis
Refinement Area #1: Nyberg Interchange

Concept Package #1: Safety-Focused Solutions

Goal Statement

The primary goal for this refinement area is to address safety concerns at the Nyberg interchange, for all modes. The interchange serves as the main connection between Tualatin and the I-5 freeway, but also via Nyberg Road provides a main connection between downtown and east Tualatin. The interchange ramps have the highest crash rates in Tualatin, including several reported bicycle- and pedestrian-related crashes.

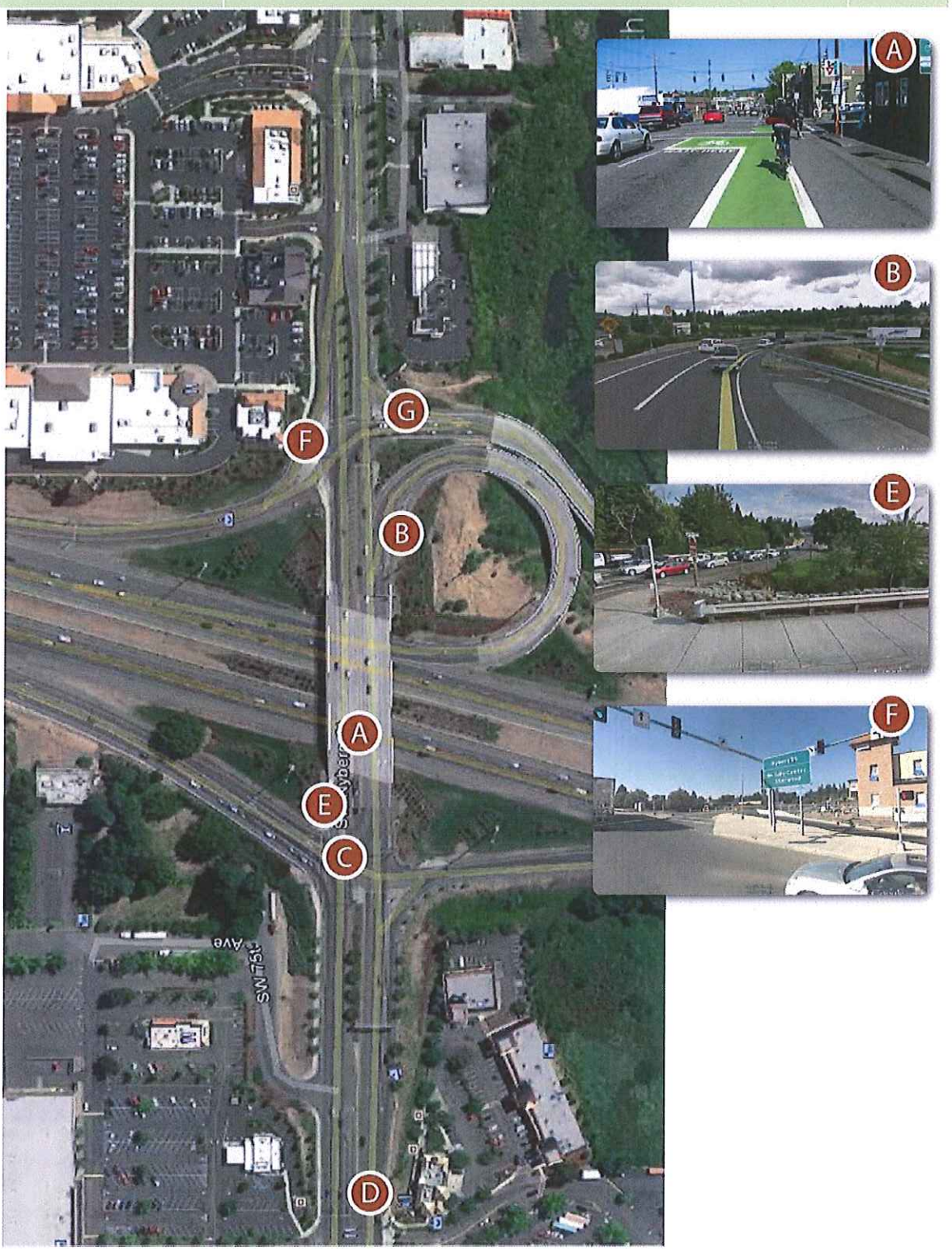
Possible Solution

The following solutions are put forth as one package at the Nyberg interchange area:

A. Paint the pavement through the interchange area to make the bicycle lane more visible and distinct from travel lanes
B. Redesign location of bicycle lane at the east end of interchange
C. Bring bicycle lane across and over at west end of interchange with skip striping
D. Improve lane signage west of the interchange to help vehicles be in the correct lane before entering interchange area
E. Move guardrail on southbound off ramp to improve sight distance
F. Redesign westbound-northbound movement to enhance safety
G. Redesign northbound off ramp to discourage traffic getting off and then right back onto I-5

Consideration Area	Comments	Score
How would this solution affect traffic and safety near the interchange?	• Minor effects on motor vehicle traffic • Moderate safety benefits from visible separation between bicycle and motor vehicle traffic	●
How would this solution affect traffic city-wide?	• Minimal effect on city-wide traffic	◒
Design Constraints / Considerations	• Striping revisions can be incorporated with minor impacts • Provides better delineation for traffic and bicyclists • Redesigns the northbound on ramp terminal to allow double rights • Discourages the northbound through traffic with minor impacts	●
Environmental / Policy Considerations	• Painted pavement would require ODOT review/approval • Recent precedent for painted bike lanes on ODOT facility • Minor changes to the interchange configuration will not	◒

impact the wetlands preservation district

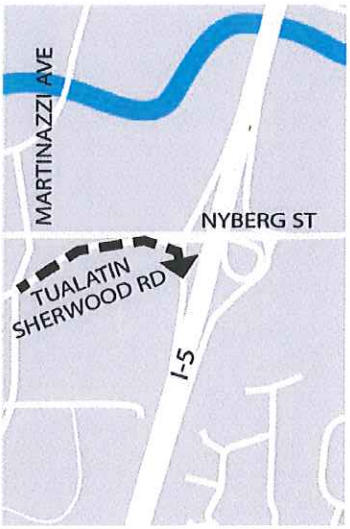


Refinement Area #1: Nyberg Interchange

Concept Package #2: Adding lane to Tualatin-Sherwood Road from Martinazzi to I-5 (eastbound direction)

Goal Statement

Concept package #2 addresses a goal to reduce congestion on Tualatin-Sherwood Road for eastbound drivers between Martinazzi Avenue and I-5. Traffic backups have been reported at the southbound on ramps which have been verified through field visits. However, traffic analysis for the Nyberg interchange does not show congestion concerns either now (2012 traffic volumes) or in the future (forecasted 2035 traffic volumes). The southbound on-ramps with I-5 operate at a Level of Service (LOS) D now and anticipated in the future, and the northbound on-ramps with I-5 operate at LOS B now and anticipated LOS C in the future.



Potential Solution

Add a new lane on Tualatin-Sherwood Road in the eastbound direction from Martinazzi to I-5.

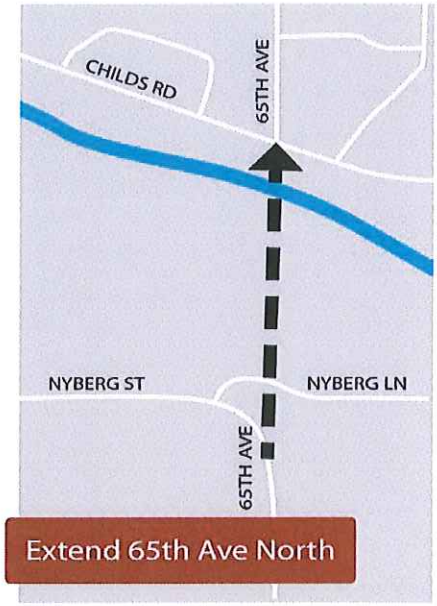
Consideration Area	Comments	Score
How would this solution affect traffic near the interchange?	• Minor increase in eastbound traffic accessing the freeway (50-100 vehicles during the PM peak hour) • Operations stay relatively consistent • Could detract from bicycle and pedestrian safety	◒
How would this solution affect traffic city-wide?	• This potential solution has minimal effect on city-wide traffic	◒
Design Constraints / Considerations	• Width of Tualatin-Sherwood Road/Nyberg Street from Martinazzi to the east is tight • No impacts forecasted to the Fred Meyer truck access road, though walls may be needed to ensure truck access retained • Requires removal of mature street trees • Possible solution would be to shift lanes and widen to the median • Past the Fred Meyer intersection, widening would likely require walls, structure widening and impacts to sensitive areas	◒
Environmental / Policy Considerations	• The area is already built • Only impacts are to the landscaping strip between the roadway and Fred Meyer	●

Refinement Area #2: 65th Avenue

Option 1: Extending North into River Grove Only

Goal Statement

This option provides an alternative to crossing the Tualatin River in a north-south direction east of I-5. The 65th Avenue corridor serves as a major north-south route. It serves residents and medical facilities located east and west of 65th Avenue, notably the Legacy Meridian Park hospital. 65th Avenue is owned and maintained by Washington County. Although current traffic levels are within accepted County and City standards, future traffic is of concern due to expected residential and business growth. 65th Avenue has sidewalk gaps and lacks bicycle lanes.



Potential Solution

Extend 65th Avenue north of its current terminus near Nyberg Road to 65th Avenue across the Tualatin River in River Grove. At its crossing over the Tualatin River, the bridge could be a narrower cross section as a turn lane would not be needed. Reconstruct intersection of 65th Avenue and Nyberg Street and consider a roundabout at this location.

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• New connection has the potential for 1,000 to 1,200 motor vehicles during the PM peak hour • Allows for connectivity to the north • Slight increase in traffic on Sagert Street, Borland Road, 50th Avenue, SW Wilke Road, and Nyberg Lane	◒
How would this solution affect traffic city-wide?	• Reduces traffic on I-5 and Boones Ferry Road • Slight increase in traffic on Tualatin Sherwood Road eastbound over the Nyberg interchange • Traffic would be impacted in River Grove and Lake Oswego	●
Design Constraints / Considerations	• Available right of way is 40' ± from river to SW Childs St • Alignment could be designed to avoid impacts to recently constructed lift station east/north of the bridge • Connection to the local roadway network north of the river	●
Environmental / Policy Considerations	• Solution requires multi-jurisdictional coordination • Adjacent to land zoned high density residential where transportation facilities are an allowed use • Impacts to Metro Riparian class Habitats I-III	◒

Refinement Area #2: 65th Avenue

Option 2: Widening to Existing Sections of 65th Avenue Only

Goal Statement

This option addresses forecasted future congestion on 65th Avenue. The 65th Avenue corridor serves as the major north-south route east of I-5. It serves residents and medical facilities located east and west of 65th Avenue, notably the Legacy Meridian Park hospital. 65th Avenue is owned and maintained by Washington County. Although current traffic levels are within accepted County and City standards, future traffic is problematic due to expected residential and business growth. This facility has some sidewalk gaps and lacks bicycle lanes.

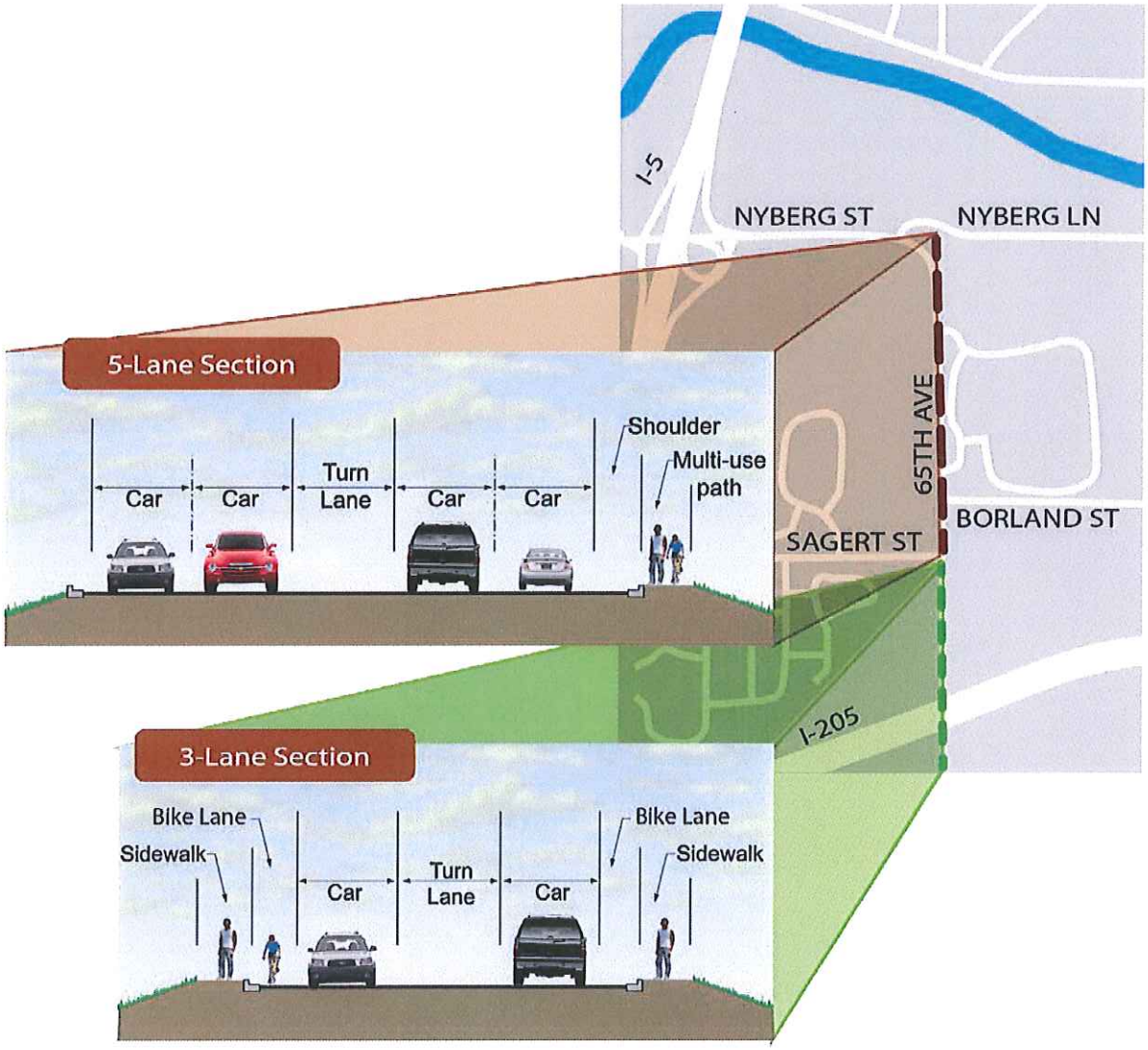
Potential Solution

This potential solution consists of the following:

- Widen 65th Avenue to 4 or 5 lanes between Nyberg Road and Sagert Street
- Widen the road to 3 lanes south of Sagert Street across I-205 to city limits
- Address the dips in the existing road
- Bicyclists and pedestrians would be accommodated via:
  - A separated bicycle and pedestrian multi-use path located near 65th Avenue, OR
  - Via continuous bicycle lanes and sidewalks on 65th Avenue
- New traffic signal at Sagert Street and 65th Avenue would operate in conjunction with the existing signal at 65th Avenue and Borland (traffic progresses through both intersections in one signal cycle) OR
- Realign intersections at Sagert Street/65th and 65th/Borland into one intersection

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Helps meet future motor vehicle demand along 65th Avenue • Little new vehicle activity attracted to the roadway (150-200 new PM peak hour vehicles) over what is expected without widening	
How would this solution affect traffic city-wide?	• Little effect realized city-wide	
Design Constraints / Considerations	• Widening north of Borland to Nyberg street to accommodate bicyclists or a multi-use path likely possible with minor impacts until the structure crossing Nyberg Creek and the wetlands area • Widening for lane/capacity likely to involve more significant right of way and utility impacts • Realignment of Borland/Sagert intersection to one location, likely the current location of Sagert/65th • Alignment dictates the extent of impacts, but could include the utility substation, or private structure	

Consideration Area	Comments	Score
Environmental / Policy Considerations	• Realigning the Sagert and Borland intersections would have right-of-way impacts • Widening the roadway would require some easements • Replacing the bridge over Nyberg Creek Greenway to accommodate bicyclists and pedestrians on the structure	



Refinement Area #2: 65th Avenue

Option 3: Extending North into River Grove AND Widening Existing Section

Goal Statement

This option provides an alternative to crossing the Tualatin River in a north-south direction east of I-5, as well as addresses forecasted future congestion on 65th Avenue. The 65th Avenue corridor serves as the major north-south route east of I-5. It serves residents and major medical facilities located east and west of 65th Avenue, notably the Legacy Meridian Park hospital. 65th Avenue is owned and maintained by Washington County. Although current traffic levels are within accepted County and City standards, future traffic is problematic due to expected residential and business growth. This facility has some sidewalk gaps and lacks bicycle lanes.

Potential Solution

- Extend 65th Avenue to the north as described in Option 1
- Widen the existing sections of 65th Avenue as described in Option 2

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Combination of extending 65th Avenue and widening the roadway is similar to the extension alone • Widening allows capacity to service the future demand on the roadway and at intersections	
How would this solution affect traffic city-wide?	• Similar effects as the 65th Avenue extension	
Design Constraints / Considerations	• See constraints/considerations from the two previous options	
Environmental / Policy Considerations	• Solution requires multi-jurisdictional coordination • Adjacent to land zoned high density residential where transportation facilities are an allowed use • Impacts to Metro Riparian class Habitats I-III • The City of Rivergrove does not have a TSP	

Refinement Area #3: North/South Connectivity

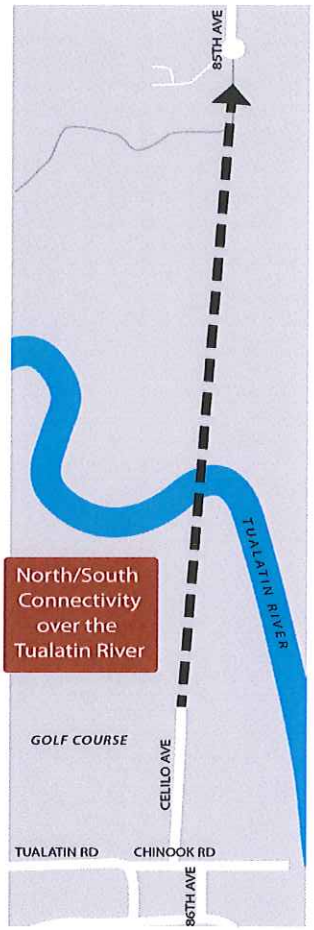
Option 1: Extension East of Country Club and West of Railroad Track

Goal Statement

This option improves connectivity in the north-south direction west of I-5. Connections in Tualatin west of I-5 are limited to Boones Ferry Road and 99W in the north-south direction, and Tualatin Road and Herman Road in the east-west direction. In the 2001 Tualatin TSP, there was a project to extend Tualatin Road to connect with Boones Ferry Road, and an extension to the north to connect with Hall Boulevard in Tigard.

Potential Solution

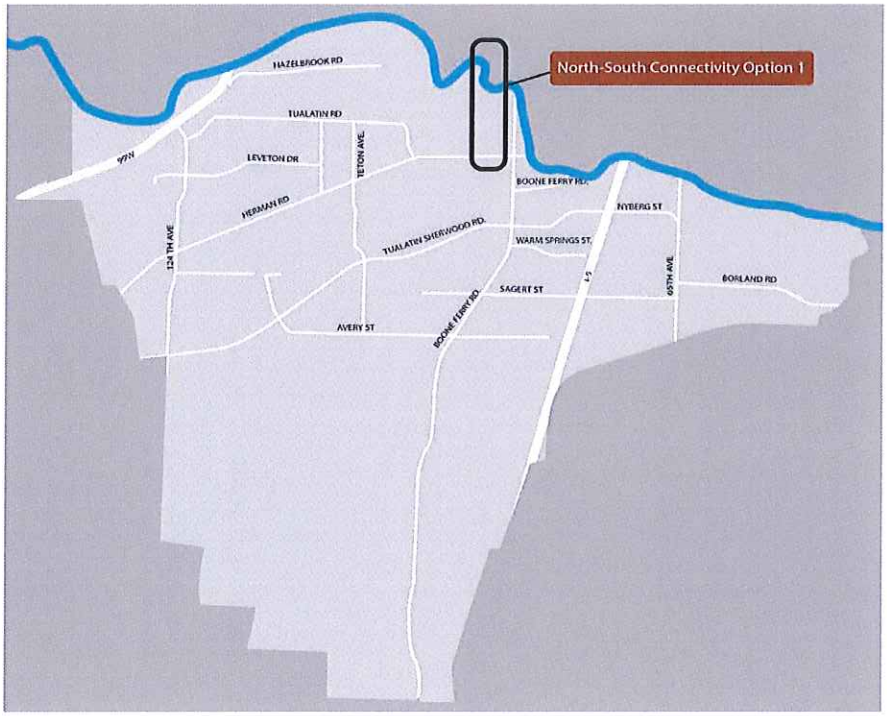
- An extension west of the railroad tracks, in the general vicinity of SW 86th Avenue east of the Country Club appears to be feasible
- Road would extend northward in the vicinity of SW Celilo Road and connect with SW 85th Avenue north of the Tualatin River



Consideration Area	Comments	Score
How would this solution affect traffic locally?	• New extension allows connectivity north/south across the Tualatin River • New roadway has the potential to carry up to 1,000 – 1,200 vehicles in each direction during PM peak hour • Will increase traffic on Boones Ferry Road in front of Tualatin Community Park – uncertain whether signal warrant would be met	

Consideration Area	Comments	Score
How would this solution affect traffic city-wide?	• Tualatin, Herman, 99W, and Boones Ferry Road (north of the Tualatin River) experience a moderate decrease in traffic • Boones Ferry Road immediately south of Celilo Road has an increase in traffic leading up to the extension	●
Design Constraints / Considerations	• Does not impact Tualatin Community Park • At least one, if not two railroad crossings would be upgraded and require crossing orders from ODOT Rail • North improvements to alignment would extend along the west edge of the tracks and tie into 85th Ave on the north side of the river	◒
Environmental / Policy Considerations	• An extension of Hall Boulevard into Tualatin is included in the Tigard TSP (long-term not fiscally constrained project list) and in the Washington County TSP	○

North-South Connectivity Option 1 Vicinity



Refinement Area #3: North/South Connectivity

Option 2: Widen Boones Ferry Road

Goal Statement

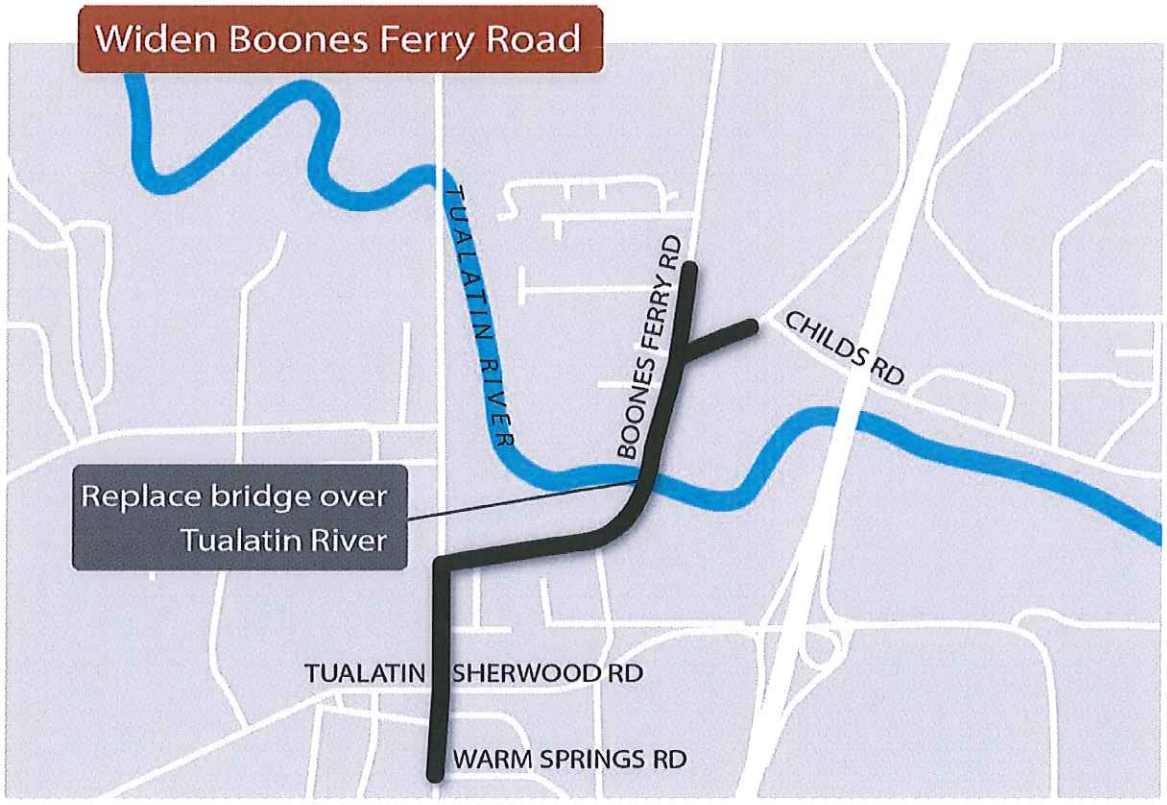
This option improves connectivity in the north-south direction west of I-5, by increasing capacity along the existing Boones Ferry Road between downtown and north of the river, towards the communities of Durham and Tigard. Connections in Tualatin west of I-5 are limited to Boones Ferry Road and 99W in the north-south direction, and Tualatin Road and Herman Road in the east-west direction. In the 2001 Tualatin TSP, there was a project to extend Tualatin Road to connect with Boones Ferry Road, and an extension to the north to connect with Hall Boulevard in Tigard. The extension of Tualatin Road project would have impacted Tualatin Community Park. After a robust community conversation the City decided not to pursue this project, and an amendment was voted in March 2011 to amend the City Charter (Chapter XI) to prevent the transfer, sale, vacation or major change in use of city parks without a public vote.

Potential Solution

- Widening Boones Ferry Road between the intersection of Lower Boones Ferry Road to the north and Warm Springs to the south
- Widening explored through:
  - Retaining a three-lane section with intersection improvements and coordinated signal timing
  - Widening to four lanes, limiting turning pockets to intersections
  - Widening to five lanes, with two travel lanes in each direction and a center-turn lane transitioning to a turn pocket at intersections
- All options assume replacement of the Tualatin River bridge

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Potential to shift traffic from Tualatin-Sherwood Road (east of Boones Ferry Road) and away from the Nyberg interchange	
How would this solution affect traffic city-wide?	• Moderate shift in traffic from Hwy 99W/Durham Road to Boones Ferry Road • Moderate shift in traffic from I-5 between the Boones Ferry Road and Nyberg interchanges to Boones Ferry Road	

Consideration Area	Comments	Score
Design Constraints / Considerations	• 4 lane and 5 lane options have significant impacts to right of way/access • All options likely require coordination and improvements to the railroad crossing north of the bridge • Widening at Boones Ferry Road and Tualatin-Sherwood Road south of the intersection is problematic • Constraints are railroad to the west and McDonald's drive thru to the east	○
Environmental / Policy Considerations	• ODOT is interested in a jurisdictional transfer from ODOT to the City if bridge is replaced • The City or ODOT could initiate the transfer process • The City would then be responsible for maintenance and upkeep on the new or modified bridge • The County would be required to approve the transfer • The existing bridge is within the Tualatin River Greenway	○



Refinement Area #3: North/South Connectivity

Other Options Considered but Dismissed

Extension west of Country Club

The team considered placing the northerly extension west of the Country Club, but dismissed this for the following reasons:

1. Traffic flows on the new arterial lessened traffic on 99w, but did not address congestion on Tualatin arterials, including Boones Ferry Road.
2. Disruption to the community in the Hazelbrook area, and especially for residents at its eastern edge including SW Shawnee Trail, and SW Cheyenne Way, was thought to be too great.
3. Geometrically, it was deemed difficult to place an arterial in this vicinity without creating an additional 90 degree turn. This in turn would create safety concerns associated with driver expectation, speed, and sight visibility.
4. This general location is aligned with a northward bend in the Tualatin River, which could make construction of a new river crossing difficult.
5. Connections with the roadway network in Tigard would be difficult. SW 92nd Avenue is the nearest roadway north of the river but connections to it are problematic, and it does not continue northward beyond SW Durham Road.

Extension north of SW 90th Avenue

The team explored extending SW 90th Avenue northward, but dismissed this concept for the following reasons:

1. It would bisect the Tualatin Country Club, a regional destination.

   The Tualatin Country Club serves patrons from throughout the south Metro area and is a major employer in Tualatin. Bisecting the club would make it difficult for it to continue its current operations as a golf course.

2. Connections with the roadway network in Tigard would be difficult. Extending SW 90th Avenue north across the Tualatin River connects with Cook Park in Tigard. It would be difficult to design an alignment that avoided impacts to this park, though it could be possible to align the river crossing so that it touched down east of the park's boundary.

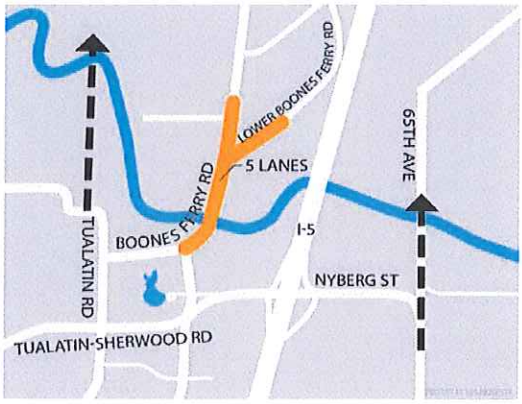
   This alignment could be reconsidered in the future if the Country Club were to redevelop to another use.

Refinement Area #3: North/South Connectivity

Option 3: Hybrid. Two-lane local road connecting to Hall Boulevard, extending 65th Avenue across the Tualatin River, and Widening Boones Ferry Road.

Goal Statement

This option improves connectivity in the north-south direction west of I-5. Connections in Tualatin west of I-5 are limited to Boones Ferry Road and 99W in the north-south direction, and Tualatin Road and Herman Road in the east-west direction. In the 2001 Tualatin TSP, there was a project to extend Tualatin Road to the north to connect with Hall Boulevard in Tigard.



Potential Solution

- An extension west of the railroad tracks, in the general vicinity of SW 86th Avenue east of the Country Club
- Road would extend northward in the vicinity of SW Celilo Road and connect with SW 85th Avenue north of the Tualatin River
- Combine extending to Hall Boulevard with widening Boones Ferry Road, and extending SW 65th Avenue north over the River

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• New extension allows connectivity north/south across the Tualatin River • New two lane local roadway could carry up to 800-900 vehicles in each direction during the 2035 PM peak hour • Will increase traffic on Boones Ferry Road in front of Tualatin Community Park – uncertain whether signal warrant would be met • Tualatin-Sherwood Rd and Boones Ferry Rd V/C deteriorates slightly • Connections would increase PM Peak hour intersection volume by 400 vehicles, primarily north/south through vehicles.	

Consideration Area	Comments	Score
How would this solution affect traffic city-wide?	• Tualatin, Herman, 99W, and Boones Ferry Road (north of the Tualatin River) experience a moderate decrease in traffic • Boones Ferry Road immediately south of Celilo Road has an increase in traffic leading up to the extension	●
Design Constraints / Considerations	• Does not physically impact Tualatin Community Park • At least one, if not two railroad crossings would need crossing improvements and would require coordination with the Railroad and ODOT Rail. • North improvements to alignment would extend along the west edge of the tracks and tie into 85th Ave on the north side of the river	◒
Environmental / Policy Considerations	• An extension of Hall Boulevard into Tualatin is included in the Tigard TSP (long-term not fiscally constrained project list) and in the Washington County TSP • Potential impacts (likely temporary) to the Tualatin River and adjacent natural resources. • Potential impacts to wetlands/sensitive areas west of the existing railroad tracks north of Tualatin Road.	○

Refinement Area #4: Herman Road and Tualatin Road

Goal Statement

The refinements along these two corridors aim to encourage some through traffic to move onto Herman Road, and off of Tualatin Road, as a way to improve safety and livability for residents north of Tualatin Road. Herman Road and Tualatin Road run parallel to each other in north Tualatin. Both provide connections to downtown at the east and to 99W at the west. Herman Road is located in Tualatin's industrial center, and Tualatin Road features some industrial and manufacturing to the south, but residential to the north.

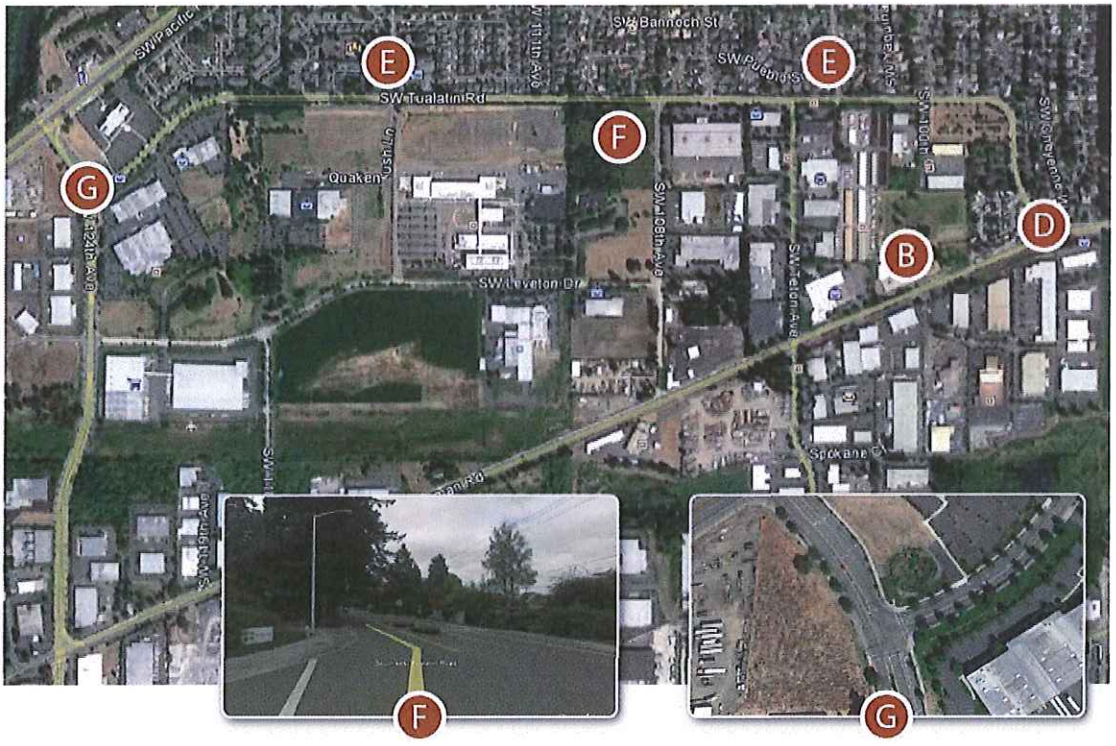
Potential Solution

The following projects have been explored as a package:

A. Reclassify Herman Road as a Minor Arterial, and retain Tualatin Road's classification as a Major Collector
B. Upgrade the remaining section of Herman Road as a 3-lane cross section between Tualatin Road and Teton Road
C. Lowering speeds on Tualatin Road
D. Eliminate the free right turn at Tualatin Road at the intersection with Herman Road, and consider a roundabout at this location
E. Add signals at the east and west ends of Tualatin Road, such as in the vicinity of 115th Avenue and Jurgens Avenue
F. Remove trees at intersection of Tualatin Road and 108th Avenue to improve sight distance at this location
G. Modify channelization of 124th Avenue and Tualatin Road to encourage traffic to proceed along 124th to the intersection with Herman Road. Consider a roundabout at this location
H. Signage that indicates that Tualatin Road is for local traffic

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Major effect is shifting of traffic from Tualatin Road to Herman Road • On the west end traffic is diverted to 124th Avenue • On the east end traffic is diverted to Herman Road • Small amount of traffic shifted to Tualatin-Sherwood Road • Some traffic diverted along Hwy 99W up to Durham Road	●
How would this solution affect traffic city-wide?	• Minimal effects to city-wide traffic • Majority of effects are local	●

Consideration Area	Comments	Score
Design Constraints / Considerations	• Traffic calming projects can be installed with minor impacts • Projects could be chicane type improvements (lane weave) or speed tables • Coordination with Tualatin Valley Fire and Rescue and Tualatin Police likely needed • Improvements to Herman Road and the intersection of Tualatin/Herman Road would require right of way but are straight forward with likely impacts to some access • Signal improvements at the intersection of Tualatin Rd/108th Ave were not met as recently as the last 5 years • New locations for signals recommended at Jurgens and 115th have not been analyzed for warrants • Removal of tree(s) at Teton, at the SW quadrant improve sight distance but have impacts to natural resources	●
Environmental / Policy Considerations	• Some adjacent land would be required north of Herman to widen to three lanes • Potential impact some landscaping and parking • Planter circles and speed table design standards would need to be added to the City's code	◒



Refinement Area #5: Tualatin-Sherwood Road

Option 1: Five-Lane Section Teton to Cipole

Goal Statement

Relieve congestion and improve safety for all modes along Tualatin-Sherwood Road within the City of Tualatin.

Tualatin-Sherwood Road serves as the major east-west arterial through Tualatin. It connects residents, employees, and visitors to the I-5 freeway system, to the community of Sherwood, and areas west. Tualatin-Sherwood Road is owned and maintained by Washington County. West of 124th Avenue average daily traffic volumes are higher than 26,000 vehicles.

Though there are continuous sidewalks and bicycle lanes throughout the corridor, including a buffered bicycle lane west of downtown, the team has heard from the community that the traffic volumes still make this corridor feel unsafe from the vantage point of a bicyclist. Crossing this arterial at key intersections can be difficult for a pedestrian.

Potential Solution

Widen Tualatin-Sherwood Road to five lanes with bicycle lanes and sidewalks between Teton to the east and Cipole to the west.

Consideration Area	Comments	Score

How would this solution affect traffic locally?	• Serves future demand that is beginning to be seen today
	• Minor to moderate increases in traffic seen on Avery Street, 124th Avenue, and new connection between 112th and Myslony
	• Widening Tualatin-Sherwood Road from 3 to 5 lanes changes V/C and LOS at the following intersections:
	  ○ Improves 124th Ave: from 1.33, LOS F to 0.92, LOS C
	  ○ Improves Avery St: from 0.99, LOS E to 0.92, LOS D
	  ○ Teton Ave deteriorates slightly: from 0.95, LOS E to 1.03, LOS E	

How would this solution affect traffic city-wide?	• Draws traffic away from Hwy 99W, Tualatin Road, Herman Road, and the Cipole Rd extension • New traffic on Tualatin-Sherwood Road forecasted to be approximately 200-350 vehicles in each direction during afternoon rush hour	

Consideration Area	Comments	Score
Design Constraints / Considerations	• Right-of-way setbacks likely allow widening with minor impacts to properties from Teton west to Cipole • Some drainage/water quality basins that would likely need to be relocated • Major design complications not anticipated	
Environmental / Policy Considerations	• Most widening impacts would be to landscaping • Project is included in Washington County TSP • Any widening west of Cipole would require coordination with Sherwood.	

Refinement Area #5: Tualatin-Sherwood Road

Option 2: Retain 3-Lane Section, Transportation System Management

Goal Statement

Relieve congestion and improve safety for all modes along Tualatin-Sherwood Road within the City of Tualatin.

Tualatin-Sherwood Road serves as the major east-west arterial through Tualatin. It connects residents, employees, and visitors to the I-5 freeway system, to the community of Sherwood, and areas west. Tualatin-Sherwood Road is owned and maintained by Washington County. West of 124th Avenue average daily traffic volumes are higher than 26,000 vehicles. The intersection of Tualatin-Sherwood Road and Boones Ferry Road is the most congested intersection in the community of Tualatin, and serves as a activity hub, with the WES Commuter Rail station and commercial businesses on all four corners. Crossing this arterial at key intersections can be difficult for a pedestrian.

Potential Solution

The team explored keeping Tualatin-Sherwood Road as a three-lane section west of Teton, improving travel conditions via coordinated signal timing and intersection-specific treatments that would reduce overall conflicts and delay.

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• There could be a modest shift of traffic to utilize Tualatin-Sherwood Road if TSM type enhancements occur and make the corridor more efficient. • Likely shift in traffic would come from Herman Road, Tualatin Road, and Avery Street.	◒
How would this solution affect traffic city-wide?	• Most impacts would be local with little city-wide effect.	●
Design Constraints / Considerations	• N/A.	N/A
Environmental / Policy Considerations	• None	●

Refinement Area #5: Tualatin-Sherwood Road

Drilling Down on the Tualatin-Sherwood Road / Boones Ferry Road Intersection

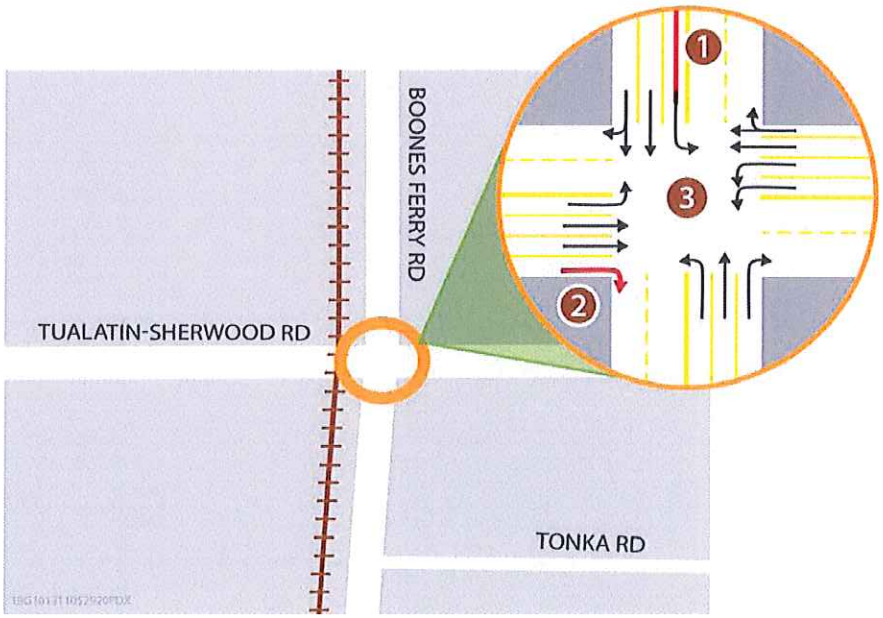
Goal Statement

The intersection of Tualatin-Sherwood Road and Boones Ferry Road is one of the busiest in the City. It is the junction of two major arterials, serves traffic moving north-south and east-west, has commercial businesses on all four corners, and is the location of WES commuter rail service. The intersection is already wide and intimidating to pedestrians. Right-of-way is limited for further widening.

Potential Solution

The team looked into several treatments that would improve conditions at this intersection while minimizing further widening.
These include:

1. Lengthening the southbound left turn pocket on Boones Ferry Road
2. Adding a right turn pocket on Tualatin-Sherwood Road
3. Changing the signal phasing to allow westbound left and through movements to proceed at the same time.



Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Overall intersection operation improvements allow for better east/west traffic flow. • Capacity improvements on side streets could allow for a signal timing shift on Tualatin-Sherwood Road. • The intersection is still likely to be over capacity by 2035 (PM peak hour).	
How would this solution affect traffic city-wide?	• Most impacts would be local with little city-wide effect.	
Design Constraints / Considerations	• Lengthening the southbound left turn pocket would have impacts to the northbound turn pocket at Nyberg Street and the Hagens parking lot. • Adding a right turn pocket on Tualatin-Sherwood Road would require improvements to the signal and railroad crossing and sidewalk/planter on Tualatin-Sherwood Road and available right-of-way width would need to be reviewed for adequacy.	
Environmental / Policy Considerations	• Drainage ditch impacts from the right turn pocket on eastbound Tualatin-Sherwood Rd. • Adding a turn pocket would move Tualatin-Sherwood Road closer to the business at that corner.	

Refinement Area #6: Boones Ferry Road

Five-lane option North of Martinazzi Avenue

Goal Statement

Boones Ferry Road serves as the main north-south arterial in Tualatin west of I-5. It connects Tualatin with Wilsonville to the south and Durham and Tigard to the north. Because of its length, Boones Ferry Road serves different needs – to the south it serves the many residents of south Tualatin, and the Byrom Elementary and Tualatin High Schools. Between Warm Springs and the Tualatin River, Boones Ferry Road is one of the major streets serving the core of downtown.

North of the river it transitions to Upper Boones Ferry Road to Durham and Tigard, and Lower Boones Ferry Road to serve the Bridgeport Village Regional Center. Our team's analysis has found the intersection of Boones Ferry Road and Lower Boones Ferry Road is one of the more congested intersections in the City. Overall the corridor has seen four reported crashes involving bicyclists, and two involving pedestrians, in the last three years.

Solution

The team explored widening Boones Ferry Road between the intersection of Lower Boones Ferry Road to the north and Martinazzi to the south, as well as keeping that section three-lanes. Assumes replacement of the Tualatin River bridge.

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Could potentially shift traffic from Tualatin-Sherwood Road (east of Boones Ferry Road) and away from the Nyberg interchange.	
How would this solution affect traffic city-wide?	• Would shift traffic from Hwy 99W/Durham Road, and from Interstate 5 between the Boones Ferry Road and Nyberg interchanges onto Boones Ferry Road	
Design Constraints / Considerations	• Would have minor (likely temporary) impacts on natural resources. • Would require little, if any right-of-way. However accesses would be affected and would need to be reconstructed. • The railroad crossing between the bridge and Lower Boones Ferry Road would require coordination with ODOT Rail and the Railroad.	
Environmental / Policy Considerations	• Widening Boones Ferry Road would not impact any structures, mainly landscaping adjacent to the roadway.	

UPPER BOONES FERRY RD
BOONES FERRY RD
I-5
REPLACE BRIDGE
BOONES FERRY RD
SENECA
MARTINAZZI
5-Lane Section
Bike Lane
Planter
Sidewalk
Turn Lane
Bike Lane
Planter
Sidewalk

Refinement Area #6: Boones Ferry Road

Options between Martinazzi Avenue and Warm Springs Avenue

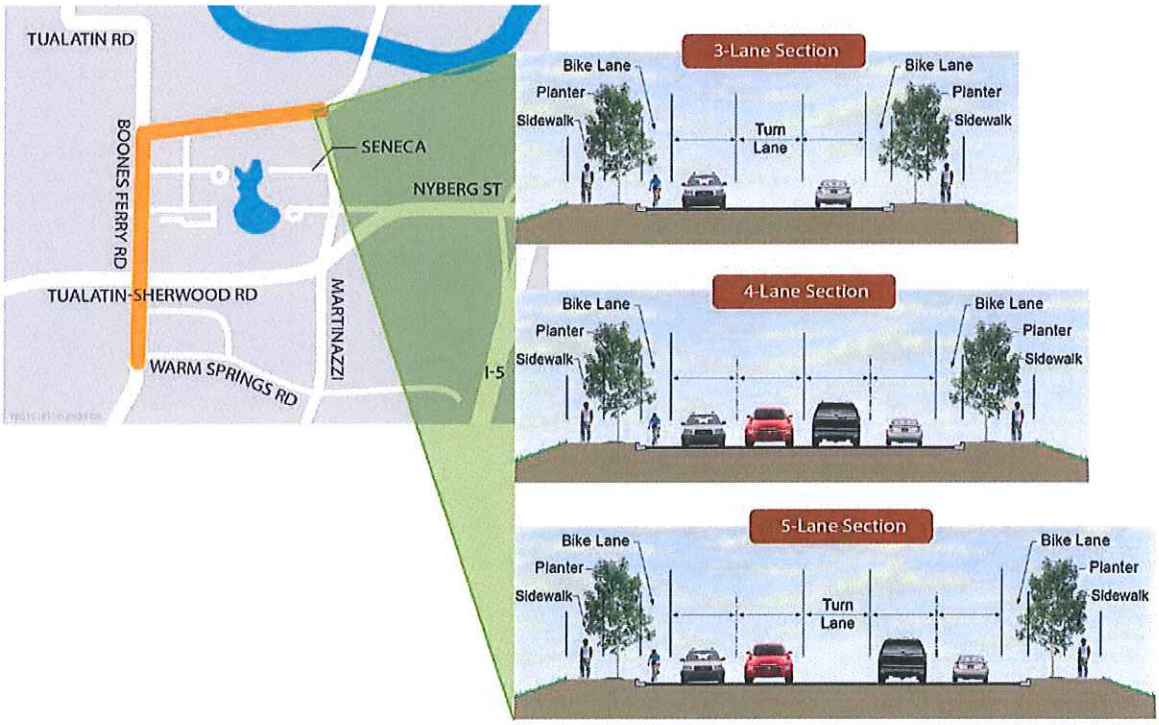
Goal Statement

Boones Ferry Road serves as the main north-south arterial in Tualatin west of I-5. It connects Tualatin with Wilsonville to the south and Durham and Tigard to the north. Because of its length, Boones Ferry Road serves different needs – to the south it serves the many residents of south Tualatin, and the Byrom Elementary and Tualatin High Schools. Between Warm Springs and the Tualatin River, Boones Ferry Road is one of the major streets serving the core of downtown. The intersection of Tualatin-Sherwood and Boones Ferry Roads is one of the most congested intersections in the city. The intersection of Tualatin-Sherwood Road and Boones Ferry road is also the site of 50 crashes in the last five years and has been flagged by Washington County as a location of safety concern. Overall the corridor has seen four reported crashes involving bicyclists, and two involving pedestrians, in the last three years.

Potential Solution

The team explored three options between Martinazzi and Warm Springs:

a) Retaining a three-lane section with intersection improvements and coordinated signal timing;
b) Widening to four lanes, limiting turning pockets to intersections; and
c) Widening to five lanes, with two travel lanes in each direction and a center-turn lane transitioning to a turn pocket at intersections.



Consideration Area	Three-Lane Section with Intersection Improvements and Signal Timing		Four-Lane Section with Turn Pockets at Intersection		Five-lane Section with Center Turn lane	
How would this solution affect traffic locally?	• Signal timing improvements alone have a minor improvement, but there would still be intersection deficiencies.	◒	• Would improve operations along the corridor to better meet demand, while shifting traffic from Interstate 5 and away from the Nyberg interchange. • Could add delay on the corridor due to turning vehicles in the travel lane	◒	• Would improve operations along the corridor to better meet demand, while shifting traffic from Interstate 5 and away from the Nyberg interchange.	●
How would this solution affect traffic city-wide?	• Effects are mostly local with signal timing improvements.	◒	• The effects are mostly local • Shifts traffic away from I-5 and the Nyberg Interchange	◒	• The biggest effect is the shift from traffic away from Interstate 5 and the Nyberg interchange.	◒
Design Constraints / Considerations	• Would not impact natural resources. • Minor impacts associated with intersection improvements.	●	• Would have minor (likely temporary) impacts on natural resources. • Would require right-of-way, and would impact accesses.	◒	• Would have minor impacts on natural resources. • Would require additional right-of-way and reconstructed accesses.	◒
Environmental / Policy Considerations	• Few impacts – maintains the existing cross-section	●	• Would impact businesses and parking between Martinazzi and Warm Springs • Would make it more difficult for turning vehicles to access driveways in this section.	◒	• Would impact businesses and parking between Martinazzi and Warm Springs.	○

Refinement Area #6: Boones Ferry Road

Options South of Warm Springs

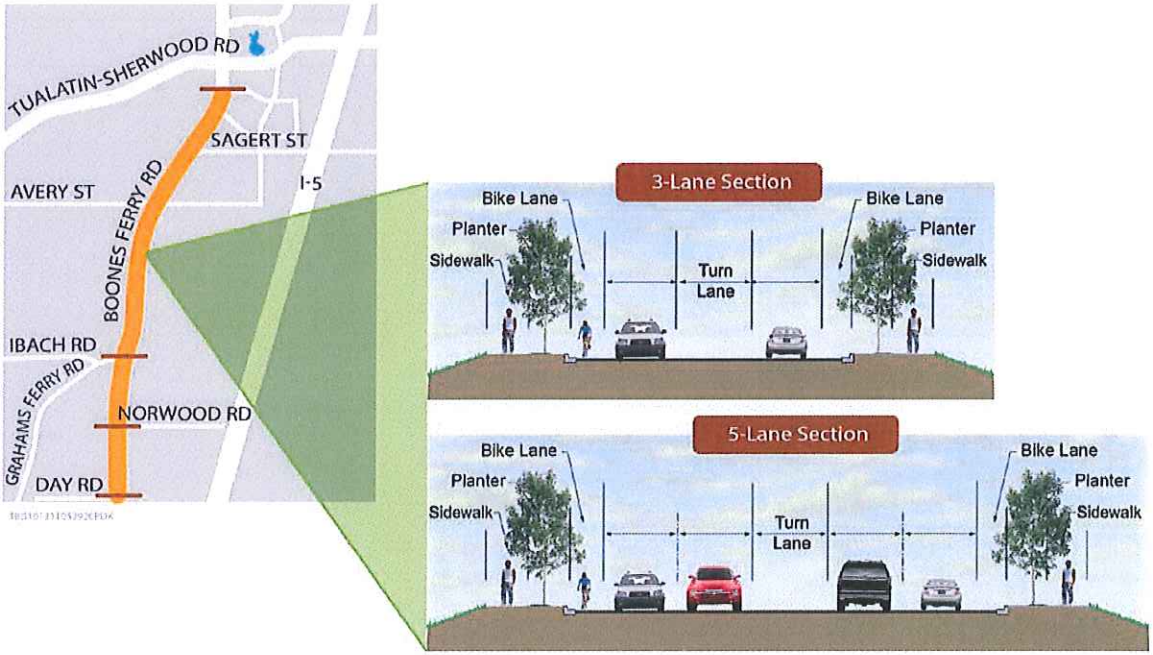
Goal Statement

Boones Ferry Road serves as the main north-south arterial in Tualatin west of I-5. It connects Tualatin with Wilsonville to the south and Durham and Tigard to the north. Because of its length, Boones Ferry Road serves different needs – to the south it serves the many residents of south Tualatin, and the Byrom Elementary and Tualatin High Schools. Overall the corridor has seen four reported crashes involving bicyclists, and two involving pedestrians, in the last three years.

Potential Solution

The team explored widening Boones Ferry Road to five lanes between Warm Springs and Ibach, and between Ibach and Norwood. Between Norwood and Day Boones Ferry Road will be expanded to three lanes (this latter project is planned for construction by Washington County).

The other option is to keep Boones Ferry Road at three lanes and improve signal timing and make targeted improvements at intersections.



Consideration Area	Three Lane Cross Section		Five Lane Cross Section	
How would this solution affect traffic locally?	• The three lane section would slightly improve intersection operations • Would not add additional vehicles on the roadway	○	• The 5 lane option would address 2035 PM peak hour capacity and operational deficiencies along Boones Ferry Road. • Widening would add approximately 200-300 vehicles in each direction along Boones Ferry Road. • Widening Boones Ferry Road from 3 to 5 lanes changes V/C and LOS at the following intersections: o Improves Sagert St: from 1.11, LOS E to 0.84, LOS C o Improves Avery St: from 1.15, LOS F to 0.96, LOS D o Improves Ibach St: from 0.98, LOS D to 0.88, LOS C	◒
How would this solution affect traffic city-wide?	• Would have little effect on city-wide traffic	○	• Moderate levels of traffic would shift from the new 124th Avenue extension, 65th Avenue, and 105th Avenue/Blake Street (a local roadway) to Boones Ferry Road.	◒
Design Constraints / Considerations	• Would have few impacts on right-of-way as the roadway is already 3 lanes wide. • Intersection improvements could require additional room to add turn lanes, etc, though few impacts are anticipated	●	• Widening to 5-lanes is relatively straight forward from Warm Springs to Norwood. • There may be some opportunities to improve vertical profiles and horizontal curves for sight distance. • Right of way varies throughout the corridor with some newer developments having full width for 5-lanes, while other areas have structures up to the ROW line.	◒
Environmental / Policy Considerations	• None	●	• Some houses are very close to Boones Ferry Road between Warm Springs and Norwood. Widening Boones Ferry Road in this area would impact setbacks and landscaping; though no houses would be impacted. • Widening the roadway could have some small impacts to Little Woodrose Nature Park, depending on the design of the widening. There are no other environmental concerns as the area is already built-up residential.	○

Refinement Area #7: Downtown Connectivity

Connections for Nyberg and Seneca

Goal Statement

Connectivity within the downtown core is limited by the Lake at the Commons, the railroad line, and high traffic volumes along the Boones Ferry Road and Tualatin-Sherwood Road corridors.

Potential Solution

Connect both sides of Seneca Street via a pedestrian and bicycle bridge over the lake. Connect to existing path around the lake, providing a connection for through east-west bicycle and pedestrian traffic.

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• No effects on local traffic	N/A
How would this solution affect traffic city-wide?	• No effects on city-wide traffic	N/A
Design Constraints / Considerations	• Impacts to lake are temporary and minor	●
Environmental / Policy Considerations	• Tualatin Commons and Tualatin Commons Park are City-owned parks • The lake is human-made and a bridge and is not expected to impact habitat	●

Refinement Area #1:
Nyberg Interchange

Goal Statement (#1 of 2)

Address safety at the Nyberg Interchange for all modes

Possible Solution

A. Paint bike lanes
B. Redesign bike lane at east end of interchange
C. Skip striping on bike lane at west end of interchange
D. Improve lane signage west of interchange
E. Move guardrail on SB off ramp
~~F. Disallow right turns on red from SB off ramp~~
G. Redesign WB-NB movement to enhance safety
H. Redesign NB off ramp to discourage traffic getting off and then right back onto I-5

Nyberg Interchange - Findings

Consideration Area	Comments	Score
Local traffic/safety	• Minor effects on motor vehicle traffic • Moderate safety benefits	●
City-wide traffic	• Minimal effect on city-wide traffic	▬
Design Constraints / Considerations	• Revisions can be incorporated with minor impacts • Provides better delineation for traffic and bicyclists • Redesigns the NB on ramp to allow double rights • Discourages the NB through traffic with minor impacts	●
Environmental / Policy Considerations	• Painted pavement would require ODOT review/approval • Recent precedent for painted bike lanes on ODOT facility • Minor changes to the interchange configuration will not impact the wetlands preservation district	▬

Discussion

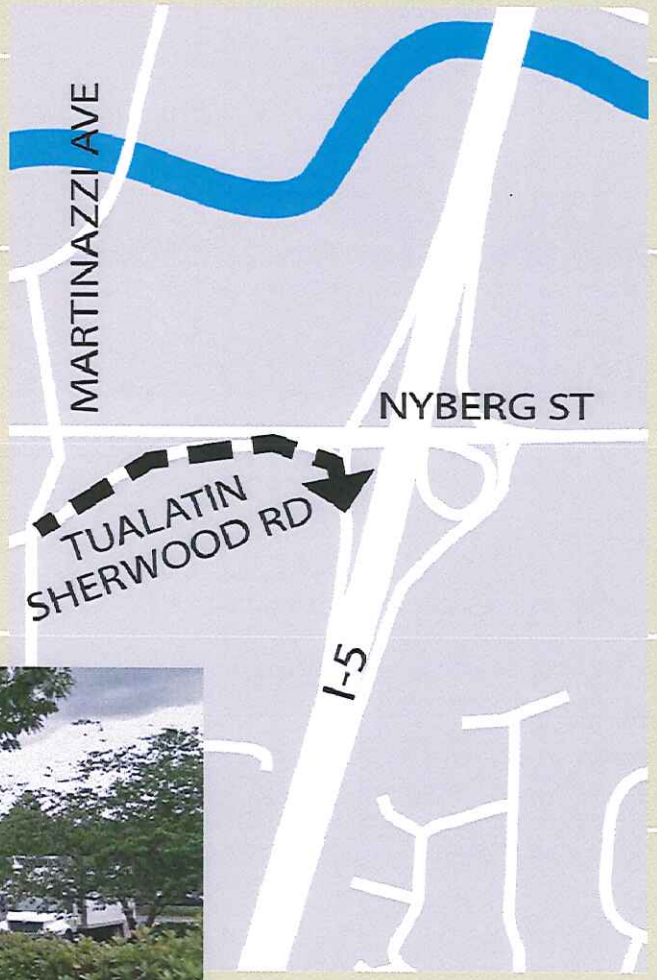
TTF recommendation:
Yes, move this option forward to the Summit (without F)

Goal Statement (#2 of 2)

Reduce congestion on Tualatin-Sherwood Road for eastbound drivers

Possible Solution

- Add a new lane on Tualatin-Sherwood Road in the eastbound direction from Martinazzi to I-5



Nyberg Interchange - Findings

Consideration Area	Comments	Score
Local traffic/safety	• Minor increase in EB traffic accessing freeway • Operations stay relatively consistent • Could detract from bicycle and pedestrian safety	◒
City-wide traffic	• This potential solution has minimal effect on city-wide traffic	◒
Design Constraints / Considerations	• Width of Tualatin-Sherwood Road/Nyberg Street from Martinazzi to the east is tight • No impacts forecasted to the Fred Meyer truck access road • Requires removal of mature street trees • Possible solution would be to shift lanes and widen to median • Past Fred Meyer intersection, widening would likely require walls, structure widening and impacts to sensitive areas	◒
Environmental / Policy Considerations	• The area is already built • Only impacts are to the landscaping strip between the roadway and Fred Meyer	●

Discussion

TTF recommendation:
No, do not forward on to summit as a long-term solution. Revisit upon next TSP update.

Refinement Area #2:

65th Avenue

Goal Statements

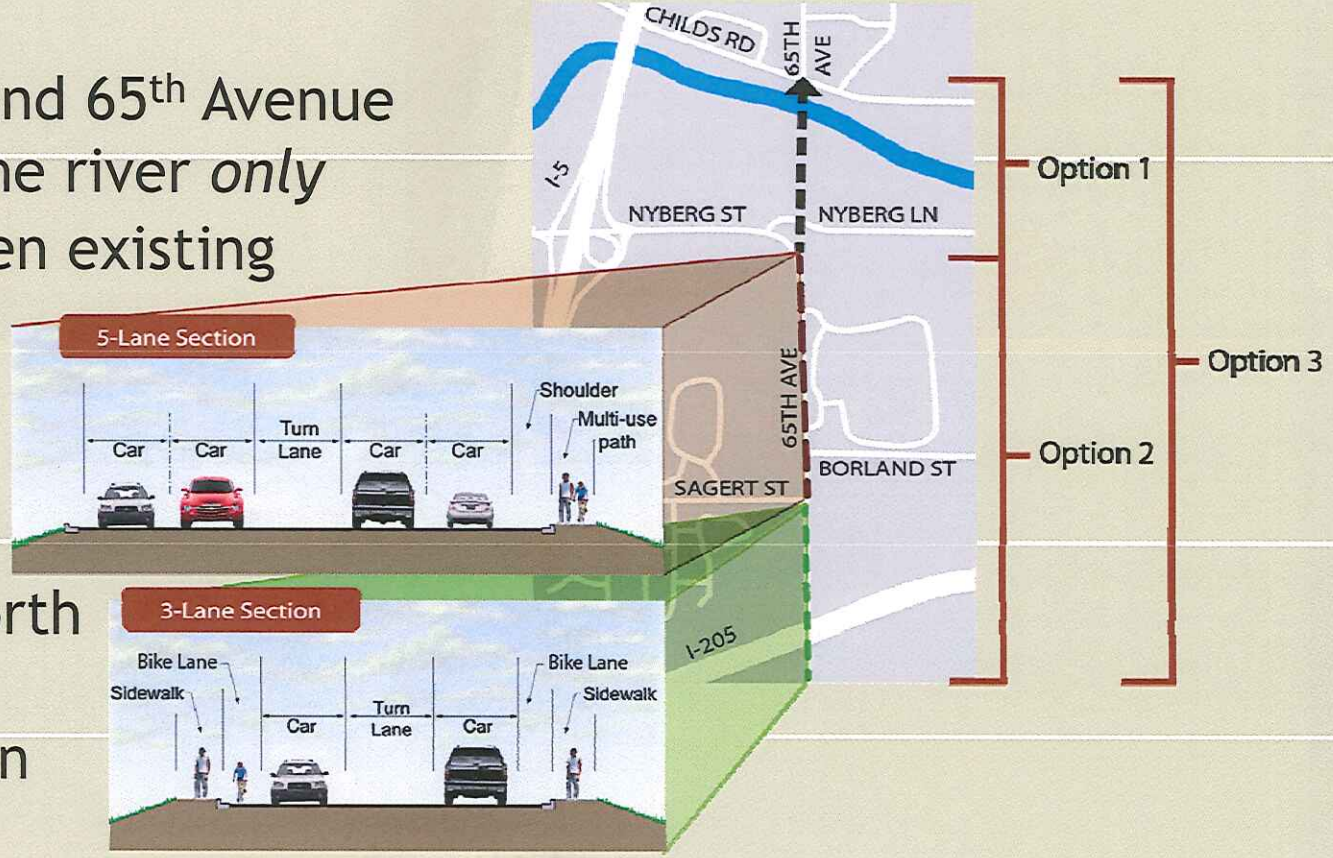
1. Provide north-south connectivity east of I-5
2. Address forecasted future congestion along 65th Avenue

Possible Solution

Option 1: Extend 65th Avenue north across the river *only*

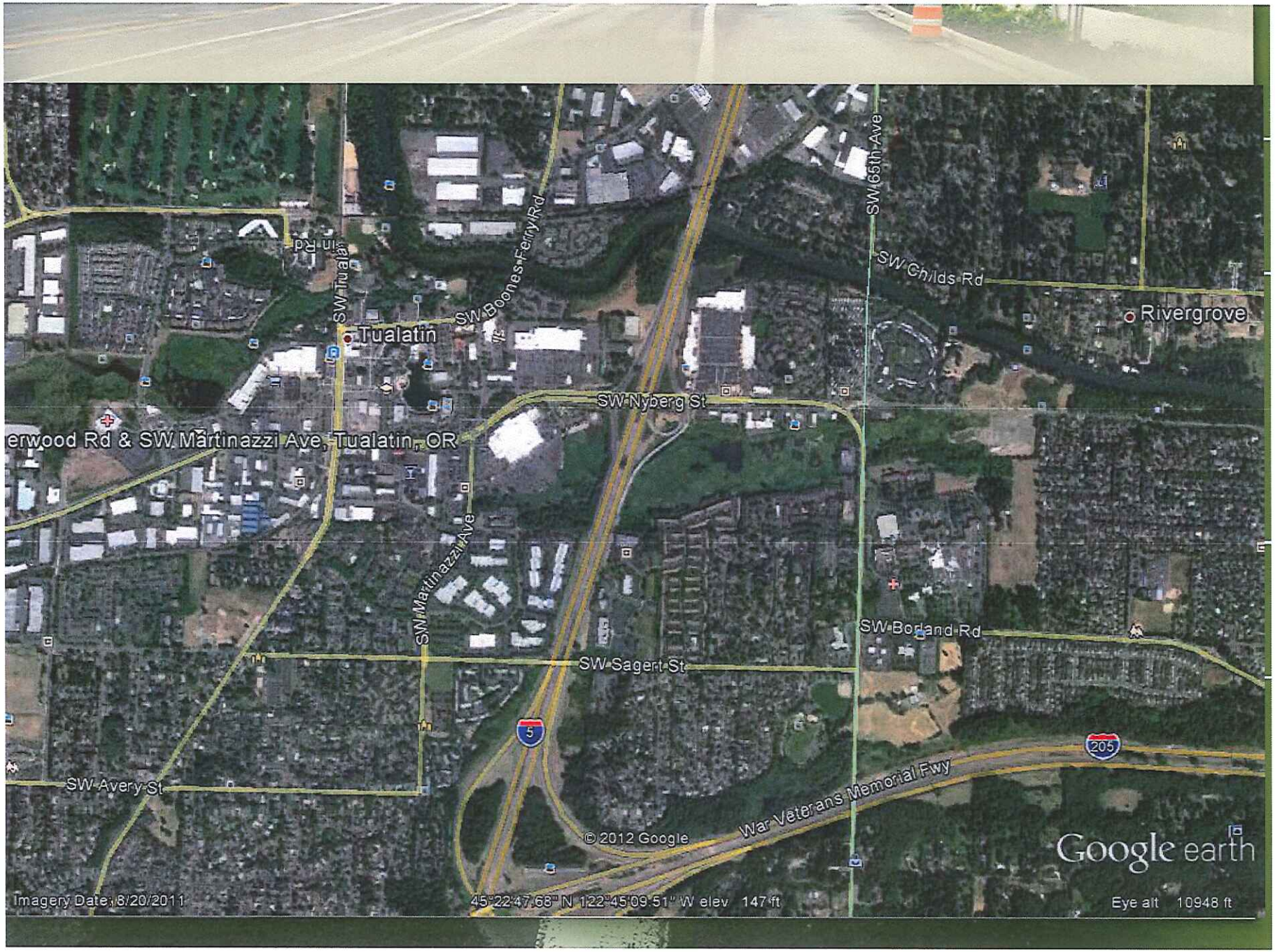
Option 2: Widen existing section of 65th Avenue *only*

Option 3: Extend 65th Avenue north <u>and</u> widen existing section



65th Avenue - Findings

Consideration Area	Comments	Score
Local traffic/safety	• A Four-Lane Extension allows for ➢ Connectivity to north ➢ Potential for 1,000-1,200 vehicles during PM peak hour • Widening allows ➢ Capacity to service the future demand on the roadway and at intersections	
City-wide traffic	• Extension would ➢ Reduce traffic on I-5 and Boones Ferry Road ➢ Create slight increase in traffic on Tualatin Sherwood Road eastbound over the Nyberg interchange	


SW 65th Ave
SW Childs Rd
Rivergrove
SW Boones Ferry Rd
SW Tualatin
Tualatin
SW Nyberg St
erwood Rd & SW Martinazzi Ave, Tualatin, OR
SW Martinazzi Ave
SW Borland Rd
SW Sagert St
5
205
SW Avery St
War Veterans Memorial Fwy
© 2012 Google
Google earth
Imagery Date: 8/20/2011
45°22'47.68" N 122°45'09.51" W elev 147 ft
Eye alt 10948 ft

65th Avenue - Findings

Consideration Area	Comments	Score
Design Constraints / Considerations	• Extension considerations: ➢ 40' ± right of way available from river to Childs ➢ Alignment could be designed to avoid lift station east/south of Nyberg Lane • Widening considerations: ➢ Widening Borland to Nyberg possible for bikes and peds with minor impacts until structure crossing Nyberg Creek and wetlands area ➢ Widening for lane/capacity involves more significant right of way and utility impacts ➢ Signal at Sagert less impactful than combining Sagert and Borland into one intersection	●
Environmental / Policy Considerations	• Multi-jurisdictional coordination needed • Impacts to Metro riparian class I-III habitat • Easements or right of way required to extend and/or widen 65th Avenue	●

Discussion

TTF recommendation: **Forward two options** (Variation of Option 1 with multi-use path along 65th Avenue, Option 3) on to summit

Refinement Area #3:
North to South Connectivity

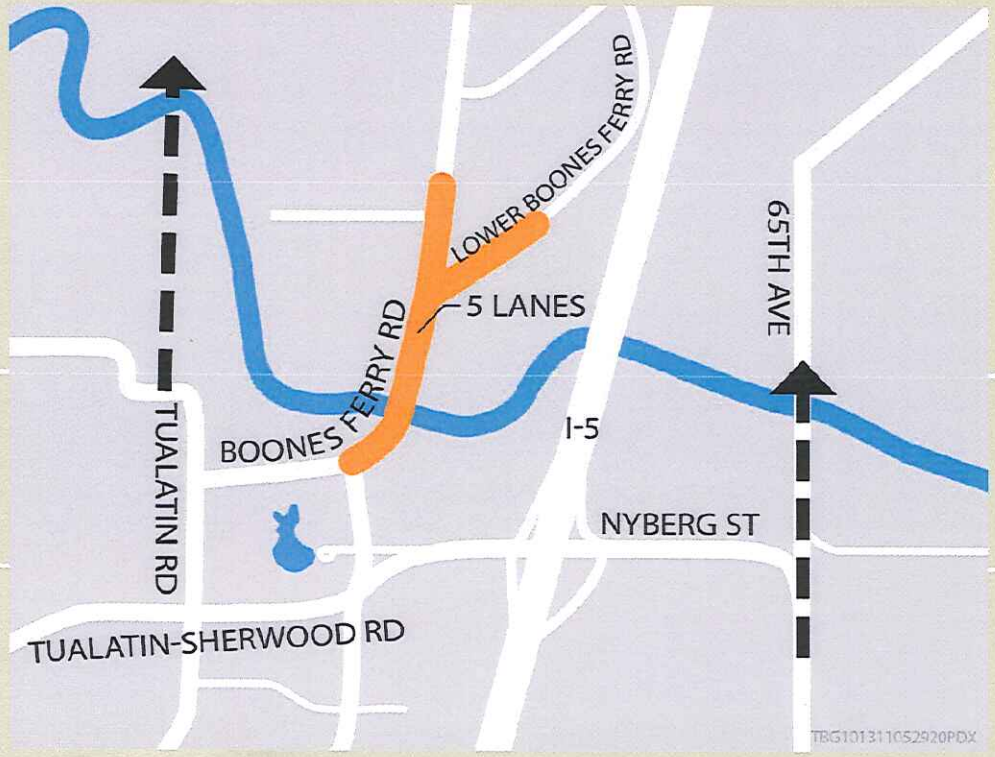
Goal Statement

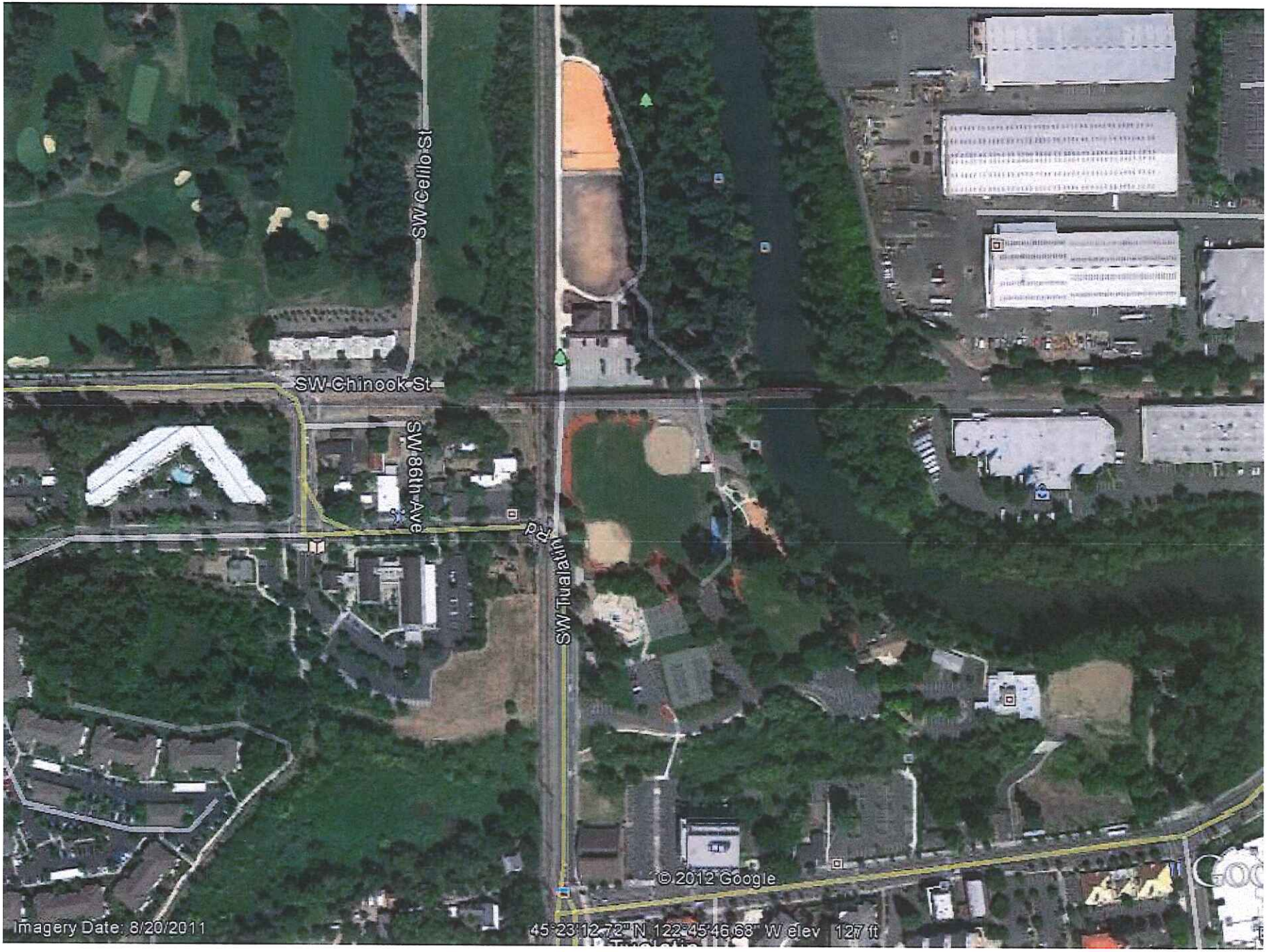
Improve north-south connectivity west of I-5

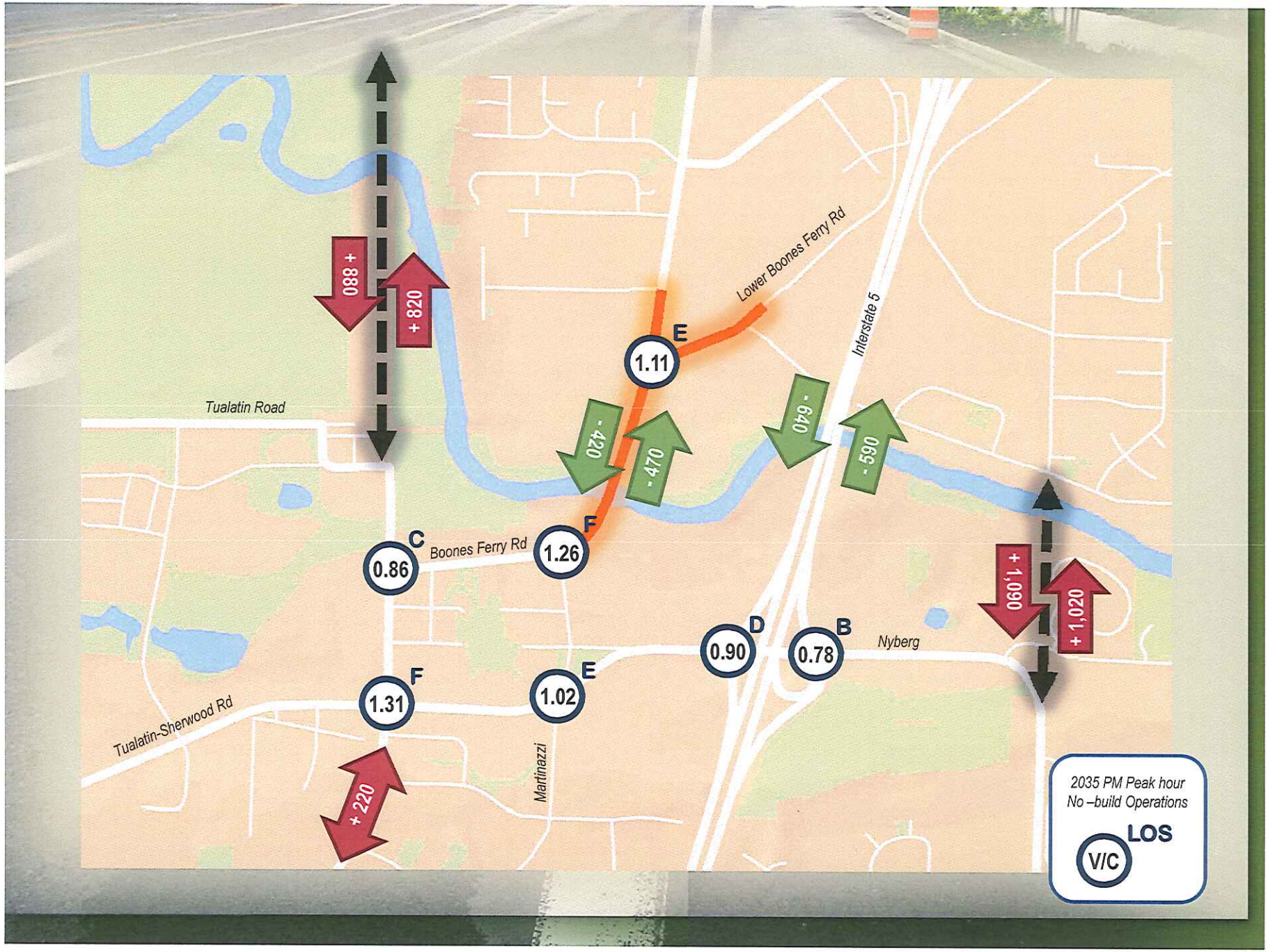
From our July Meeting…

Look at a hybrid option that:

- Constructs a two-lane road connecting from Tualatin Road to Hall Boulevard north of the river
- Widens Boones Ferry Road to five lanes between Martinazzi and Lower Boones Ferry
- Assumes extension of 65th Avenue




SW Cellio St
SW Chinook St
SW 86th Ave
SW Tualatin Rd
© 2012 Google
Imagery Date: 8/20/2011
45°23'12.72" N 122°45'46.68" W elev 127 ft


Tualatin Road
Lower Boones Ferry Rd
Interstate 5
Boones Ferry Rd
Tualatin-Sherwood Rd
Martinazzi
Nyberg
+ 880
+ 820
- 420
- 470
- 640
- 590
+ 1,090
+ 1,020
+ 220
E
1.11
C
0.86
F
1.26
F
1.31
E
1.02
D
0.90
B
0.78
2035 PM Peak hour
No –build Operations
LOS
V/C

What Does This Do For Tualatin?

Area	Benefits	Impacts
Traffic	• Decreases traffic on 99W, Boones Ferry Road (east of Tualatin Road), I-5 • Decreases traffic on Herman and Tualatin Roads	• Increases traffic into downtown and onto Tualatin-Sherwood Road
Design	• Removes one 90 degree turn on Tualatin Road	• Requires significant right of way • Additional at-grade crossing of RR tracks might be difficult
Environmental / Policy	• Extension included in Tigard and Washington County TSPs • Does NOT impact Sweek House • If local connection is made at Tualatin Community Park, helps circulation into park	• Additional environmental analysis would be needed related to river crossing, crossing of trail(s), and noise and air quality assessments

Discussion

City Council discussed North-South connectivity and voted No, do not move north-south connectivity on to Summit

Revisiting Refinement Area #4:

Herman Road and Tualatin Road

Goal Statement

Encourage through traffic to move onto Herman Road and off of Tualatin Road

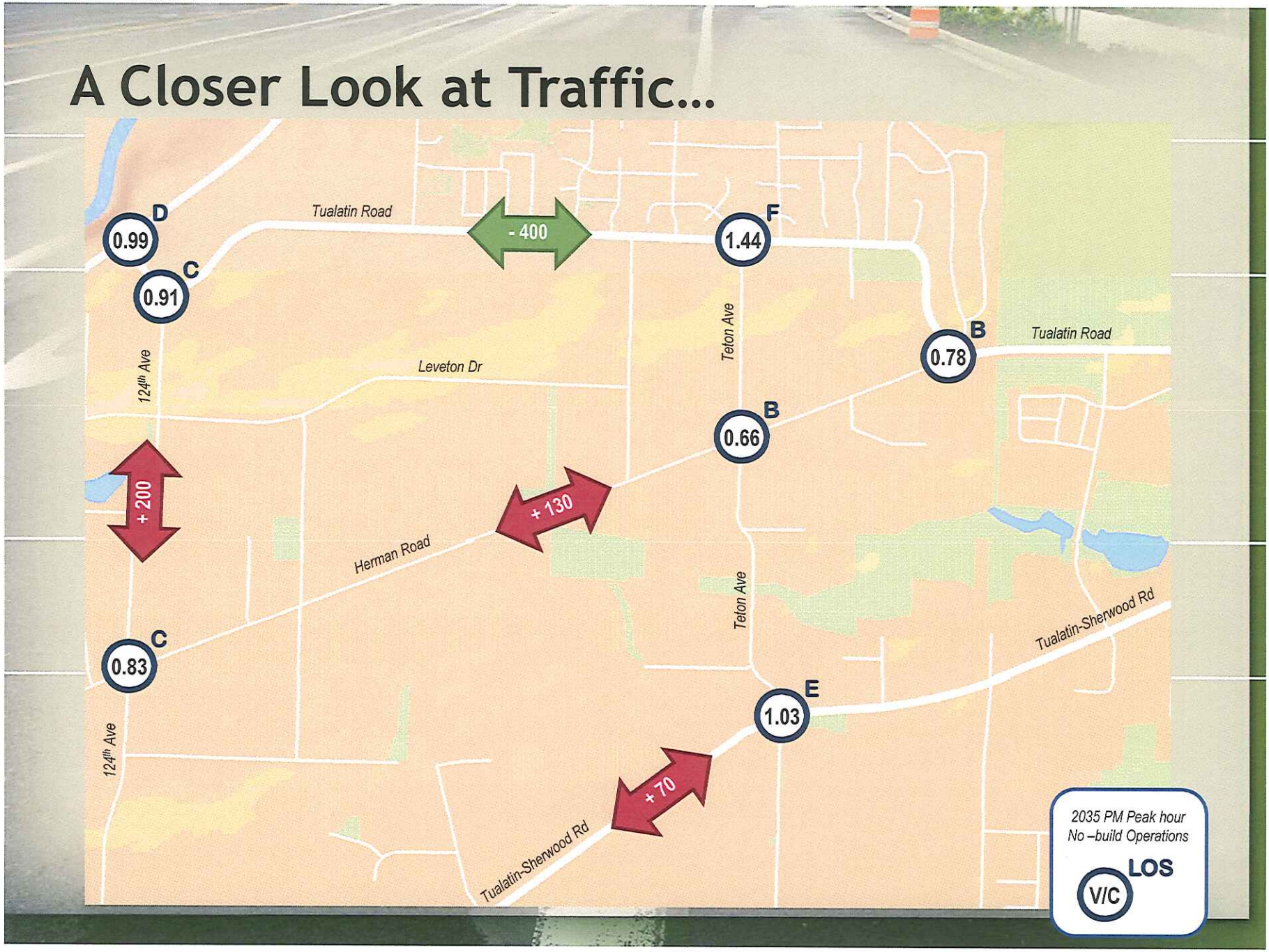
Refined Solution

A. Reclassify Herman to a minor arterial
B. Upgrade section of Herman to 2 lanes
C. Lower speeds on Tualatin
D. Eliminate free right turn at Tualatin/Herman intersection, consider roundabout
E. Add signals at the east and west ends of Tualatin
F. Remove trees at Tualatin and 108th
G. Modify channelization of 124th and Tualatin, consider roundabout
H. Signage to indicate that Tualatin is for local traffic

Responses to Questions

No.	Question	Response
1.	Can you look at keeping Herman at 2-lanes between Teton and Tualatin?	Yes. There are limited driveways that would warrant a center-turn lane. Modified recommendation to upgrade Herman to 2-lanes with bicycle lanes and sidewalks
2.	Can you look at retaining current speeds on Tualatin?	Yes, but fewer cars move off of Tualatin as a result. Speeds would decrease as a result of signals
3.	What would the roundabout look like at the east end?	There appears to be sufficient room for a single-lane roundabout at this location, allowing Cheyenne to access it, would shift intersection slightly to north to avoid railroad tracks
4.	What happens to the signal on Tualatin and Teton?	This signal stays above the mobility threshold but we can look at minor modifications to the intersection and the timing to improve flow
5.	How many vehicles move from Tualatin to Herman?	See next slide – approx. 400 with suite of projects
6.	What about the 45-degree angles east of where you're looking?	See earlier discussion. There are modifications that could be done, or other ways to encourage traffic to turn on Teton or 124th to move south

A Closer Look at Traffic...



Herman Road and Tualatin Road - Findings

Consideration Area	Comments	Score
Local traffic/safety	• Major effect is shifting of traffic from Tualatin Road to Herman Road • On the west end traffic is diverted to 124th • On the east end traffic is diverted to Herman • Small amount of traffic shifted to Tualatin-Sherwood Road • Some traffic diverted along Hwy 99W up to Durham Road	
City-wide traffic	• Minimal effects to city-wide traffic • Majority of effects are local	

Tualatin Road and Herman Road - Findings

Consideration Area	Comments	Score
Design Constraints / Considerations	• Traffic calming can be installed with minor impacts • Projects could be chicane type improvements (lane weave) or speed tables • Coordination with Tualatin Valley Fire and Rescue and Tualatin Police likely needed • Improvements to Herman and the intersection of Tualatin/ Herman require right of way • New locations for signals recommended at Jurgens and 115th have not been analyzed for warrants • Removal of tree(s) at Teton, at the SW quadrant improve sight distance but have impacts to natural resources	
Environmental / Policy Considerations	• Some adjacent land would be required north of Herman to widen to three lanes • Potential impact some landscaping and parking • Planter circles and speed table design standards would need to be added to the City's code	

Discussion

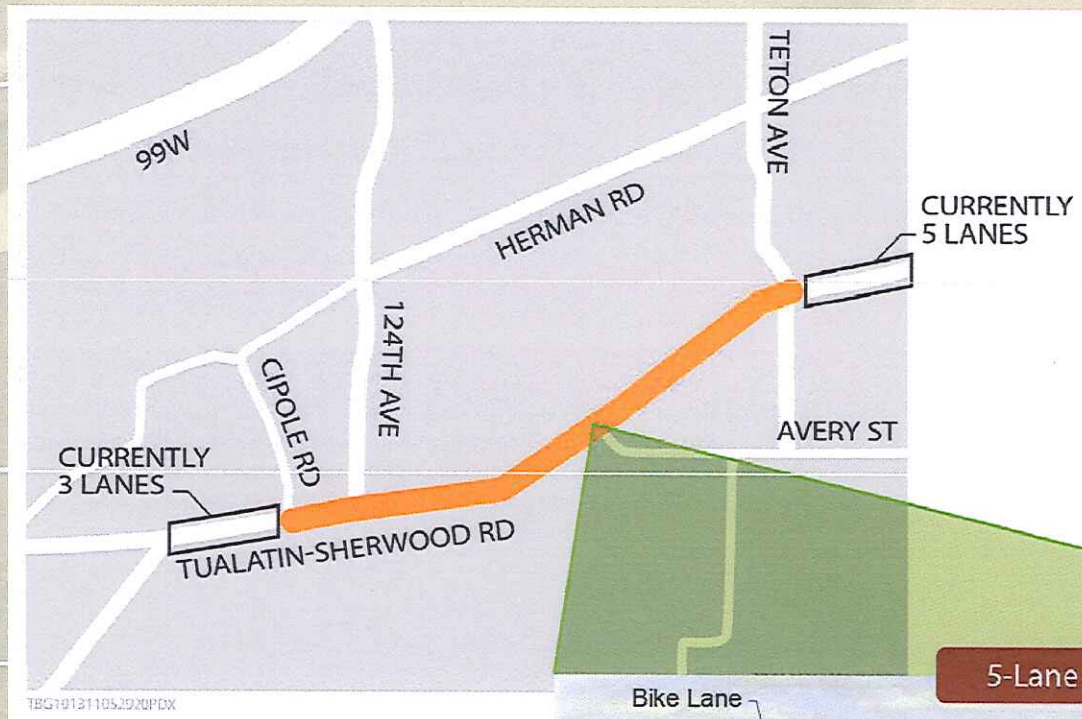
TTF recommendation: Yes, move this option forward to Summit

Refinement Area #5:
Tualatin-Sherwood Road

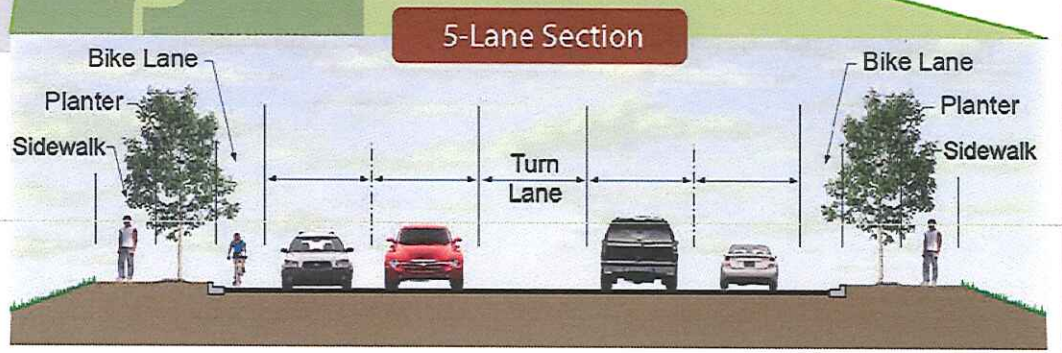
Goal Statement

Relieve congestion and improve safety for all modes

Option #1: Complete Five Lane Section



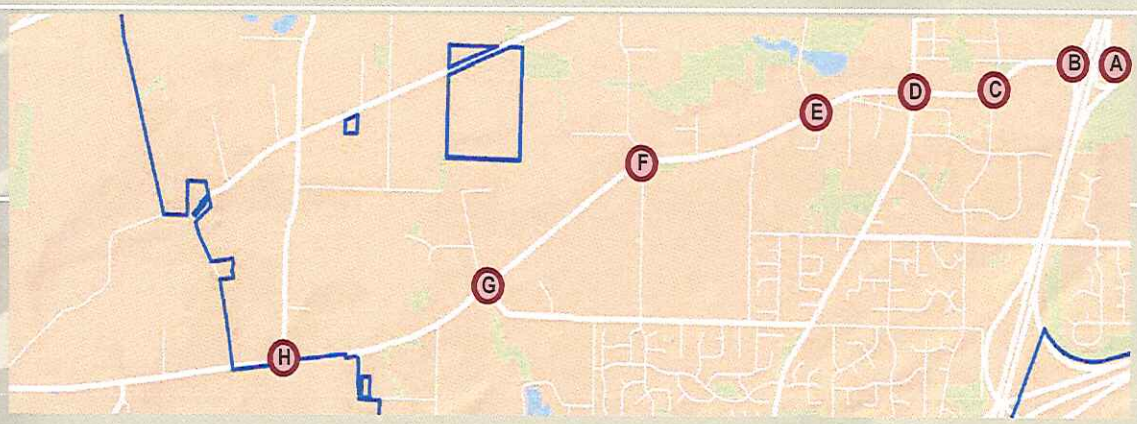
- Widens Tualatin-Sherwood Road to five lanes between Teton and Cipole
- Road is currently five lanes east of Teton



Option #2: Retain Three Lane Section

- One travel lane in each direction
- Center turn lane
- Retains shoulder bicycle lanes and sidewalks
- Coordinated signal timing
- Spot improvements at key intersections

What Do These Options Do For Traffic?



PM Peak Hour Operations

Tualatin-Sherwood Road &	2011 Existing	Retain Three Lane Cross Section	Widen to Full Five-Lane Cross Section
A I-5 Northbound	0.68 (B)	0.78 (B)	0.78 (B)
B I-5 Southbound	0.79 (D)	0.90 (D)	0.90 (D)
C Martinazzi Ave	0.94 (D)	1.02 (E)	1.02 (E)
D Boones Ferry Road	0.93 (D)	1.31 (F)	1.31 (F)
E 90th Avenue	0.60 (C)	0.78 (C)	0.78 (C)
F Teton Avenue	0.79 (D)	0.95 (E)	0.95 (E)
G Avery St	0.71 (B)	0.99 (E)	0.92 (D)
H 124th Avenue	0.60 (C)	1.33 (F)	0.92 (C)

V/C ratio (Level-of-Service)

Other Connectivity Options

Option	West of Boones Ferry Rd	East of Boones Ferry Road
65th Extension	+50 vehicles ⇧	+180 vehicles ⇧
North/South Connection	+170 vehicles ⇧	-50 vehicles ⇩
Hybrid (both 65th and North/South)	+130 vehicles ⇧	+80 vehicles ⇧
TSM Option	Negligible	Negligible

What are the Other Benefits to Tualatin?

Area	Five-Lane	Three-Lane
Design Constraints	• Setbacks appear to allow widening with minor impacts to properties • Some drainage/water quality basins may require relocation	• None – this largely retains existing cross section. Widening at key intersections could be accommodated with no major design concerns
Environmental / Policy	• Project is included in Washington County TSP	• This option is not consistent with the Washington County TSP

Discussion

TTF recommendation:

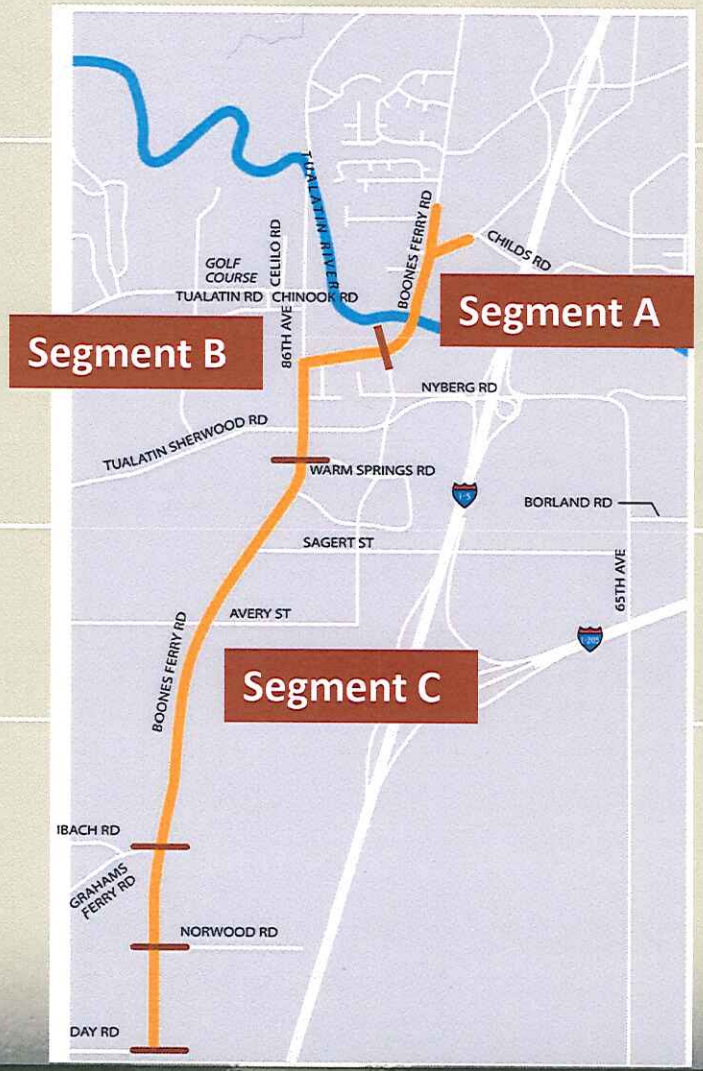
Move five-lane option forward to summit

Refinement Area #6:
Boones Ferry Road

Goal Statement

Reduce congestion and improve safety on Boones Ferry Road throughout Tualatin

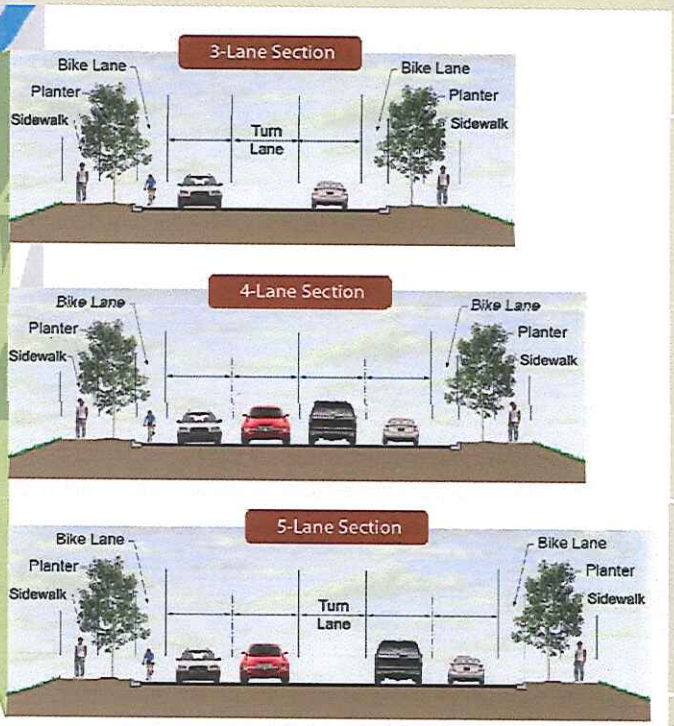
Three Segments of Boones Ferry Road



Segment A: North of Martinazzi

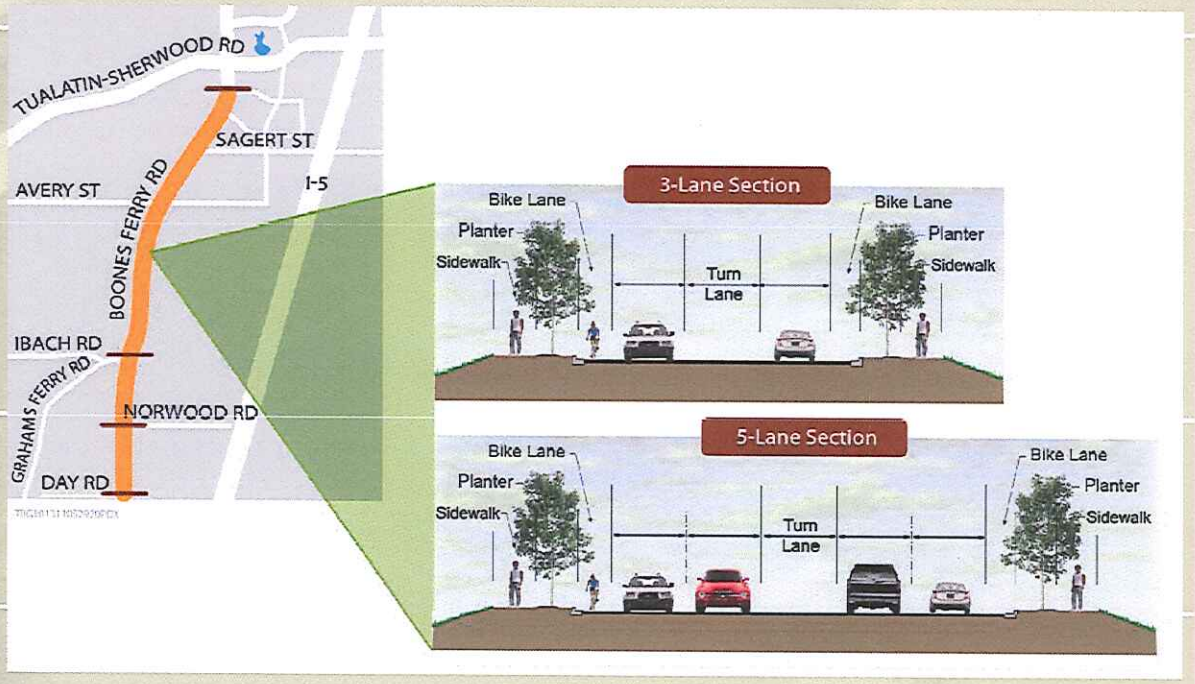
- Widen to five lanes from intersection with Lower Boones Ferry to bridge
- Replace current bridge, widen to four lanes with bike lanes and sidewalks
- Transition to three lanes south of bridge with transition at Martinazzi (left turn lane)

Segment B: Through Downtown



- Option 1: Retain 3-Lane Section
- Option 2: Widen to 4-lanes – 2 lanes in each direction (center turn lane goes away)
- Option 3: Widen to 5-lanes – 2 lanes in each direction with center turn lane

Segment C: South of Warm Springs



- Option 1: 3-lane section with widening at key intersections, coordinated signal timing
- Option 2: 5-lane section (2 travel lanes in each direction with center turn lane)

Boones Ferry Road Traffic: All Options

PM Peak Hour Operations

Boones Ferry Road &	2011 Existing	2035 No-Build	Widen South of Tualatin-Sherwood Rd to Norw ood	Widen North of Martinazzi to Lower Boones
A Lower Boones Ferry	0.76 (C)	1.11 (E)	1.11 (E)	0.89 (C)
B Martinazzi Ave	0.89 (D)	1.26 (F)	1.26 (F)	1.33 (F)
C Tualatin Road	0.62 (B)	0.86 (C)	0.86 (C)	0.92 (C)
D Tualatin-Sherwood Rd	0.93 (D)	1.31 (F)	1.30 (F)	1.31 (F)
E Sagert St	0.75 (C)	1.11 (E)	0.84 (C)	1.11 (E)
F Avery St	0.87 (C)	1.15 (F)	0.96 (D)	1.15 (F)
G Ibach St	0.70 (B)	0.98 (D)	0.88 (C)	0.98 (D)

V/C ratio (Level-of-Service)

Other Connectivity Options

Option	South of Tualatin-Sherwood Rd	TSR to Martinazzi Rd	North of Martinazzi
65th Extension	- 70 vehicles ↓	-180 vehicles ↓	-440 vehicles ↓
North/South Connection	+ 520 vehicles ↑	-270 vehicles ↓	-570 vehicles ↓
Hybrid (both 65th and North/South)	+220 vehicles ↑	-500 vehicles ↓	-890 vehicles ↓

What are the Benefits for Tualatin?

Area		Segment A	Segment B	Segment C
Design	3-lane	• No impacts	• No impacts	• No impacts
	4-lane	• N/A	• Would require ROW • Access impacts	• N/A
	5-lane	• Minor impacts • Little ROW needed • Railroad coordination needed	• Would require additional ROW • Would require reconstructed accesses	• Could improve curves and grade for sight distance improvements • Some structures close to ROW line
Environmental/ Policy	3-lane	• None	• None	• None
	4-lane	• N/A	• Business impacts • Difficult turning movements	• N/A
	5-lane	• Some landscaping impacts adjacent to road	• Impacts businesses in this segment	• Impacts setbacks and landscaping (no houses) • Near Woodrose Nature Park

Discussion

TTF recommendation: Move forward with

Segment A: Five lanes

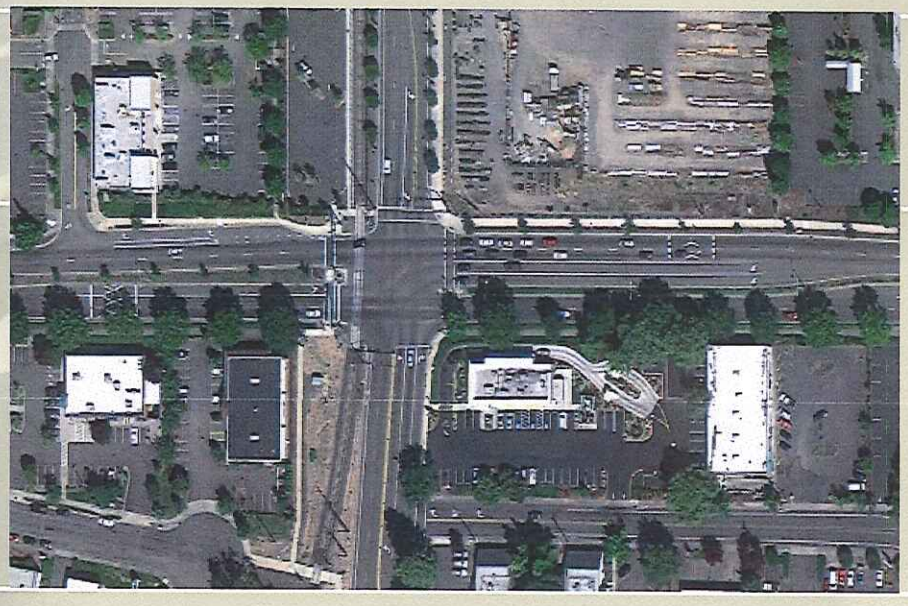
Segment B: Three lanes

Segment C: Three lanes

To the summit

Refinement Area #7:
Downtown Connectivity

Tualatin-Sherwood Road/Boones Ferry Road Intersection



Notes:

- Signal timing is already optimized at this intersection, but other phasing/timing/ coordination alternatives may be tested
- Changing the signal timing to 120 seconds could improve the V/C ratio from 1.30 (F) to 1.22 (F)
- Intersection is well over capacity, even a test of 140 second signal cycle with right turns on every approach yields a V/C of 1.06 (E)

PM Peak Hour Operations

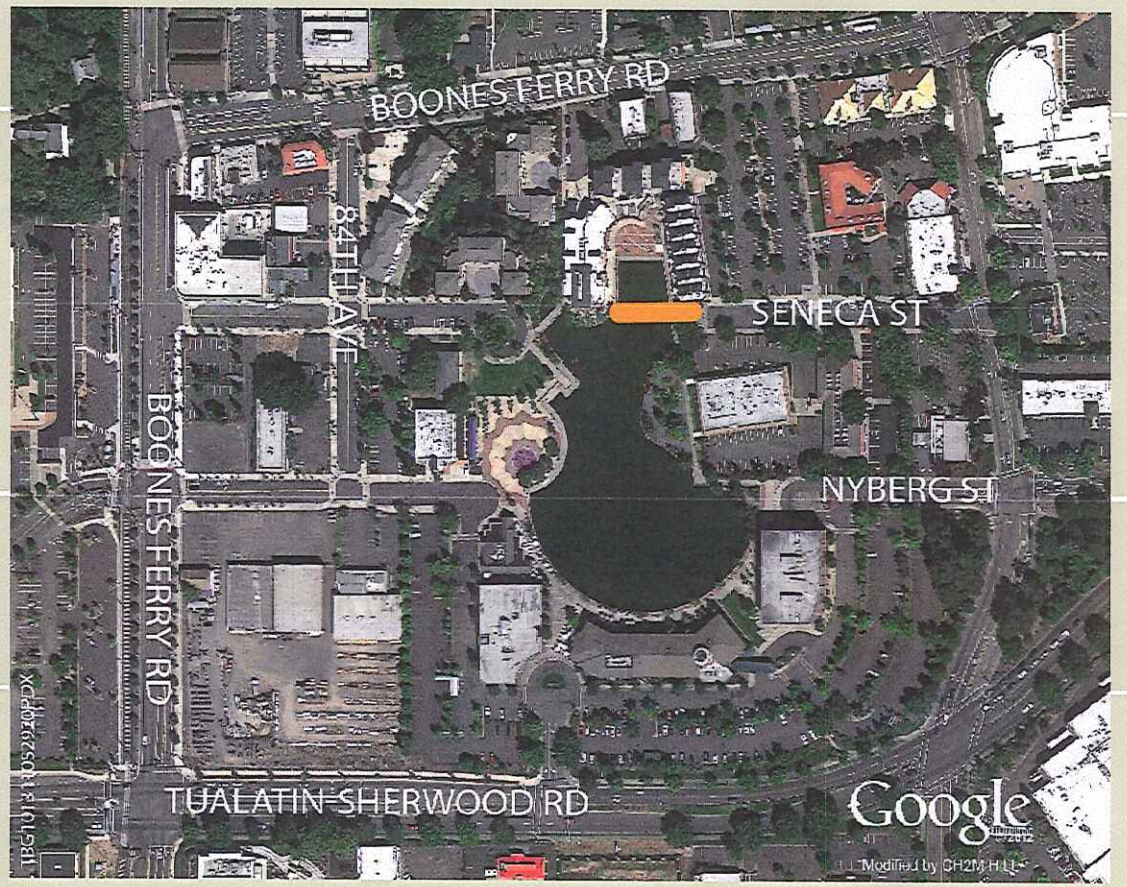
	Tualatin-Sherwood Road/Boones Ferry Road
Existing Conditions	0.93 (D)
2035 No-Build	1.31 (F)
Added Eastbound Right Turn Pocket	1.18 (E)
Added Westbound Right Turn Pocket	1.31 (F)
Added Southbound Right Turn Pocket	1.18 (E)

V/C ratio (Level-of-Service)

Other Connectivity Options

Option	West of Boones Ferry Rd	East of Boones Ferry Road	North of TSR	South of TSR
65th Extension	+ 50 vehicles ⇧	+180 vehicles ⇧	-60 vehicles ⇩	- 70 vehicles ⇩
North/South Connection	+ 170 vehicles ⇧	-50 vehicles ⇧	+420 vehicles ⇧	+ 520 vehicles ⇧
Hybrid (both 65th and North/South)	+130 vehicles ⇧	+80 vehicles ⇧	+280 vehicles ⇧	+220 vehicles ⇧
TSM Option	Negligible	Negligible	Negligible	Negligible

Connectivity in the Downtown Core



- Auto bridge over the lake was screened out
- Auto tunnel under the lake was screened out
- At least we can improve connectivity for bicyclists and pedestrians

Discussion

TTF recommendation: No, with changes to Lake, Yes, with recommendations to Boones Ferry and Tualatin Sherwood Road intersection

TualatinTSP_TBG061511054135PDX 422992.PS.C1.HWn6/15/2011 kk

City of Tualatin

Putting it all Together

Tualatin TSP

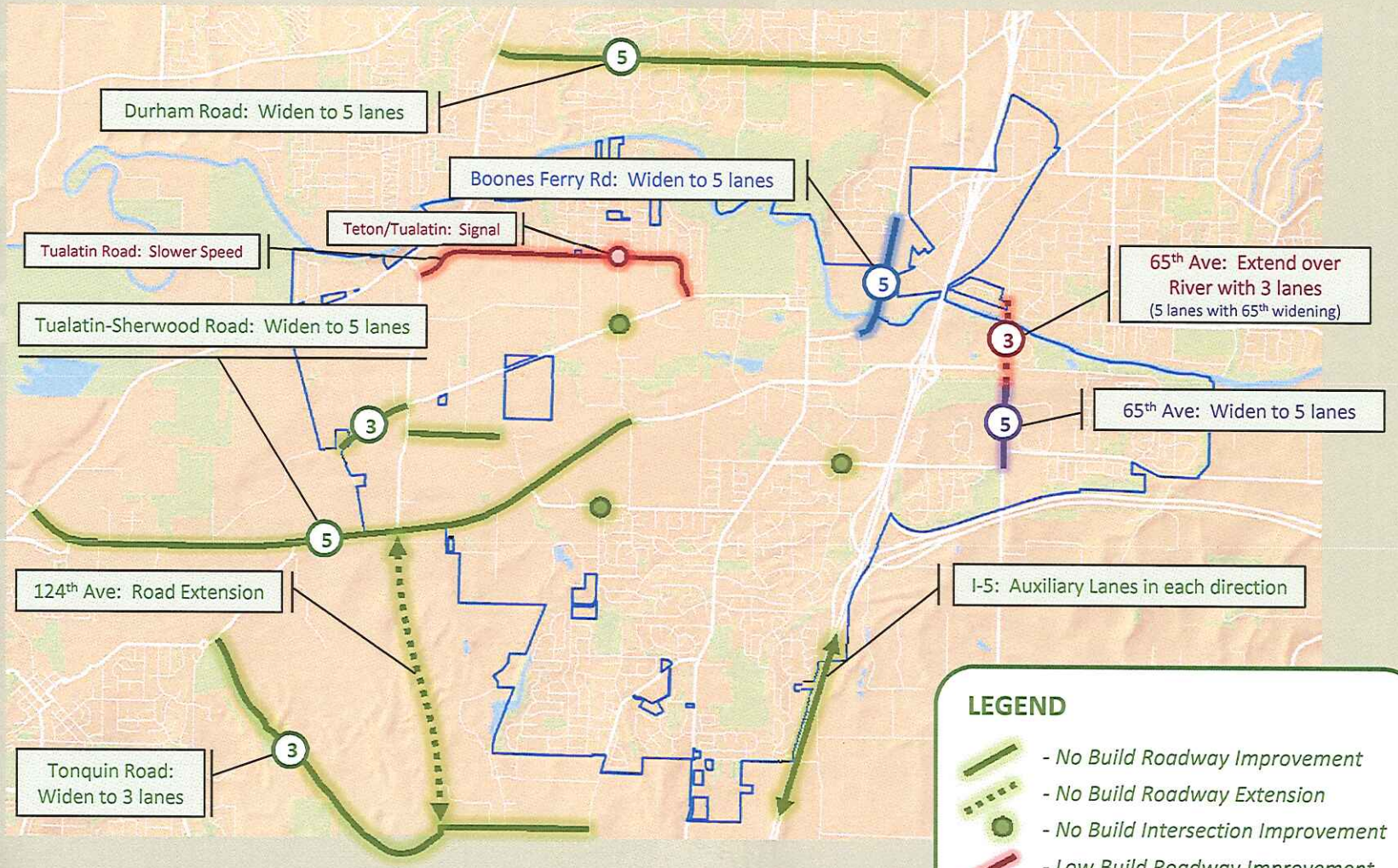
Presentation to
Tualatin Transportation Task Force
September 20, 2012

Scenarios

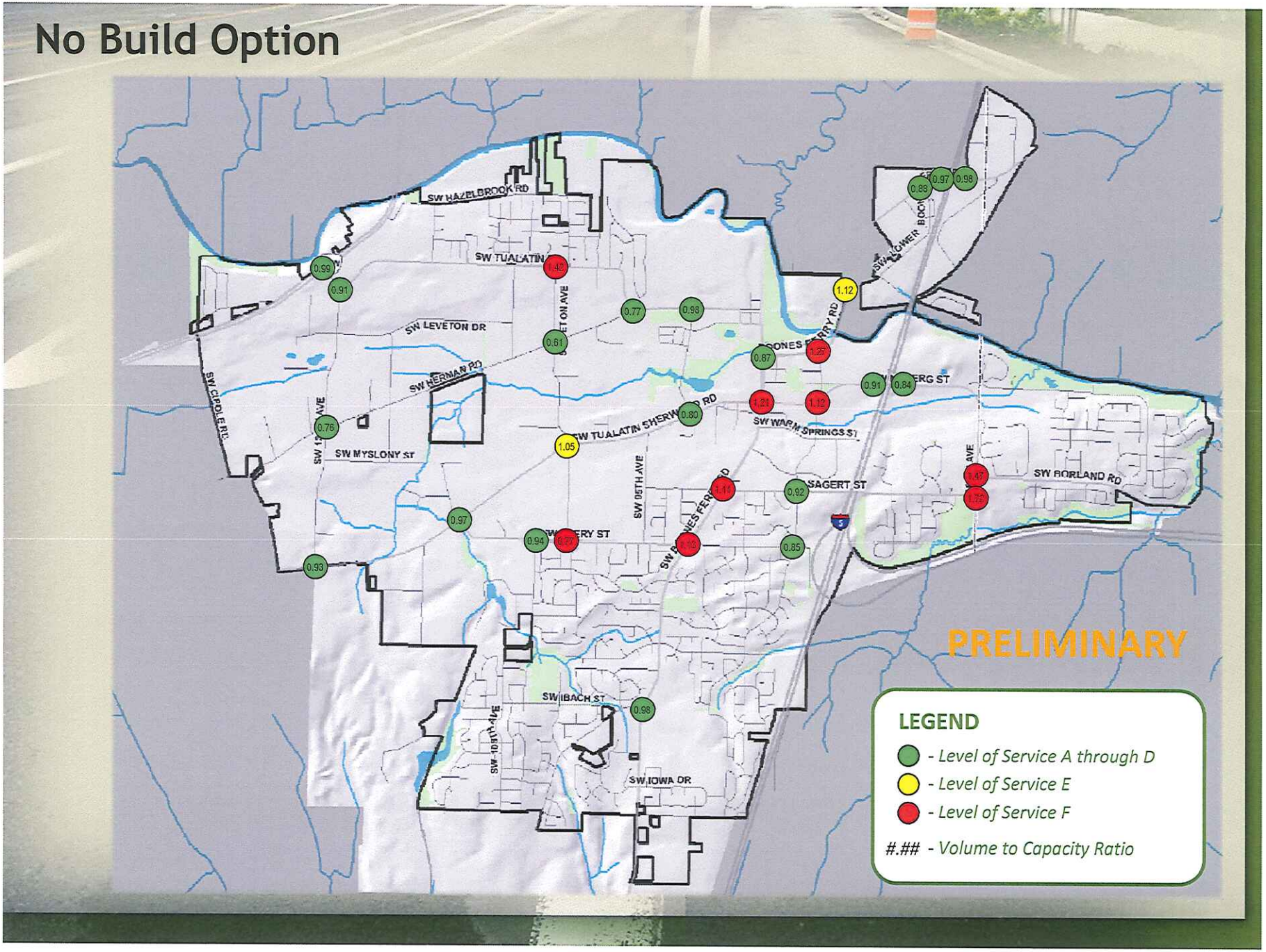
Scenarios Rely on TTF Guidance

1. Includes compilation of guidance from 7 refinement areas
2. Looked at various options for 65th Avenue
   a. No extension
   b. 2-lane bridge extension
   c. 5-lane widening of 65th with 4-lane bridge extension
3. Looked at widening Boones Ferry Road north of Martinazzi

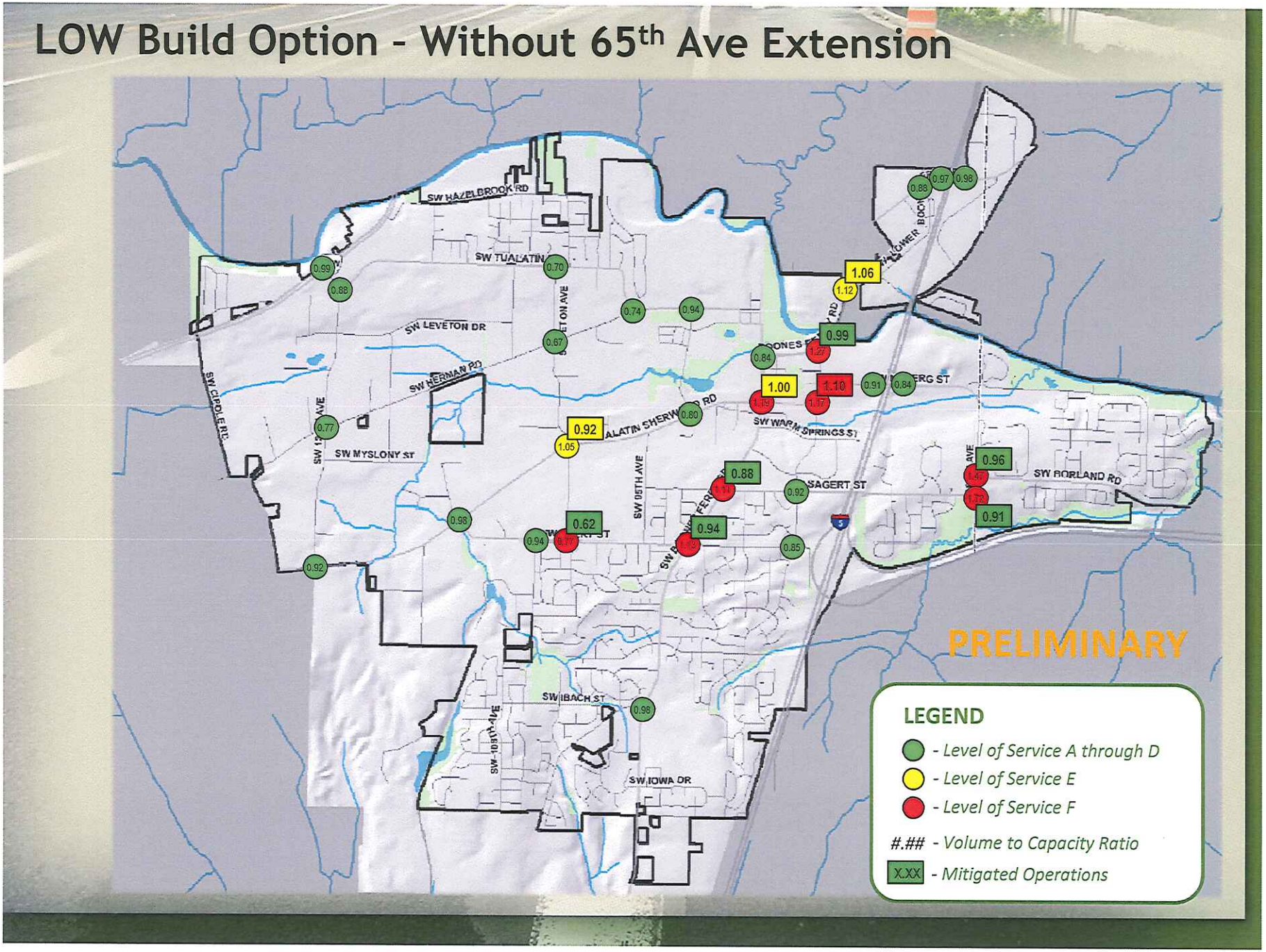
Assumed Future 2035 Scenarios and Roadway Projects



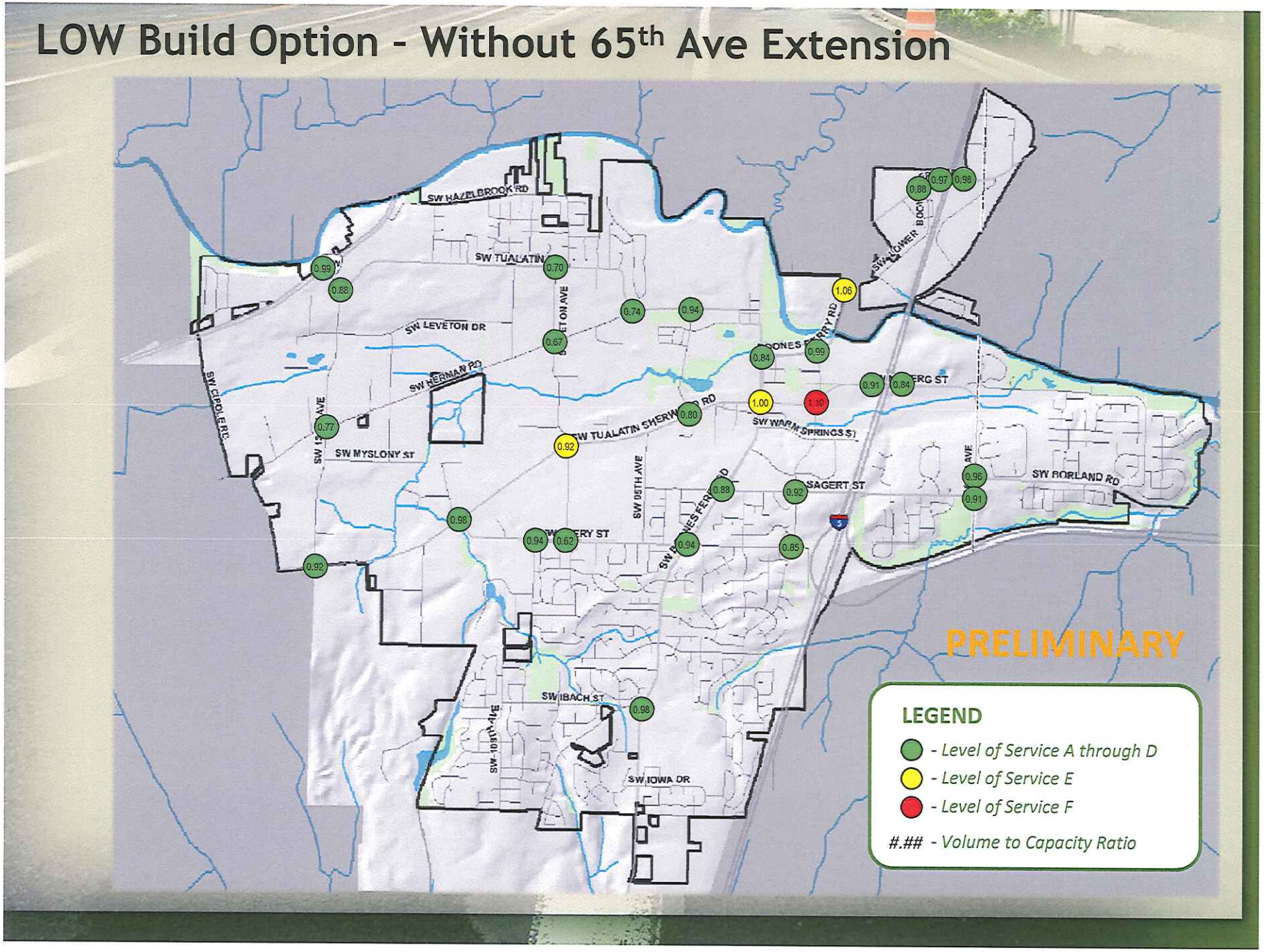
No Build Option



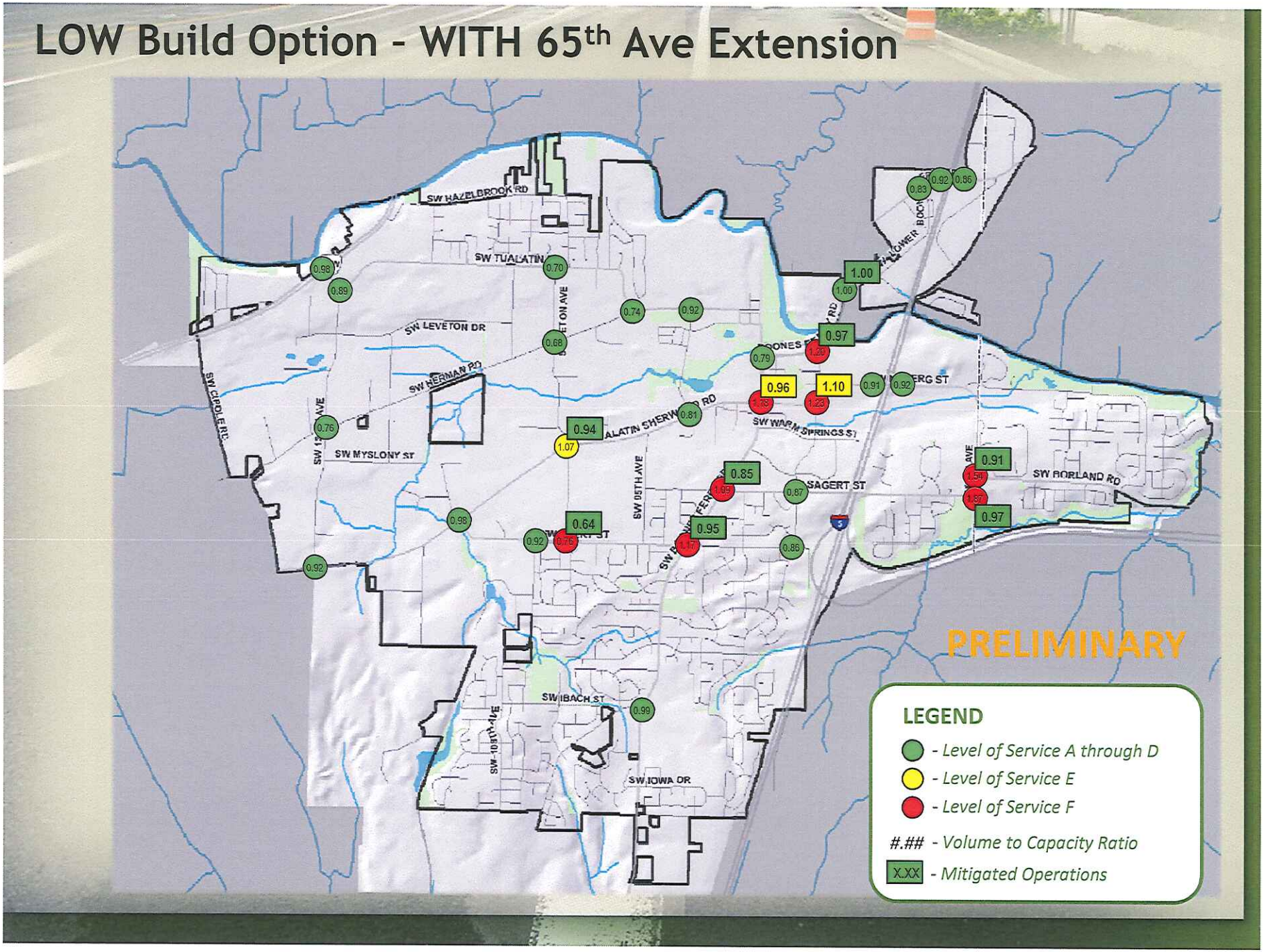
LOW Build Option - Without 65th Ave Extension



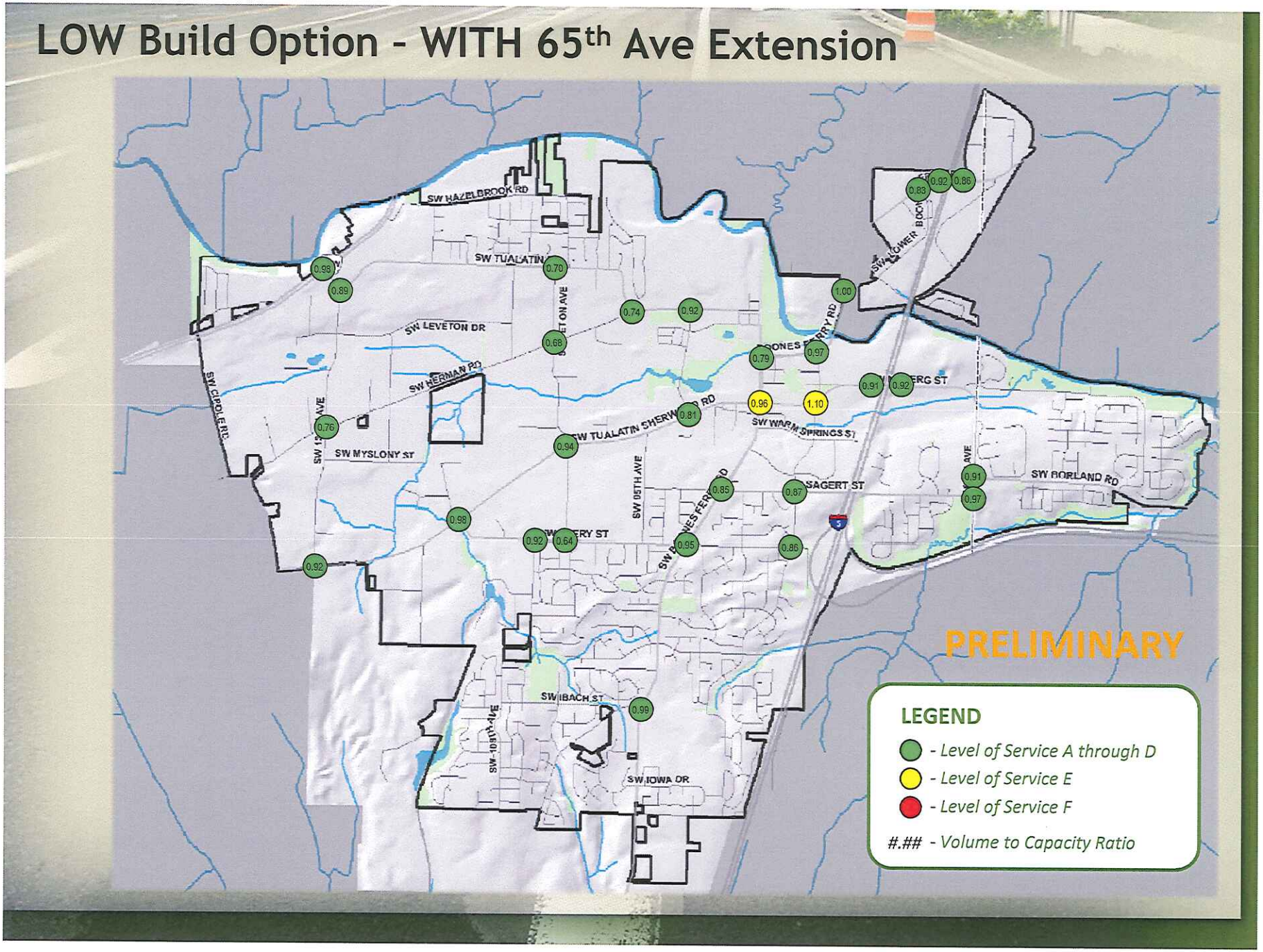
LOW Build Option - Without 65th Ave Extension



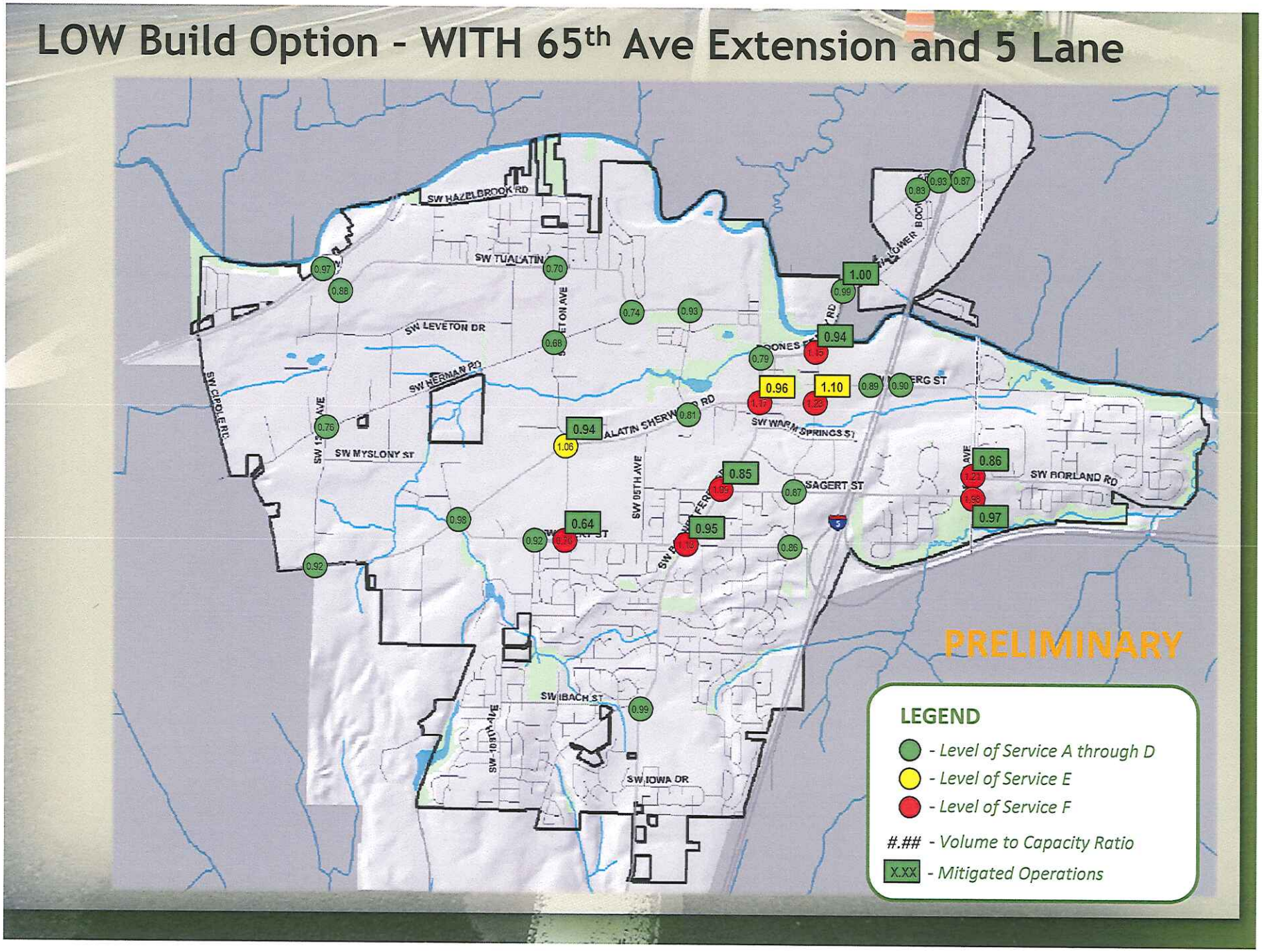
LOW Build Option - WITH 65th Ave Extension



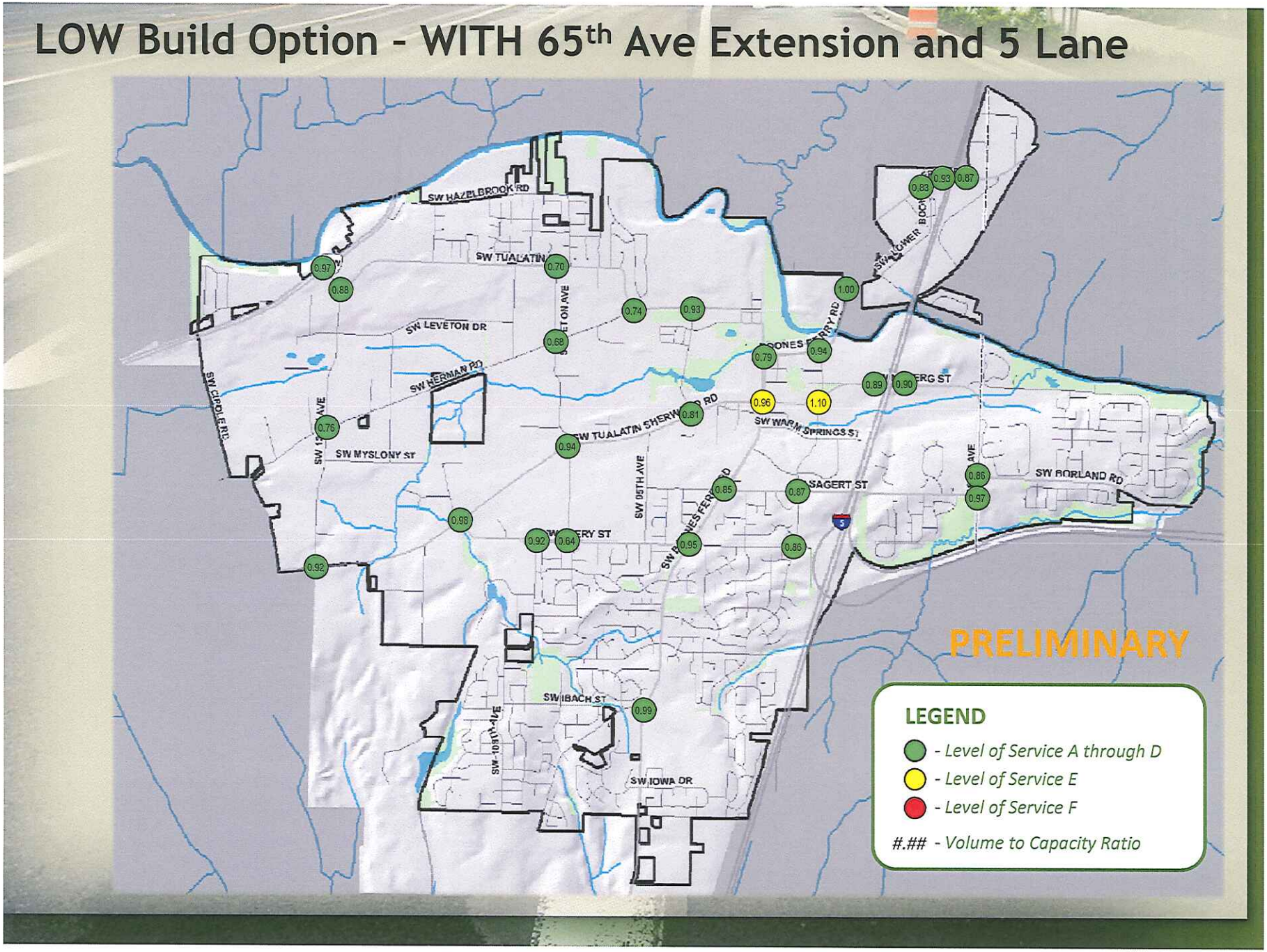
LOW Build Option - WITH 65th Ave Extension



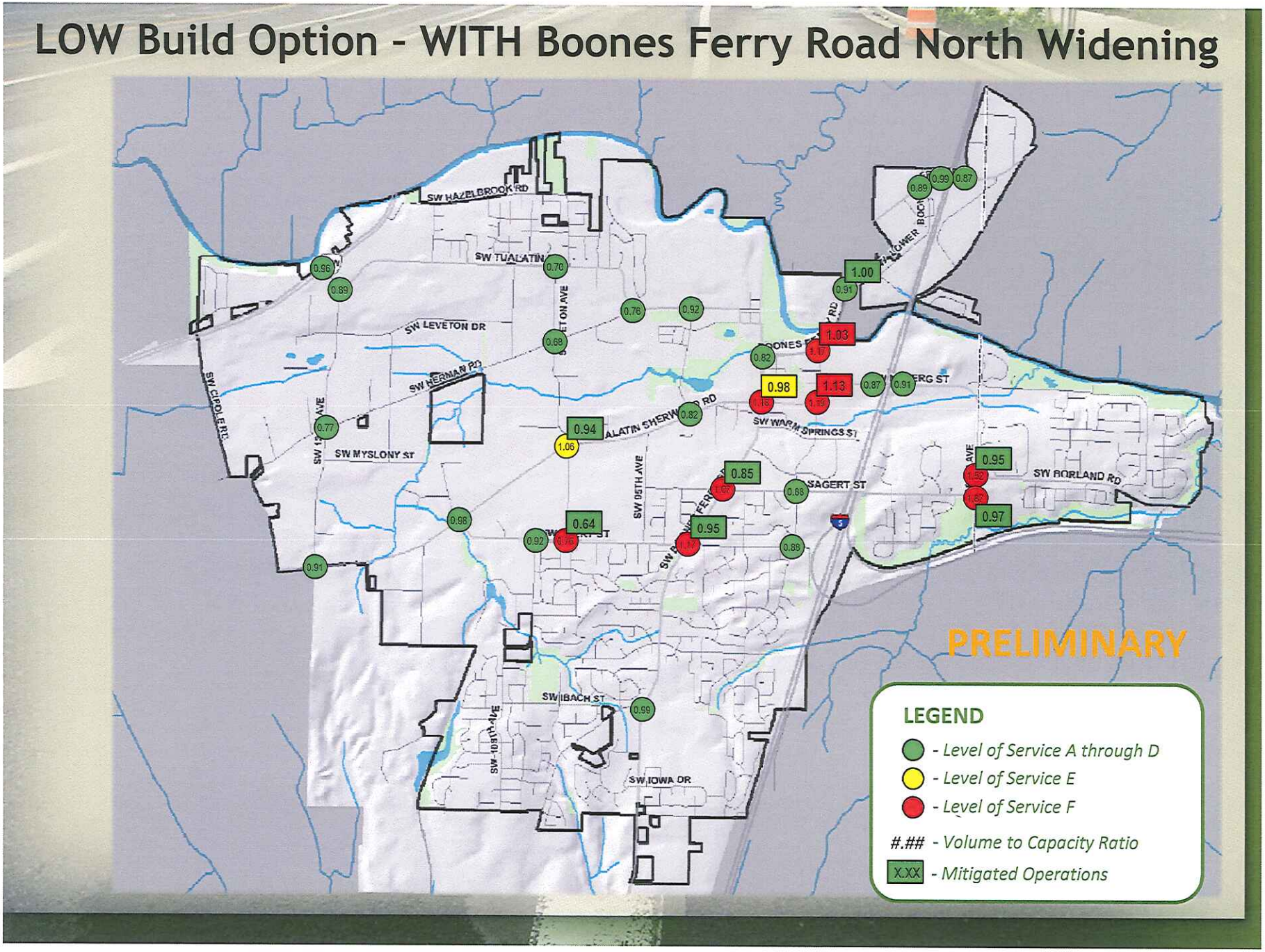
LOW Build Option - WITH 65th Ave Extension and 5 Lane



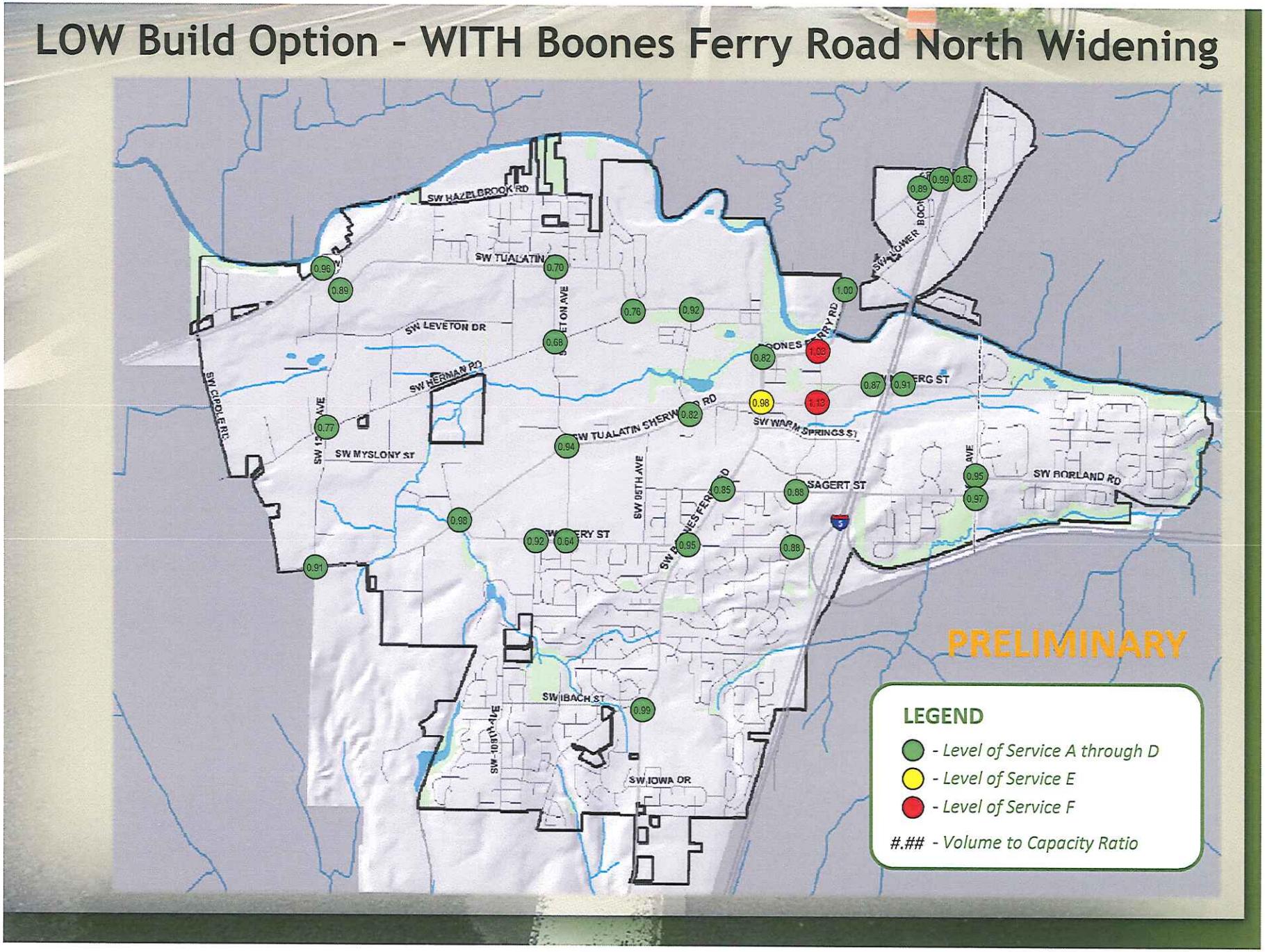
LOW Build Option - WITH 65th Ave Extension and 5 Lane



LOW Build Option - WITH Boones Ferry Road North Widening



LOW Build Option - WITH Boones Ferry Road North Widening



Technical Memorandum

City-Wide Traffic Analysis Results for Roadway Capacity Scenarios

TUALATIN TRANSPORTATION SYSTEM PLAN

PREPARED FOR:	Tualatin Transportation System Plan Project Management Team
PREPARED BY:	Theresa Carr, CH2M HILL Alan Snook, DKS & Associates Mat Dolata, DKS & Associates
COPIES:	Terra Lingley, CH2M HILL Eryn Deeming Kehe, JLA
DATE:	October 17, 2012

This memorandum highlights traffic analysis findings for six roadway infrastructure scenarios prepared for Tualatin's Transportation System Plan (TSP). The purpose is to provide information about the benefits and tradeoffs of various capacity projects being considered in the TSP, with a focus on a possible extension of 65th Avenue to the north and the possible widening of Boones Ferry Road north of Martinazzi. Both of these projects center on a crossing of the Tualatin River: the 65th Avenue extension would be a new crossing, and the Boones Ferry Road widening would be a widening of an existing crossing. This memorandum provides information to support decision makers and the community with finalizing TSP recommendations (fall of 2012). The analysis centers on mobility/access, one of the TSP's seven evaluation categories. The other evaluation categories are: safety, vibrant community, equity, economy, health and the environment, and ability to be implemented.

Information is organized into four sections: (1) project scenarios, which includes descriptions of the six scenarios analyzed; (2) results, which highlights the intersection operations, traffic volumes, and travel time changes associated with each scenario; (3) conclusions and recommendations; and (4) next steps.

Project Scenarios

What follows are descriptions of the six scenarios evaluated in this memo, and a description of the three components of the traffic analysis: (1) intersection level of service, (2) traffic volume shifts, and (3) travel times. Each of these three components reveals something different about overall system performance: from what it feels like to live near a major roadway capacity project, to how much time drivers spend waiting to proceed through an intersection, to what effect a project can have on the total amount of time it takes a driver to cross town.

Six scenarios were analyzed:

1. ***Existing conditions.*** An existing conditions analysis takes into account what drivers experience *today*. It is based on traffic counts collected in October 2011 throughout the City, site visits to

verify intersection geometry and land uses, and observed and recorded travel times (also from fall 2011). Existing conditions lay a solid foundation on which to compare all future scenarios.

2. ***Future "no build."*** This scenario takes into account the projected growth in population and employment in Tualatin and elsewhere over the next 20+ years (Year 2035), assuming the transportation network will remain the same. The only transportation projects are included in this scenario are those with funding and a subset of projects on Metro's fiscally-constrained Regional Transportation Plan (RTP), such as the extension of 124th Avenue south of Tualatin-Sherwood Road. This scenario allows us to consider what congestion concerns might arise in the future.

3. ***Future "low build."***[1] The future "low build" scenario begins with the assumption that there will be "no build" and then adds in those projects that the Tualatin Task Force (TTF) agreed to unanimously during the evaluation and refinement area analysis meetings (May through August 2012). A list of projects included in the "low build" scenario is included below. This scenario does not include any changes to 65th Avenue or Boones Ferry Road north of Martinazzi Avenue.

4. ***Future "low build" with 65th Avenue extension.*** This scenario begins with the "low build" option and then adds an extension of 65th Avenue to the north, from Nyberg Road to the vicinity of Childs Road north of the Tualatin River. This option was analyzed with the assumption that the existing three-lane cross section of 65th Avenue between Nyberg Road and Sagert Street would be retained and the northerly extension would transition to a two-lane cross section over the river, continuing as a two-or three-lane roadway towards Lakeview Boulevard.

5. ***Future "low build" with Boones Ferry Road widening.*** This scenario begins with the "low build" option and then adds a widening of Boones Ferry Road to five lanes north of Martinazzi Avenue. The existing cross section of three lanes would be retained through Tualatin's downtown core.

6. ***Future "low build" with 65th extension and Boones Ferry Road widening.*** This scenario begins with the "low build" option and then adds a widening of Boones Ferry Road to five lanes north of Martinazzi Avenue and an extension of 65th Avenue to the north, from Nyberg Road to the vicinity of Childs Road north of the Tualatin River. This scenario is a combination of Scenarios 4 and 5.

The traffic analysis for each of these scenarios relies on both the traffic counts collected during the fall of 2011 and Metro's regional travel demand model. For each of the scenarios analyzed, major infrastructure improvements were:

(1) Coded into the Metro regional travel demand model;
(2) Post-processed to be calibrated to traffic counts taken for the TSP; and
(3) Analyzed in the Synchro operational analysis software at an intersection-specific scale.

[1] The "low-build" scenario assumes the following projects:

- Tualatin-Sherwood Road as a five lane facility (throughout Tualatin, including widening of Sherwood segment as per Regional Transportation Plan)
- Boones Ferry Road as a three lane facility for entire length
- Herman Road as a two lane facility from Teton Ave to Tualatin Road
- Tualatin Road as a "30 mph" roadway
- Signal at Teton Avenue/Tualatin Road
- Teton Avenue as a three lane road from Herman Road to Avery Street

Intersection Level of Service

An analysis of intersection-level traffic operations helps to understand the driver experience of waiting at specific intersections along the network. The wait can be long, frustrating, and—in some cases—unsafe when traffic volumes are high, when there is a mix of different types of users (e.g., railroad trains, freight trucks, bicycles), or when there are multiple approaches and traffic movements. To mitigate this, traffic engineers work to keep intersection performance within certain congestion thresholds or mobility standards. Mobility standards can vary depending on where the intersection is located, who owns (and therefore controls) it, and its main purpose.

Depending on the location, roadways and intersections are owned and operated by one of three jurisdictions: (1) City of Tualatin, (2) Washington County, or (3) the Oregon Department of Transportation (ODOT). These jurisdictions measure traffic operations in different ways – either by level of service (LOS) or by volume-to-capacity (v/c). These terms are defined below:

- Level of service (LOS): A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in cars waiting through more than one signal cycle to get through an intersection.
- Volume-to-capacity (v/c) ratio: This measure is a range and represents how full an intersection is with vehicles. The ratio is similar to a percentage, for example, if a glass of water were 75 percent full, it would have a v/c ratio of 0.75. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If an intersection reports v/c higher than 1.0, it indicates that volumes are higher than capacity.

The City of Tualatin uses a LOS standard; depending on intersection type, the acceptable standard is either LOS D or LOS E. Washington County and ODOT use a v/c standard, which compares traffic volumes to intersection capacity. Both agencies define the acceptable mobility standard at or under a 0.99 v/c.

The next section of this memorandum compares intersection-level performance with congestion thresholds at these intersections:

1. Along Tualatin-Sherwood Road
    a. Tualatin-Sherwood Road/124th Avenue
    b. Tualatin-Sherwood Road/Boones Ferry Road
    c. Tualatin-Sherwood Road/Martinazzi Avenue
2. Along Boones Ferry Road
    a. Boones Ferry Road/Tualatin-Sherwood Road
    b. Boones Ferry Road/Tualatin Road
    c. Boones Ferry Road/Martinazzi Avenue
    d. Boones Ferry Road/Lower Boones Ferry Road
3. Along 65th Avenue
    a. 65th Avenue/Sagert Street
    b. 65th Avenue/Borland Road
    c. 65th Avenue/Nyberg Road

Shifts in Traffic Volumes from One Roadway to Another

Coding infrastructure improvements into Metro's travel demand model—Step 1 of the analysis process outlined at the top of this page—will provide key outputs that will be helpful in understanding the major trends of specific infrastructure projects. One of those trends is traffic volume shifts. Volume shifts provide an understanding of the scale of activity both at new connections and at the existing connections that are "relieved" by a new one. For example, when a new roadway is added to the network, volume shift diagrams help illustrate the number of trips that involve the new roadway, and—of those trips—how many are new trips versus those that have been diverted from elsewhere in the system. This analysis is only relevant to Scenarios 4-6, as these are the scenarios which introduce one or both of the river crossing projects that could affect traffic routing. Further, volume shifts were only recorded for these key roadways:

- Tualatin Road
- Herman Road
- 99W
- I-5
- Boones Ferry Road
- Tualatin-Sherwood Road
- Martinazzi Avenue
- Sagert Street
- Borland Road
- 65th Avenue
- Nyberg Road

Travel Time

Travel time is one of the most intuitive measures of traffic performance. Drivers know the amount of time it takes to get from one place to another, and the extent to which congestion can change travel times. What follows is a comparison of travel times, for each scenario, between these key north-south and east-west destination pairs:

- Boones Ferry Road
  - Tualatin High School to Bridgeport Village
  - Tualatin High School to Nyberg Interchange
- Tualatin Road
  - 115th/Tualatin to Bridgeport Village
  - 115th/Tualatin to Nyberg Interchange
- Tualatin-Sherwood Road (TSR)
  - TSR/Cipole Road to Bridgeport Village
  - TSR/Cipole Road to Nyberg Interchange
- Borland Road and 65th Avenue
  - Bridgeport Elementary School to Nyberg Interchange
  - Sagert/65th to Bridgeport Village

Results

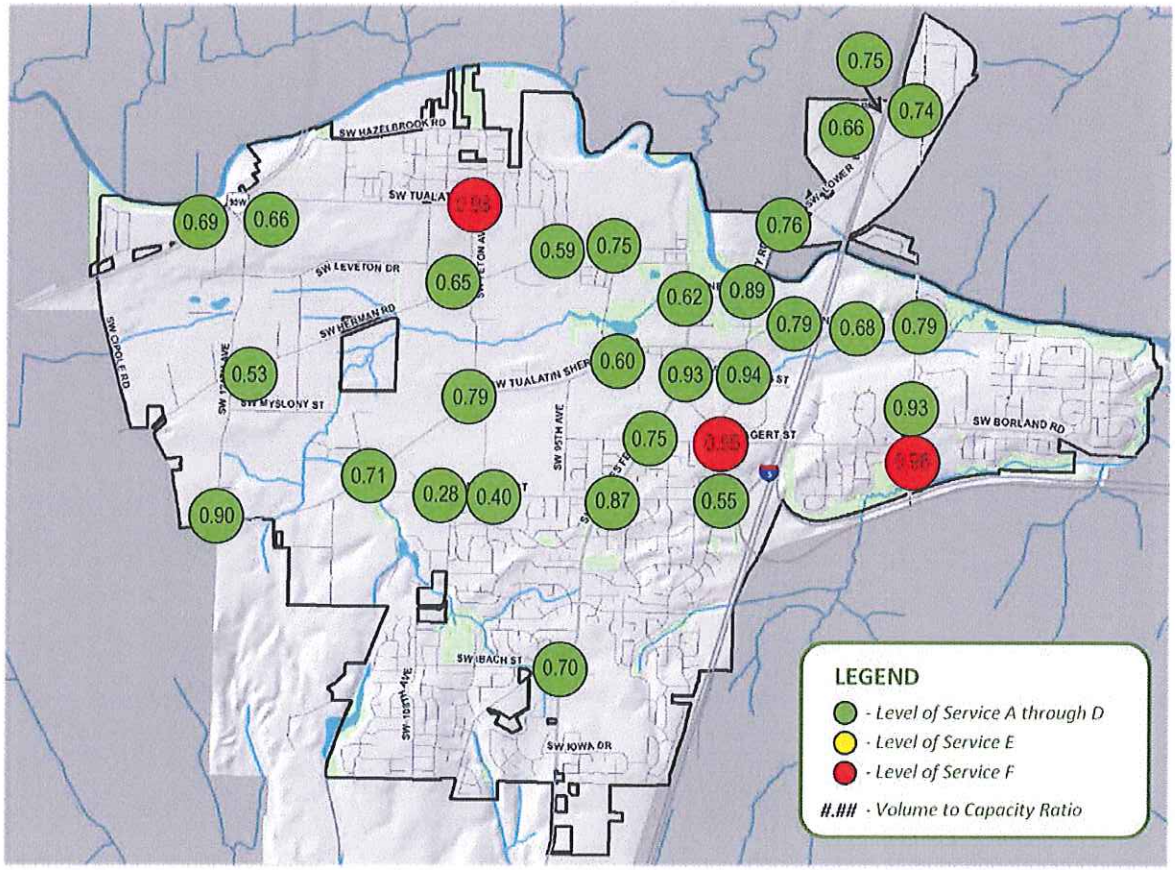
This section includes a description of findings from intersection operations, traffic volume shifts, and travel times for each of the scenarios outlined in the previous section. Appendix A provides the traffic operations results by scenario with and without intersection-level optimizations.

Scenario 1: Existing Conditions

Traffic Operations

Figure 1 shows traffic conditions for all 30 study intersections in Tualatin as of October 2011. It is based on counts collected on weekdays during the morning (7:00 a.m.to 9:00 a.m.) and afternoon (4:00 p.m. to 6:00 p.m.) traffic rush hours. In addition, 24-hour counts were conducted at 11 locations on key roadways in Tualatin to provide an understanding of the fluctuations in traffic throughout the day and night. Figure 1 illustrates the current operations within the City of Tualatin. Green circles indicate the intersection meets City accepted standards and red circles indicate that standards are not met. Numbers within the circles indicate the intersection v/c ratio. Three intersections currently do not meet City accepted standards: (1) Tualatin Road/Teton Road, which performs at an LOS F with a v/c ratio of 0.98, (2) 65th Avenue/Sagert Street, which performs at an LOS F with a v/c ratio of 0.98; and (3) Martinazzi Avenue/Sagert Street, which performs at an LOS F with a v/c ratio of 0.95.

Figure 1. Intersection Operations, Existing Conditions



Travel Times

In addition to intersection and daily volume profiles, the project team collected corridor data related to travel times and speeds during the p.m. peak period. These travel times are recorded in Table 1 below. As can be seen, it takes between 9 and 10 minutes to drive north-south through Tualatin on Boones Ferry Road, and between 11 and 13 minutes to drive east-west through the City on Tualatin-Sherwood Road. These current travel times are compared to various future scenarios in the pages that follow.

TABLE 1
Existing (2011) P.M. Peak Period (4:00 p.m. to 6:00 p.m.) Travel Time Data

Corridor	From	To	Average Travel Time
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	10 min, 20 sec
	Bridgeport Village	Tualatin High School	9 min, 10 sec
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	7 min, 25 sec
	Nyberg Interchange	Tualatin High School	7 min, 5 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	8 min, 35 sec
	Bridgeport Village	115th Avenue	8 min, 30 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	8 minutes
	Nyberg Interchange	115th Avenue	8 min, 40 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	11 min, 40 sec
	Bridgeport Village	Cipole Road	13 minutes
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	8 min, 40 sec
	Nyberg Interchange	Cipole Road	10 min, 10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 10 sec
	Nyberg Interchange	Bridgeport Elementary	2 min, 20 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	9 min, 10 sec
	Bridgeport Village	Bridgeport Elementary	8 min, 25 sec

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

Scenario 2: Future "No Build" (2035)

Traffic Operations

By 2035, there will be much more congestion throughout the network in Tualatin, both along Tualatin-Sherwood Road (intersection with Teton Road, Boones Ferry Road, and Martinazzi Avenue), along Boones Ferry Road (intersections with Lower Boones Ferry Road, Martinazzi Avenue, Tualatin-Sherwood Road, Sagert Road, and Avery Street), along Teton Avenue (intersections with Tualatin Road, Tualatin-Sherwood Road, and Avery Street), and along 65th Avenue (intersections with Borland Road and Sagert Street). Operations are illustrated in Figure 2 below.

Travel Times

Travel times are summarized in Table 2 for the future (Year 2035) "no build" scenario. Travel times in the north-south direction would increase over existing conditions substantially, from between 9 and 10 minutes to between 12 and 15 minutes. Travel time increases would be more dramatic in the east-west direction: from between 11 and 13 minutes to approximately 17 minutes. Table 2 shows the travel time differences between the future no build and existing conditions. In most instances travel times increase by at least one minute. Some locations travel times increase by over 4 minutes – for example between Tualatin High School and Bridgeport Village, between 115th Avenue and Bridgeport Village, and between Bridgeport Village and Cipole Road. One destination pairing (Bridgeport Village to Bridgeport Elementary) saw a travel time increase of 6 minutes.

Figure 2. Intersection Operations, Future (2035) "No Build" Conditions

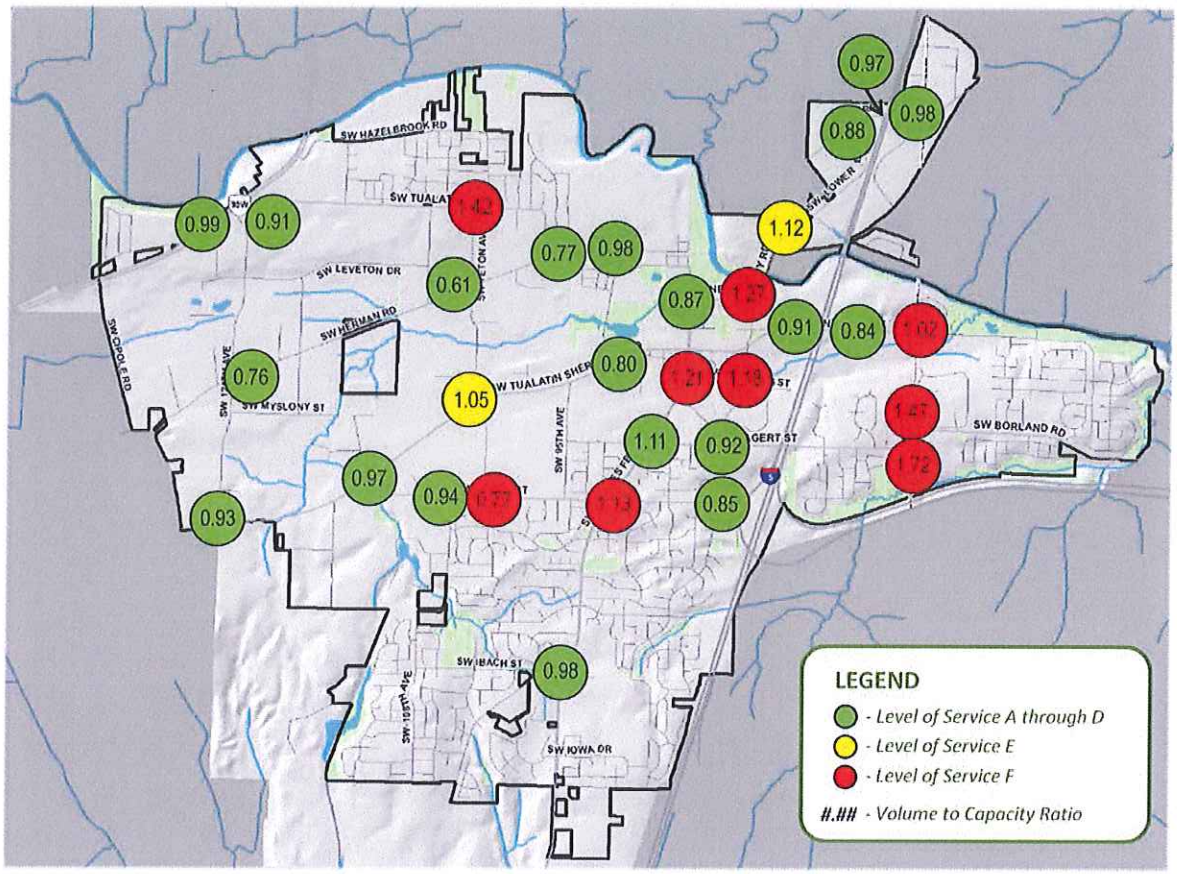


TABLE 2
Future (2035) "No Build" P.M. Peak Period (4:00 p.m. to 6:00 p.m.) Travel Time Data

Corridor	From	To	Average Travel Time	Difference from Existing Conditions
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	+4 min, 45 sec
	Bridgeport Village	Tualatin High School	12 min, 10 sec	+3 min
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	9 min, 40 sec	+2 min, 15 sec
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	+1 min, 5 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	13 minutes	+4 min, 25 sec
	Bridgeport Village	115th Avenue	11 min, 40 sec	+3 min, 10 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	10 min, 35 sec	+2 min, 35 sec
	Nyberg Interchange	115th Avenue	10 min, 25 sec	+1 min, 45 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	+5 min, 20 sec
	Bridgeport Village	Cipole Road	17 min, 20 sec	+ 4min, 20 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	11 minutes 35 sec	+2min, 55 sec
	Nyberg Interchange	Cipole Road	11 min, 50 sec	+1 min, 45 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	+15 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	+1 min, 10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	12 min, 55 sec	+3 min, 45 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	+6 min

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

Scenario 3: Future "Low Build"

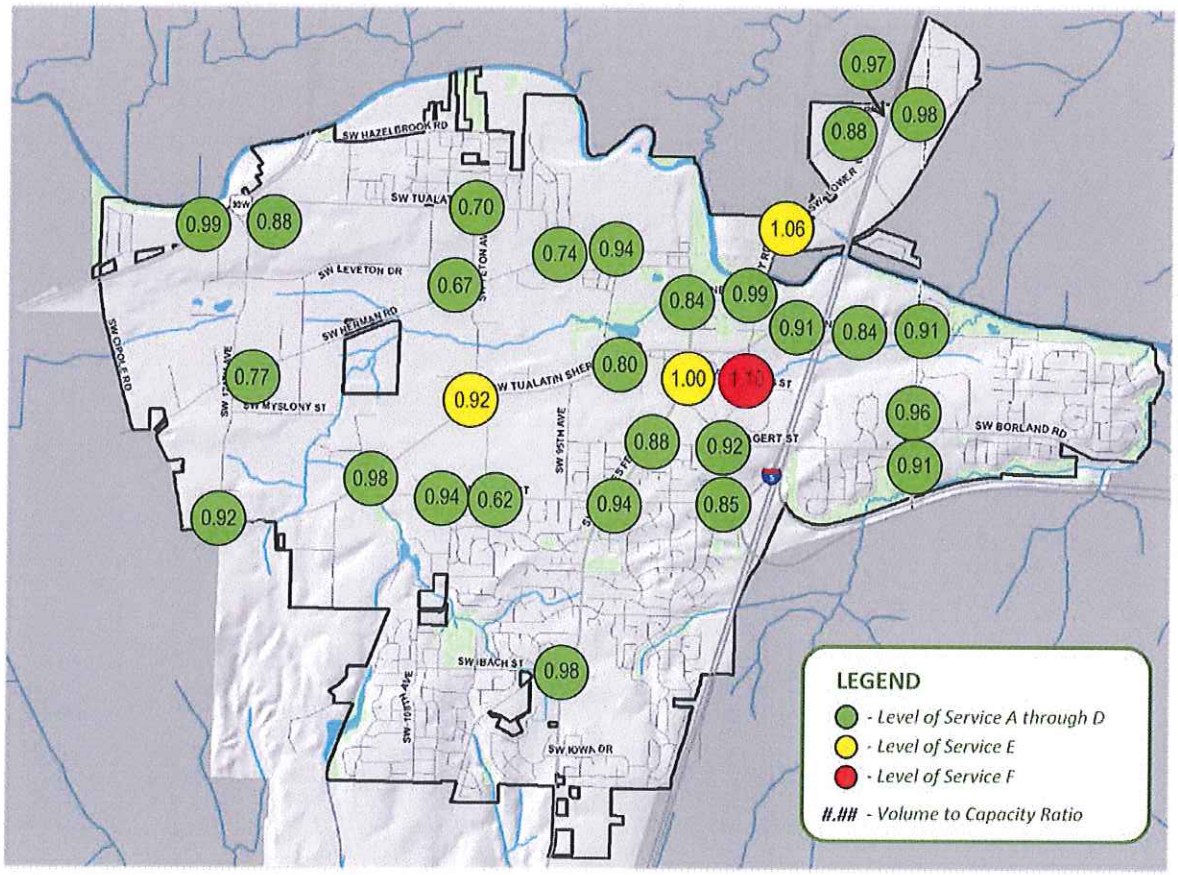
Traffic Operations

As described above, the future "low build" scenario serves as a starting point that represents all of the roadway infrastructure projects agreed to by the Task Force, Planning Commission, Tualatin Parks Advisory Committee, and City Council through the project evaluation and refinement area evaluation phases of the TSP. These include widening Tualatin-Sherwood Road between Cipole and Teton Roads, widening Teton Road to three lanes, and other intersection-specific treatments.

Raw outputs from the traffic model Synchro (as shown in Appendix A) indicate that up to ten study intersections have a v/c higher than 1.0 and/or LOS of F. However, intersections can be optimized to improve performance through one or more of these treatments:

- Signal timing adjustments
- Adding a turn lane in one or two directions (such as an eastbound left-turn lane)
- Restriping an approach lane to allow turn movements from two lanes instead of one
- Restricting a driveway approach to right-in, right-out (only used if traffic volumes entering facility are very low)

Figure 3. Intersection Operations, Future (2035) "Low Build"



With adjustments, traffic operations can improve. As shown in Figure 3, three intersections would operate with v/c at or higher than 1.0; two of these (Boones Ferry Road/Lower Boones Ferry Road and Boones Ferry Road/Tualatin-Sherwood Road) would operate at an LOS E and one (Boones Ferry Road

and Martinazzi Avenue) operates at an LOS F. One additional intersection (Tualatin-Sherwood Road and Teton Avenue) would operate at an LOS E, but meets Washington County standards with a v/c of 0.92.

Travel Times

Travel times are summarized in Table 3 for the future (Year 2035) "low build" scenario.

TABLE 3
Future (2035) "Low Build" P.M. Peak Period (4:00 a.m. to 6:00 p.m.) Travel Time Data

Corridor	From	To	Average Travel Time	Difference from Future No Build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	No difference
	Bridgeport Village	Tualatin High School	12 min, 10 sec	No difference
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	13 min, 30 sec	+30 sec
	Bridgeport Village	115th Avenue	12 minutes	+20 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 50 sec	+25 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	No difference
	Bridgeport Village	Cipole Road	17 min, 25 sec	+5 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	12 min, 50 sec	-5 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	No difference

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

Travel times in the north-south direction would not change from the "no build" condition, and would increase slightly over the "no build" condition in the east-west direction.

Scenario 4: Future "Low Build" with 65th Avenue Extension

Traffic Operations

Scenario 4 is the future "low build" (Scenario 3) with the extension of 65th Avenue to the north over the Tualatin River. Under this scenario, the cross section of 65th Avenue would remain three lanes between Nyberg Road and Sagert Street and then transition to two lanes south of Sagert Street. The northerly extension would involve three lanes transitioning to a two-lane bridge over the Tualatin River, connecting with 65th Avenue in Rivergrove in the vicinity of Childs Road.

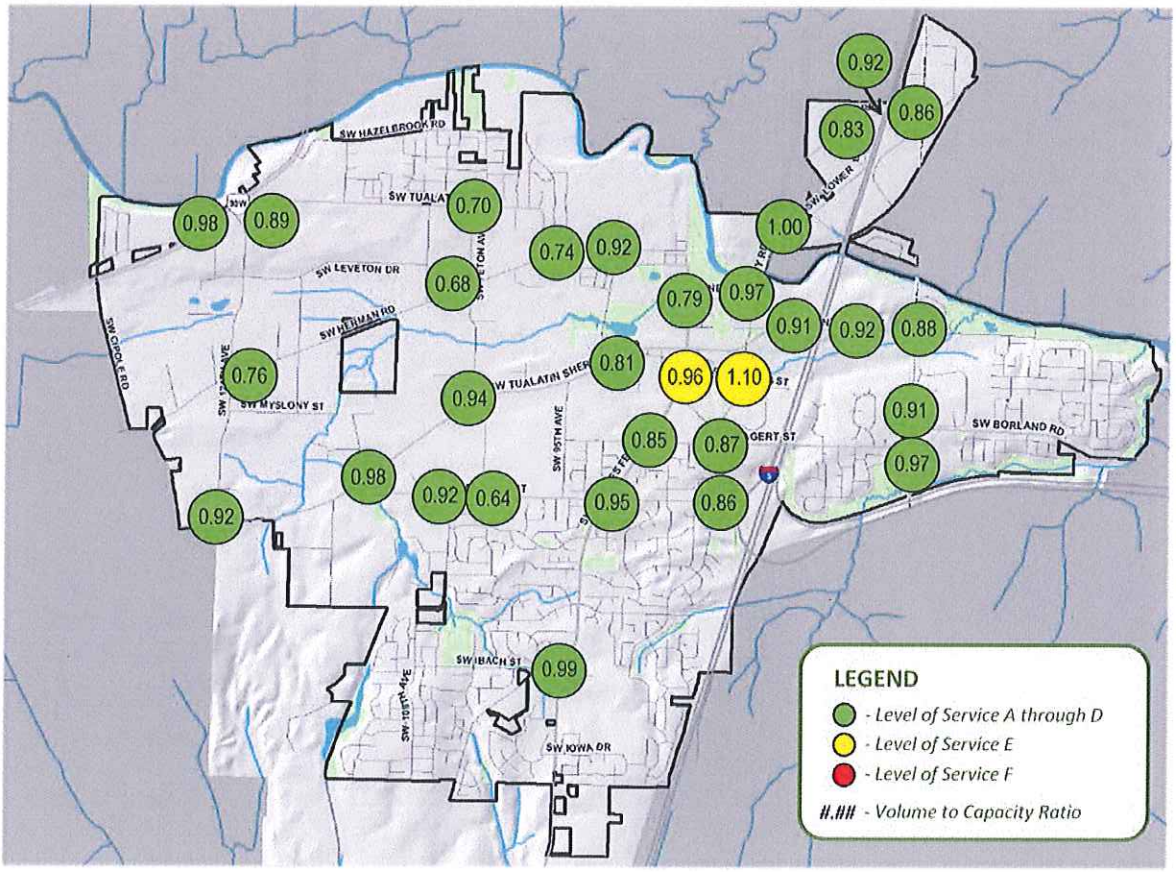
Raw outputs from the traffic model Synchro, as shown in Appendix A, indicate that up to 10 study intersections would have a v/c higher than 1.0 and/or LOS of F. However, when optimized to improve performance, traffic operations would improve. Figure 4 illustrates the traffic operations at all study intersections. Those intersections which show an improvement over the "low build" scenario alone are highlighted in Table 4 below.

TABLE 4
Future (2035) Operational Analysis Comparison between Scenario 3 and Scenario 4

	Scenario 3 ("Low Build")		Scenario 4 ("Low Build" with 65th Extension)	
	LOS	V/C	LOS	V/C
I-5 NB Ramps and SW Lower Boones Ferry Road	D	0.98	C	0.86
I-5 SB Ramps and SW Lower Boones Ferry Road	D	0.97	D	0.92
SW 72nd Avenue and Lower Boones Ferry Road and Bridgeport Road	D	0.88	D	0.83
SW Boones Ferry Road and SW Lower Boones Ferry Road	E	1.12	D	1.00
SW Tualatin Road and SW Boones Ferry Road	C	0.87	C	0.79
SW Boones Ferry Road and SW Tualatin-Sherwood Road	F	1.21	E	0.96

Scenario 4 shows only one intersection (Boones Ferry Road/Martinazzi Avenue) operating with v/c higher than 1.0, and one intersection (Boones Ferry Road/Lower Boones Ferry Road) operates at a v/c of a 1.0. No intersections would operate with an LOS F. Two intersections (Boones Ferry Road/Martinazzi Avenue and Boones Ferry Road/Tualatin-Sherwood Road) would operate at an LOS E. In this scenario, Boones Ferry Road/Tualatin-Sherwood Road would meet Washington County standards with a v/c of 0.96.

Figure 4. Intersection Operations, Future (2035) "Low Build" with 65th Avenue Extension



Traffic Volume Shifts

In this scenario, traffic volumes would shift to 65th Avenue and drivers would use the new crossing between Tualatin and Lake Oswego/Rivergrove. Moderate increases in traffic volumes would occur along 65th Avenue between Nyberg Street and Sagert Street and between Childs Road and Lakeview Boulevard. Minor increases in traffic would occur south of Sagert Street to Norwood Road, along Childs Road, along Sagert Street, and along Nyberg Road east of 65th Avenue. Traffic volumes would decrease along I-5 between the Lower Boones Ferry Road and Nyberg Road interchanges, which indicates that some drivers would take I-5 for short, local trips in this location. Minor to moderate traffic decreases would also occur on Boones Ferry Road between Lower Boones Ferry Road and Sagert Street and along Stafford Road.

Travel Times

Travel times are summarized in Table 5 below for the future (Year 2035) "low build" scenario with an extension of 65th Avenue over the Tualatin River.

TABLE 5
Future (2035) "Low Build" with 65th Avenue Extension P.M. Peak Period (4:00 p.m. to 6:00 p.m.) Travel Time Data

Corridor	From	To	Average Travel Time	Difference from Future "No Build"
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin High School	11 min, 20 sec	-50 sec
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	10 min	+20sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 20 sec	-40 sec
	Bridgeport Village	115th Avenue	11 min, 25 sec	-15 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	11 min, 10 sec	+35 sec
	Nyberg Interchange	115th Avenue	11 min	+35 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	16 min	-1 min
	Bridgeport Village	Cipole Road	16 min 25 sec	-55 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	12 min	+25 sec
	Nyberg Interchange	Cipole Road	12 min, 25 sec	+40 sec
SW Borland Road/65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
SW Borland Road/65th Ave	Bridgeport Elementary	Bridgeport Village	10 min, 40 sec	-2 min, 15 sec
	Bridgeport Village	Bridgeport Elementary	12 min, 10 sec	-2 min, 15 sec

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)

NOTE: All travel times have been rounded to the nearest 5 seconds

Travel times would decrease under this scenario by approximately 1 minute among various destination pairs. This difference is most notable for travel times extending through Tualatin either north-south or east-west. This is due to the fact that the main east-west pairing would actually extend northward along Boones Ferry Road and would benefit from the lower traffic volumes on Boones Ferry Road. In addition, however, travel times between Bridgeport Elementary School near Borland Road and 65th Avenue and Bridgeport Village would decrease by more than 2 minutes in both directions (northbound and southbound).

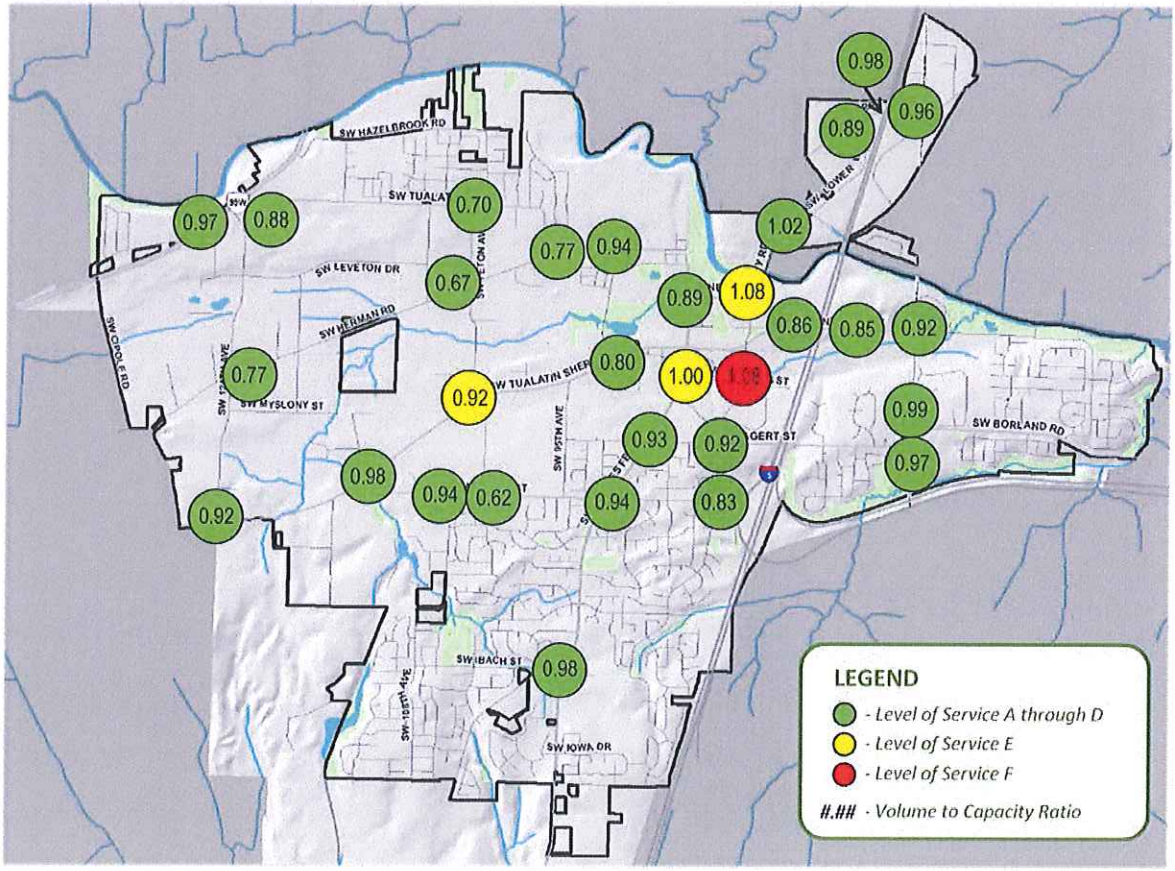
Scenario 5: Future "Low Build" with Boones Ferry Road Widening

Traffic Operations

Scenario 5 is the future "low build" (Scenario 3) with the widening of Boones Ferry Road to five lanes north of Martinazzi Avenue. Under this scenario, the cross section of 65th Avenue would remain three lanes between Nyberg Road and Sagert Street and not be extended north over the Tualatin River. Boones Ferry Road would be widened to a five lane section between Martinazzi at the south and Lower Boones Ferry Road at the north, replacing the existing two lane structure over the Tualatin River with a four lane structure.

Raw outputs from the traffic model Synchro (as shown in Appendix A) indicate that up to 12 study intersections would have a v/c higher than 1.0 and/or LOS of F. However, when optimized to improve performance, traffic operations would improve so that 4 intersections operate at a v/c at or above 1.0. As shown in Figure 5, these are: Boones Ferry Road/Tualatin-Sherwood Road, Martinazzi Avenue/Tualatin-Sherwood Road, Martinazzi Avenue/Boones Ferry Road, and Boones Ferry Road/Lower Boones Ferry Road. In this scenario, Boones Ferry Road/Lower Boones Ferry Road improves slightly but not sufficiently by itself to meet ODOT standards. In addition, conditions worsen at the intersection of Martinazzi/Boones Ferry Road as this intersection represents where the cross section tapers back to its original three lane section through the heart of downtown Tualatin. Additional volumes cause congestion at this intersection.

Figure 5. Intersection Operations, Future "Low Build" with Boones Ferry Road Widening



Another observation is that traffic diverts in this scenario from Tualatin-Sherwood Road to Sagert Street, as it becomes quicker to stay on Boones Ferry Road. This worsens conditions slightly along Sagert Street, as seen at both the Boones Ferry Road and 65th Avenue intersections. However, conditions improve slightly along Tualatin-Sherwood Road between Boones Ferry Road and 65th Avenue.

Traffic Volume Shifts

Widening this segment of Boones Ferry Road diverts trips from I-5 to Boones Ferry Road between the Lower Boones Ferry Road and Tualatin-Sherwood Road interchanges. Shifts are moderate on Boones Ferry Road between Tualatin Road and Lower Boones Ferry Road, and minor north and south of these intersections.

Travel Times

Travel times for Scenario 5 are highlighted in Table 6 below.

TABLE 6
Future (2035) "Low Build" with Boones Ferry Road Widening P.M. Peak Period (4:00 P.M. to 6:00 P.M.) Travel Time Data

Corridor	From	To	Average Travel Times	Difference from Future No Build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin HS	11 min, 30 sec	-40 sec
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin HS	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 30 sec	-30 sec
	Bridgeport Village	115th Avenue	11 min, 20 sec	-20 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 40 sec	+15 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	15 min, 50 sec	-1 min, 10 sec
	Bridgeport Village	Cipole Road	16 min, 40 sec	-40 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Avenue	Bridgeport Elementary	Nyberg Interchange	3 min, 25 sec	+5 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
SW Borland Road / 65th Avenue	Bridgeport Elementary	Bridgeport Village	12 min, 10 sec	-45 sec
	Bridgeport Village	Bridgeport Elementary	13 min, 40 sec	-45 sec

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

The travel time savings associated with this scenario are similar to what is seen under Scenario 4 ("low build" with 65th Avenue extension), with the notable exception of travel times between Bridgeport Elementary School in the vicinity of 65th Avenue / Borland Road and Bridgeport Village. Scenario 4 sees a travel time savings of over 2 minutes due to the extension of 65th Avenue whereas Scenario 5 sees a 45 second travel time increase. Other destination pairings, such as Tualatin High School/ Bridgeport Village, and Cipole Road/Bridgeport Village, see over a 1 minute travel time savings due to the widening of Boones Ferry Road.

Scenario 6: Future "Low Build" with 65th Avenue Extension and Boones Ferry Road Widening

Traffic Operations

Scenario 6 illustrates traffic operations when both Boones Ferry Road is widened north of Martinazzi Avenue and when 65th Avenue is extended northward over the Tualatin River. Raw outputs from the Synchro model show that up to nine intersections operate at a v/c of 1.0 or an LOS of F. However, by implementing such mitigations as signal timing modifications, restriping, and turn pockets at intersections, operations can be improved so that only two intersections (Martinazzi/Tualatin-Sherwood Road and Martinazzi/Boones Ferry Road) would continue to operate within failing conditions. In addition, operations would be much improved at several intersections under this scenario, as shown in the table below.

Although the operations improvements at the intersection of Boones Ferry Road and Tualatin-Sherwood Road would be slight, they would bring the intersection within the 0.99 v/c threshold and are thus reported here. Under this scenario, there would be substantial improvements at the intersection of Boones Ferry Road and Lower Boones Ferry Road and at the intersection of I-5 and Lower Boones Ferry Road, with better mobility from a combination of additional capacity along Boones Ferry Road and an alternate route east of I-5.

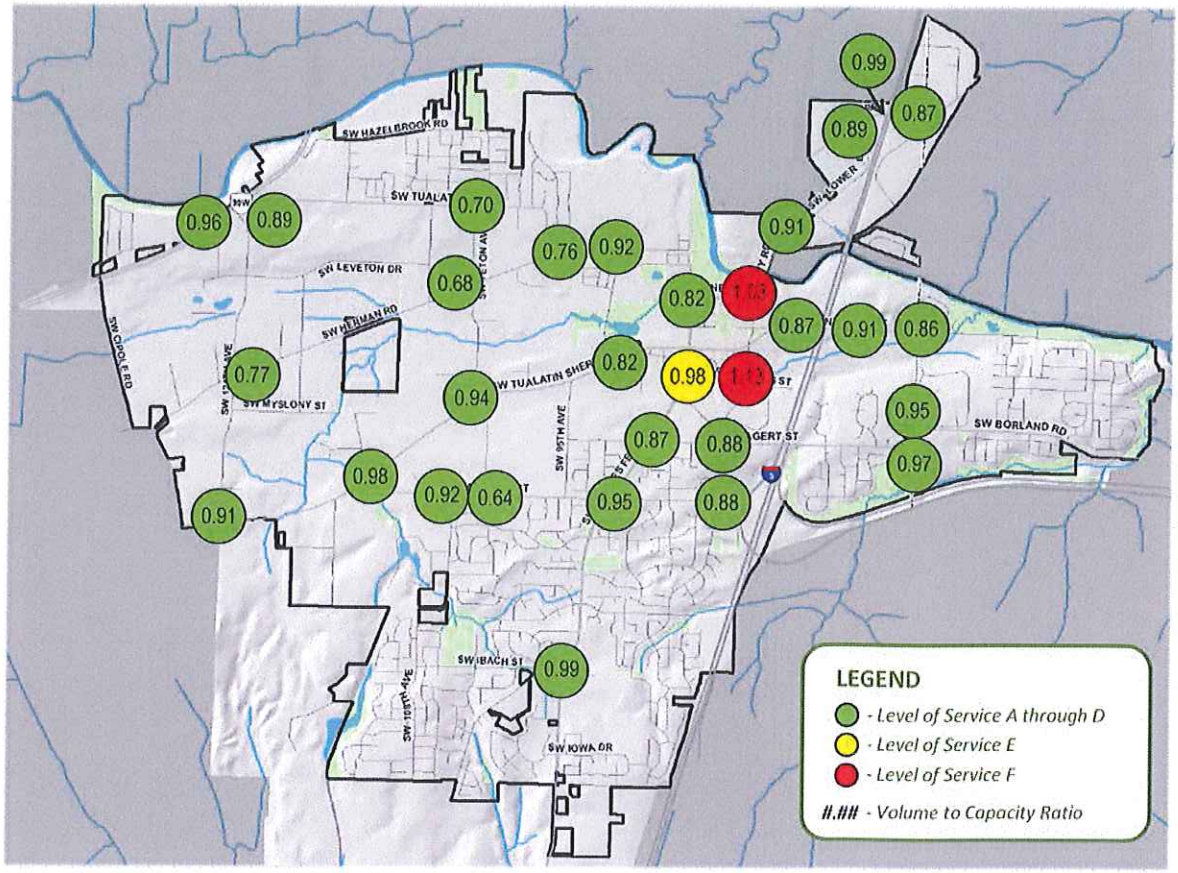
TABLE 7
Future (2035) Operational Analysis Comparison between Scenario 3 and Scenario 6

	Scenario 3 ("Low Build")		Scenario 6 ("Low Build" with 65th Extension and Boones Ferry Road Widening)	
	LOS	V/C	LOS	V/C
Boones Ferry/Tualatin-Sherwood Road	E	1.0	E	0.98
I-5 SB Ramps and Nyberg Road	D	0.91	C	0.87
Boones Ferry Road / Lower Boones Ferry Road	E	1.06	C	0.91
I-5 NB Ramps and Lower Boones Ferry Road	D	0.98	C	0.87
Martinazzi/Sagert	D	0.92	D	0.88
65th/Nyberg	C	0.91	C	0.86

Traffic Volume Shifts

Traffic volumes shift to 65th Avenue under this scenario, though with fewer shifts than under Scenario 4. Moderate increases in traffic volumes would occur along 65th Avenue between Nyberg Street and Sagert Street and between Childs Road and Lakeview Boulevard. Minor increases would continue south of Sagert Street to Norwood Road, along Childs Road, along Sagert Street, and along Nyberg Road east of 65th Avenue. Traffic volumes would decrease along I-5 between the Lower Boones Ferry Road and Nyberg Road interchanges, which indicates that some drivers would take I-5 for short, local trips in this location. Unlike Scenario 4, minor increases would occur on Boones Ferry Road between Lower Boones Ferry Road and Sagert Street, due to the extra capacity along that corridor.

Figure 6. Intersection Operations, Future (2035) "Low Build" with 65th Avenue Extension and Boones Ferry Road Widening



Travel Times

Travel times are summarized in Table 8 below for the future (Year 2035) "low build" scenario with an extension of 65th Avenue over the Tualatin River and a widening of Boones Ferry Road north of Martinazzi.

TABLE 8
Future (2035) "Low Build" with 65th Avenue Extension and Boones Ferry Road Widening P.M. Peak Period (4:00 P.M. to 6:00 P.M.) Travel Time Data

Corridor	From	To	Average Travel Times	Difference from Future No Build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	12 min, 35 sec	-2 min, 30 sec
	Bridgeport Village	Tualatin High School	10 min, 35 sec	-1 min, 35 sec
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	9 min, 50 sec	+10 sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	11 min, 30 sec	-1 min, 30 sec
	Bridgeport Village	115th Avenue	10 min, 55 sec	-45 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	11 minutes	+25 sec
	Nyberg Interchange	115th Avenue	10 min, 55 sec	+30 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	14 min, 55 sec	-2 min, 5 sec
	Bridgeport Village	Cipole Road	15 min, 40 sec	-1 min, 40 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	11 min, 50 sec	+15 sec
	Nyberg Interchange	Cipole Road	12 min, 20 sec	+30 sec
SW Borland Road / 65th	Bridgeport Elementary	Nyberg Interchange	3 min, 30 sec	+10 sec

TABLE 8
Future (2035) "Low Build" with 65th Avenue Extension and Boones Ferry Road Widening P.M. Peak Period (4:00 P.M. to 6:00 P.M.) Travel Time Data

Corridor	From	To	Average Travel Times	Difference from Future No Build
Avenue	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
SW Borland Road / 65th	Bridgeport Elementary	Bridgeport Village	10 min, 25 sec	-2 min, 30 sec
Avenue	Bridgeport Village	Bridgeport Elementary	11 min, 50 sec	-2 min, 35 sec

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

Travel time decreases under this scenario would be dramatic for some destination pairings. Between Tualatin High School and Bridgeport Village and between Bridgeport Elementary School and Bridgeport Village, for example, there are travel time savings of greater than 2 minutes. For traffic to and from the west (Tualatin Road, Cipole Road, 115th Avenue), there would be a travel time savings greater than a minute.

Conclusions

Looking at the six scenarios as a whole, we see that Tualatin is somewhat congested now, and becomes very congested in the future. The main roadways of Tualatin-Sherwood Road, Boones Ferry Road, 65th Avenue, Teton Avenue, and SW Avery Street bear the burden of this congestion, as observed in both intersection operations and travel times. In some locations, it is expected to take 6 minutes longer to travel across town than it does today.

The "low build" scenario does a fair job of mitigating intersection level problems. Adding signals, restriping lanes, and adding turn pockets by themselves can move cars more quickly through any given intersection but travel times show that conditions on the roadway sections between intersections remain congested. "Low build" travel times are no different than those seen under future no build.

Scenario 4, which combines the "low build" projects with the 65th Avenue extension, improves both intersection conditions and travel times. Travel time savings are seen for cross-town trips in both the north/south and east/west direction, but are most dramatic in the vicinity of 65th Avenue (between Bridgeport Elementary School and Bridgeport Village), where travel time reductions are in excess of two minutes.

Scenario 5, which combines the "low build" with widening Boones Ferry Road north of Martinazzi, displays similar travel time benefits to Scenario 4 except for this last pairing, which is purely a benefit of the 65th Avenue extension. Scenario 5 maintains much of the intersection level operations as under the "low build" and improves conditions at the Boones Ferry Road/Lower Boones Ferry Road intersection through additional capacity. Conditions at the Boones Ferry Road/Martinazzi Avenue intersection are worsened because this is the location that the roadway transitions back to its existing three lane section.

Scenario 6 intersection operations show that more traffic flows along Boones Ferry Road, but that capacity projects at Boones Ferry Road / Lower Boones Ferry Road accommodate some of this traffic. Operations from Scenario 6 are improved along sections of Tualatin-Sherwood Road, Boones Ferry Road, and along 65th Avenue. Of concern for Scenario 6 are the two Martinazzi intersections (Boones Ferry Road and Tualatin-Sherwood Road) which experience worsened traffic congestion in the afternoon rush hour. When intersection conditions are considered in combination with travel time savings, Scenario 6 benefits Tualatin more than any other scenario. Travel time savings in the north/south and east/west

directions are in excess of 2 minutes (Tualatin High School/Bridgeport Village, Cipole Road/Bridgeport Village, Bridgeport Elementary School/Bridgeport Village).

Next Steps

The Tualatin TSP is available in draft form as all project, program, and policy recommendations have been identified apart from the two river crossings described in this memorandum. At its next meeting, the Transportation Task Force will use the traffic analysis results to make a recommendation on which, if any, river crossing projects should be included in the TSP. This recommendation will then be taken into consideration by the Tualatin Planning Commission, Tualatin Parks Advisory Committee, and City Council as they begin deliberations on the TSP package as a whole.

This page left blank intentionally.

Appendix A: Traffic Operations and Travel Times Data

This page left blank intentionally.

APPENDIX A
PM Peak Hour Intersection Traffic Operations by Scenario (Without Intersection Mitigations)

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 No-Build LOS	2035 No-Build V/C	2035 Low-Build w/out 65th LOS	2035 Low-Build w/out 65th V/C	2035 Low-Build w/out 65th & w/BFR widened LOS	2035 Low-Build w/o 65th & w/BFR widened V/C	2035 Low-Build w/2-lane 65th LOS	2035 Low-Build w/2-lane 65th V/C	2035 Low-Build with 2-lane 65th & w/BFR widened LOS	2035 Low-Build with 2-lane 65th & w/BFR widened V/C
Signalized														
SW 124th Ave & Hwy 99W	ODOT	0.99	C	0.69	D	0.99	D	0.99	D	0.97	D	0.98	D	0.96
SW 124th Ave & SW Tualatin Rd	Tualatin	D	B	0.66	C	0.91	C	0.88	C	0.88	C	0.89	C	0.89
SW 124th Ave & SW Herman Rd	Tualatin	D	C	0.53	C	0.76	C	0.77	C	0.77	C	0.76	C	0.77
SW 124th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.90	C	0.93	C	0.92	C	0.92	C	0.92	C	0.91
SW Avery St & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	B	0.71	D	0.97	D	0.98	D	0.98	D	0.98	D	0.98
SW Teton Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.79	E	1.05	E	1.05	E	1.05	E	1.07	E	1.06
SW 90th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.60	C	0.80	C	0.80	C	0.80	D	0.81	D	0.82
SW Boones Ferry Rd & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.93	F	1.21	F	1.19	F	1.17	F	1.18	F	1.18
SW Martinazzi Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.94	F	1.18	F	1.17	F	1.15	F	1.23	F	1.19
I-5 SB Ramps & SW Nyberg Rd	ODOT	0.99	D	0.79	D	0.91	D	0.91	D	0.86	C	0.91	C	0.87
I-5 NB Ramps & SW Nyberg Rd	ODOT	0.99	B	0.68	C	0.84	C	0.84	C	0.85	C	0.92	C	0.91
SW 65th Ave & SW Borland Rd	Wash. Co.	0.99	D	0.93	F	1.47	F	1.47	F	1.47	F	1.54	F	1.52
SW Teton Ave & SW Herman Rd	Tualatin	D	C	0.65	B	0.61	C	0.67	C	0.67	C	0.68	C	0.68
SW Tualatin Rd & SW Herman Rd	Tualatin	D	B	0.59	B	0.77	B	0.74	B	0.77	B	0.74	B	0.76
SW 90th Ave & SW Tualatin Rd	Tualatin	D	B	0.75	D	0.98	C	0.94	C	0.94	C	0.92	C	0.92
SW Tualatin Rd & SW Boones Ferry Rd	Wash. Co	0.99	B	0.62	C	0.87	C	0.84	C	0.89	C	0.79	C	0.82
SW Martinazzi Ave & SW Boones Ferry Rd	Wash. Co	0.99	D	0.89	F	1.27	F	1.27	F	1.24	F	1.20	F	1.18
SW Boones Ferry Rd & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.76	E	1.12	E	1.12	D	1.05	D	1.00	C	0.91
SW 72nd Ave & Lower Boones Ferry Rd & Bridgeport Rd	Wash. Co	0.99	C	0.66	D	0.88	D	0.88	D	0.89	D	0.83	D	0.89
I-5 SB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.75	D	0.97	D	0.97	D	1.03	D	0.92	D	0.99
I-5 NB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	B	0.74	D	0.98	D	0.98	D	1.00	C	0.86	C	0.87
SW Boones Ferry Rd & SW Avery St	Wash. Co.	0.99	C	0.87	F	1.13	F	1.13	F	1.20	F	1.17	F	1.17
SW Boones Ferry Rd & SW Sagert St	Wash. Co	0.99	C	0.75	E	1.11	E	1.11	F	1.13	E	1.09	E	1.07
SW Boones Ferry Rd & SW Ibach St	Wash. Co.	0.99	B	0.70	D	0.98	D	0.98	D	0.98	D	0.99	D	0.99
SW 105th Ave & SW Avery St[2]	Tualatin	E	C	0.28	C	0.94	C	0.94	C	0.94	C	0.92	C	0.92
SW Martinazzi Ave & SW Sagert St[3]	Tualatin	E	F	0.95	D	0.92	D	0.92	D	0.93	D	0.87	D	0.88
SW 65th Ave & SW Nyberg Rd	Wash. Co	0.99	B	0.79	D	1.02	D	1.02	D	1.02	F	1.50	F	1.41

[2] Existing Conditions operations evaluated with minor street stop control.
[3] Existing Conditions operations evaluated with minor street stop control. HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the three lanes (one dedicated to each movement) are combined into two: through-right and through-left lanes. Because of this approximation, actual performance may be slightly better than reported above.

APPENDIX A
PM Peak Hour Intersection Traffic Operations by Scenario (Without Intersection Mitigations)

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 No-Build LOS	2035 No-Build V/C	2035 Low-Build w/out 65th LOS	2035 Low-Build w/out 65th V/C	2035 Low-Build w/out 65th & w/BFR widened LOS	2035 Low-Build w/o 65th & w/BFR widened V/C	2035 Low-Build w/2-lane 65th LOS	2035 Low-Build w/2-lane 65th V/C	2035 Low-Build with 2-lane 65th & w/BFR widened LOS	2035 Low-Build with 2-lane 65th & w/BFR widened V/C
All-way Stop-control														
SW Martinazzi Ave & SW Avery St*	Tualatin	E	B	0.55	D	0.85	D	0.85	D	0.83	D	0.86	D	0.88
SW Teton Ave & SW Avery St*	Tualatin	E	C	0.40	F	0.77	F	0.77	F	0.77	F	0.76	F	0.76
SW 65th Ave & SW Sagert St*[4]	Wash. Co.	0.99	F	0.98	F	1.72	F	1.72	F	1.72	F	1.87	F	1.87
*Minor Street Stop-control**														
SW Teton Ave & SW Tualatin Rd	Tualatin	E	F	0.98	F	1.42	B**	0.70**	B**	0.70**	B**	0.70**	B**	0.70**

SOURCE: Consultant Team

*LOS and V/C reported for highest delay movement.

**Evaluated as a traffic signal. Assumes construction of traffic signal.

Bold and highlighted dark grey text indicates meet minimum performance standard is not met

[4] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the dedicated southbound left turn lane and through lane are combined, due to the relatively small volume on the left turn movement. Because of this approximation, actual performance may be slightly better than reported above.

APPENDIX A
PM Peak Hour Intersection Traffic Operations by Scenario (With Mitigations)

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 No-Build LOS	2035 No-Build V/C	2035 Low-Build LOS	2035 Low-Build V/C	2035 Low-Build w/BFR widened LOS	2035 Low-Build w/BFR widened V/C	2035 Low-Build (w/2-lane 65th) LOS	2035 Low-Build (w/2-lane 65th) V/C	2035 Low-Build 2-lane 65th & w/BFR widened LOS	2035 Low-Build 2 lane 65th & w/BFR widened V/C	Mitigation (identified for Low-Build Scenario w/65th Avenue, unless noted otherwise)
Signalized															
SW 124th Ave & Hwy 99W	ODOT	0.99	C	0.69	D	0.99	D	0.99	D	0.97	D	0.98	D	0.96	
SW 124th Ave & SW Tualatin Rd	Tualatin	D	B	0.66	C	0.91	C	0.88	C	0.88	C	0.89	C	0.89	
SW 124th Ave & SW Herman Rd	Tualatin	D	C	0.53	C	0.76	C	0.77	C	0.77	C	0.76	C	0.77	
SW 124th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.90	C	0.93	C	0.92	C	0.92	C	0.92	C	0.91	
SW Avery St & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	B	0.71	D	0.97	D	0.98	D	0.98	D	0.98	D	0.98	
SW Teton Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.79	E	0.92	E	0.92	E	0.92	D	0.94	D	0.94	Signal Adjustments (Timing and Phasing)
SW 90th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.60	C	0.80	C	0.80	C	0.80	D	0.81	D	0.82	
SW Boones Ferry Rd & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.93	E	**1.02**	E	**1.00**	E	**1.00**	E	0.96	E	0.98	EBR, WBR, SBL pockets & Signal Adjustments
SW Martinazzi Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.94	F	**1.11**	F	**1.10**	F	**1.08**	E	**1.10**	F	**1.13**	EBT, NBR pocket, WBR prohibited & Signal Adjustments
I-5 SB Ramps & SW Nyberg Rd	ODOT	0.99	D	0.79	D	0.91	D	0.91	D	0.86	C	0.91	C	0.87	
I-5 NB Ramps & SW Nyberg Rd	ODOT	0.99	B	0.68	C	0.84	C	0.84	C	0.85	C	0.92	C	0.91	
SW 65th Ave & SW Borland Rd	Wash. Co.	0.99	D	0.93	D	0.96	D	0.96	D	0.99	C	0.91	D	0.95	NBR, WBL pocket & Signal Adjustments. Alternative access for EB approach (closed)
SW Teton Ave & SW Herman Rd	Tualatin	D	C	0.65	B	0.61	C	0.67	C	0.67	C	0.68	C	0.68	
SW Tualatin Rd & SW Herman Rd	Tualatin	D	B	0.59	B	0.77	B	0.74	B	0.77	B	0.74	B	0.76	
SW 90th Ave & SW Tualatin Rd	Tualatin	D	B	0.75	D	0.98	C	0.94	C	0.94	C	0.92	C	0.92	
SW Tualatin Rd & SW Boones Ferry Rd	Wash. Co	0.99	B	0.62	C	0.87	C	0.84	C	0.89	C	0.79	C	0.82	
SW Martinazzi Ave & SW Boones Ferry Rd	Wash. Co	0.99	D	0.89	D	0.99	D	0.99	E	1.08	D	0.97	F	**1.03**	Widen BFR east to create 2 EB entry lanes. Alternative access for SB approach (closed.) Restripe lanes & Signal adjustments.
SW Boones Ferry Rd & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.76	E	**1.06**	E	**1.06**	D	**1.02**	D	**1.00**	C	0.91	RIRO on EB approach including prohibiting NBL.
SW 72nd Ave & Lower Boones Ferry Rd & Bridgeport Rd	Wash. Co	0.99	C	0.66	D	0.88	D	0.88	D	0.89	D	0.83	D	0.89	
I-5 SB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.75	D	0.97	D	0.97	D	0.98	D	0.92	D	0.99	
I-5 NB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	B	0.74	D	0.98	D	0.98	D	0.96	C	0.86	C	0.87	
SW Boones Ferry Rd & SW Avery St	Wash. Co.	0.99	C	0.87	D	0.94	D	0.94	D	0.94	D	0.95	D	0.95	EBR, SBR pockets & Signal Adjustments (Timing and Phasing)
SW Boones Ferry Rd & SW Sagert St	Wash. Co.	0.99	C	0.75	D	0.88	D	0.88	D	0.93	D	0.85	D	0.87	NBR pocket & Signal Adjustments (Timing and Phasing)
SW Boones Ferry Rd & SW Ibach St	Wash. Co.	0.99	B	0.70	D	0.98	D	0.98	D	0.98	D	0.99	D	0.99	
SW 105th Ave & SW Avery St[5]	Tualatin	E	C	0.28	C	0.94	C	0.94	C	0.94	C	0.92	C	0.92	
SW Martinazzi Ave & SW Sagert St[6]	Tualatin	E	F	0.95	D	0.92	D	0.92	D	0.92	D	0.87	D	0.88	

[5] Existing Conditions operations evaluated with minor street stop control.

APPENDIX A
PM Peak Hour Intersection Traffic Operations by Scenario (With Mitigations)

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 No-Build LOS	2035 No-Build V/C	2035 Low-Build LOS	2035 Low-Build V/C	2035 Low-Build w/BFR widened LOS	2035 Low-Build w/BFR widened V/C	2035 Low-Build (w/2-lane 65th) LOS	2035 Low-Build (w/2-lane 65th) V/C	2035 Low-Build 2-lane 65th & w/BFR widened LOS	2035 Low-Build 2 lane 65th & w/BFR widened V/C	Mitigation (identified for Low-Build Scenario w/65th Avenue, unless noted otherwise)
SW 65th Ave & SW Nyberg Rd	Wash. Co	0.99	B	0.79	C	0.91	C	0.91	C	0.92	C	0.88	C	0.86	Signal timing adjustments.
All-way Stop-control															
SW Martinazzi Ave & SW Avery St*	Tualatin	E	B	0.55	D	0.85	D	0.85	D	0.83	D	0.86	D	0.88	
SW Teton Ave & SW Avery St*	Tualatin	E	C	0.40	F	0.77	B**	0.62**	B**	0.62**	B**	0.64**	B**	0.64**	Traffic Signal
SW 65th Ave & SW Sagert St*	Wash. Co.	0.99	F	0.98	D**	0.91**	D**	0.91**	D**	0.97**	D**	0.97**	D**	0.97**	**Traffic Signal & Restripe (NBL, EBL). Alternate access for WB approach (closed)**
*Minor Street Stop-control**															
SW Teton Ave & SW Tualatin Rd	Tualatin	E	F	0.98	F	1.42	B**	0.70**	B**	0.70**	B**	0.70**	B**	0.70**	Traffic Signal (assumed in Low-Build)

SOURCE: Consultant Team

*LOS and V/C reported for highest delay movement.

**Evaluated as a traffic signal. Assumes construction of traffic signal.

BOLD and highlighted dark grey text indicates meet minimum performance standard is not met

[6] Existing Conditions operations evaluated with minor street stop control. HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the three lanes (one dedicated to each movement) are combined into two: through-right and through-left lanes. Because of this approximation, actual performance may be slightly better than reported above.

[7] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the dedicated southbound left turn lane and through lane are combined, due to the relatively small volume on the left turn movement. Because of this approximation, actual performance may be slightly better than reported above.

2035 PM Peak Travel Time Comparison by Scenario (minutes)

Corridor	From	To	Existing (2011)	No-Build (2035)	Low-Build	Low-Build w/ Boones Ferry Rd. Widening	Low-Build w/ 65th Extension	Low-Build w/65th Extension & Boones Ferry Rd. Widening
SW Boones Ferry Road	Tualatin HS	Bridgeport Village	10.3	15.1	15.1	13.7	13.7	12.6
	Bridgeport Village	Tualatin HS	9.2	12.2	12.2	11.5	11.3	10.6
SW Boones Ferry Road	Tualatin HS	Nyberg Interchange	7.4	9.7	9.7	9.7	10.0	9.8
	Nyberg Interchange	Tualatin HS	7.1	8.2	8.2	8.2	8.4	8.4
SW Tualatin Road	115th Ave	Bridgeport Village	8.6	13.0	13.5	12.5	12.3	11.5
	Bridgeport Village	115th Ave	8.5	11.7	12.0	11.3	11.4	10.9
SW Tualatin Road	115th Ave	Nyberg Interchange	8.0	10.6	10.9	10.9	11.2	11.0
	Nyberg Interchange	115th Ave	8.7	10.4	10.8	10.7	11.0	10.9
SW Tualatin-Sherwood Road	Cipole Rd	Bridgeport Village	11.7	17.0	17.0	15.8	16.0	14.9
	Bridgeport Village	Cipole Rd	13.0	17.3	17.4	16.7	16.4	15.7
SW Tualatin-Sherwood Road	Cipole Rd	Nyberg Interchange	8.7	11.6	11.6	11.6	12.0	11.8
	Nyberg Interchange	Cipole Rd	10.1	11.8	12.0	12.0	12.4	12.3
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3.1	3.3	3.3	3.4	3.3	3.5
	Nyberg Interchange	Bridgeport Elementary	2.3	3.5	3.5	3.5	3.5	3.5
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	9.2	12.9	12.8	12.2	10.7	10.4
	Bridgeport Village	Bridgeport Elementary	8.4	14.4	14.4	13.7	12.2	11.8

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)

2035 PM Peak Travel Time Comparison by Scenario (Percent Change Relative to No-Build Scenario)

Corridor	From	To	Low-Build	Low-Build w/ Boones Ferry Rd. Widening	Low-Build w/ 65th Extension	Low-Build w/ 65th Extension & w/ Boones Ferry Rd. Widening
SW Boones Ferry Road	Tualatin HS	Bridgeport Village	0%	-10%	-9%	-16%
	Bridgeport Village	Tualatin HS	0%	-5%	-8%	-13%
SW Boones Ferry Road	Tualatin HS	Nyberg Interchange	0%	0%	3%	1%
	Nyberg Interchange	Tualatin HS	0%	0%	3%	2%
SW Tualatin Road	115th Ave	Bridgeport Village	3%	-4%	-5%	-12%
	Bridgeport Village	115th Ave	2%	-3%	-3%	-7%
SW Tualatin Road	115th Ave	Nyberg Interchange	3%	3%	6%	4%
	Nyberg Interchange	115th Ave	4%	3%	6%	5%
SW Tualatin-Sherwood Road	Cipole Rd	Bridgeport Village	0%	-7%	-6%	-13%
	Bridgeport Village	Cipole Rd	1%	-4%	-5%	-9%
SW Tualatin-Sherwood Road	Cipole Rd	Nyberg Interchange	0%	0%	4%	2%
	Nyberg Interchange	Cipole Rd	2%	1%	4%	4%
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	0%	1%	0%	4%
	Nyberg Interchange	Bridgeport Elementary	0%	0%	1%	0%
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	0%	-5%	-16%	-19%
	Bridgeport Village	Bridgeport Elementary	0%	-5%	-15%	-18%

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)

City of Tualatin

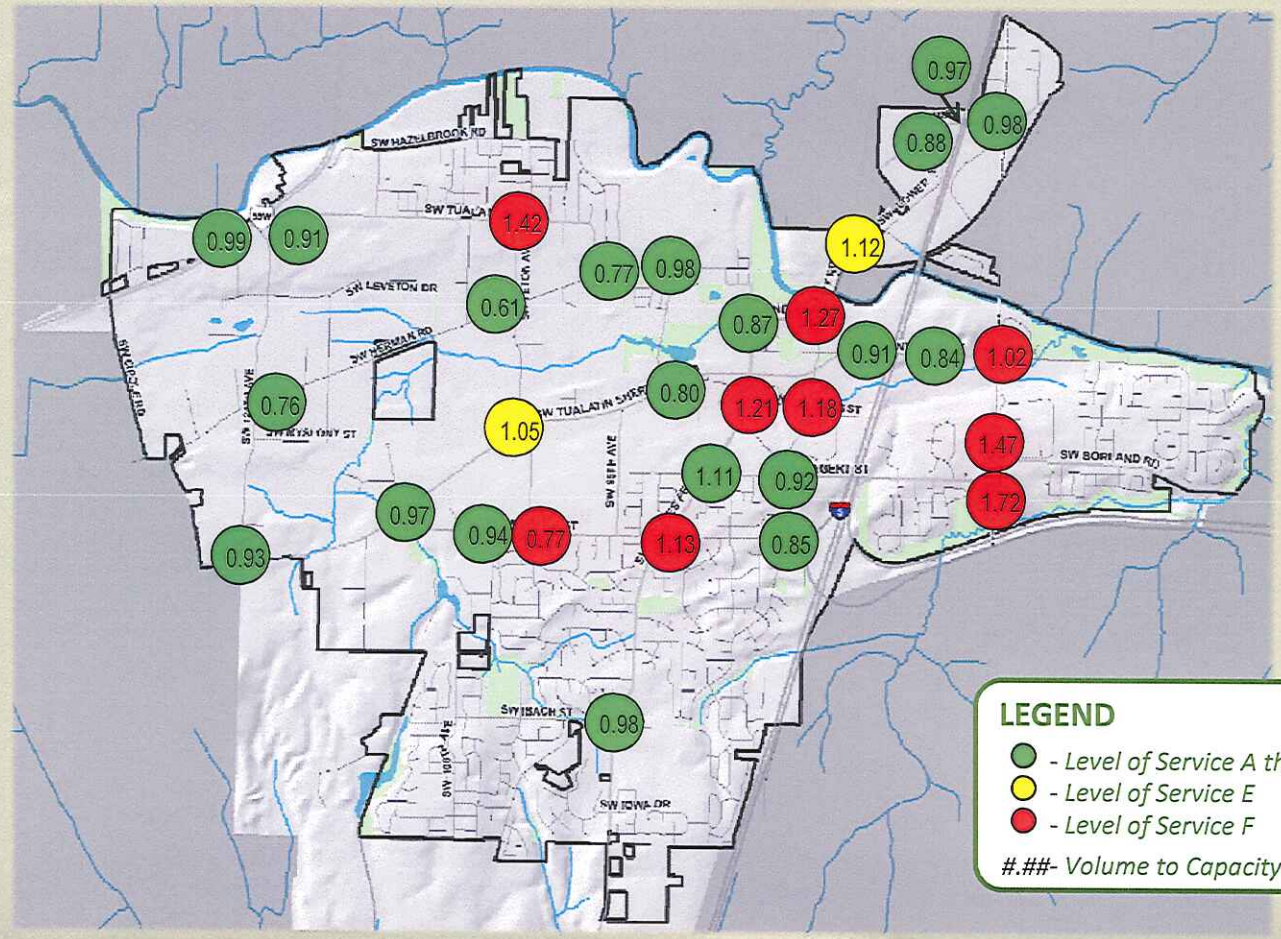
Overview of Traffic Analysis

Tualatin TSP

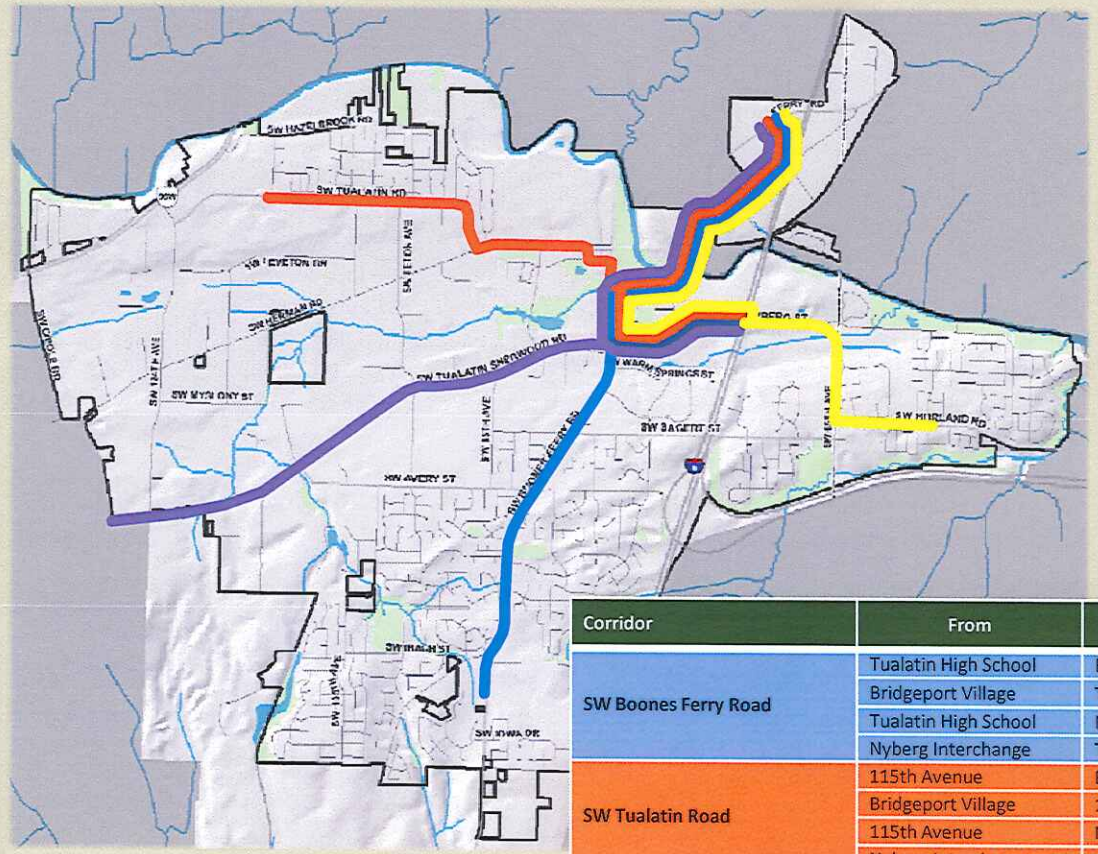
Presentation to
Tualatin Task Force
November 1, 2012

TualatinTSP_TBG061511054135PDX 422992.P5.C1.HWn6/15/2011 hk

No-build Operations

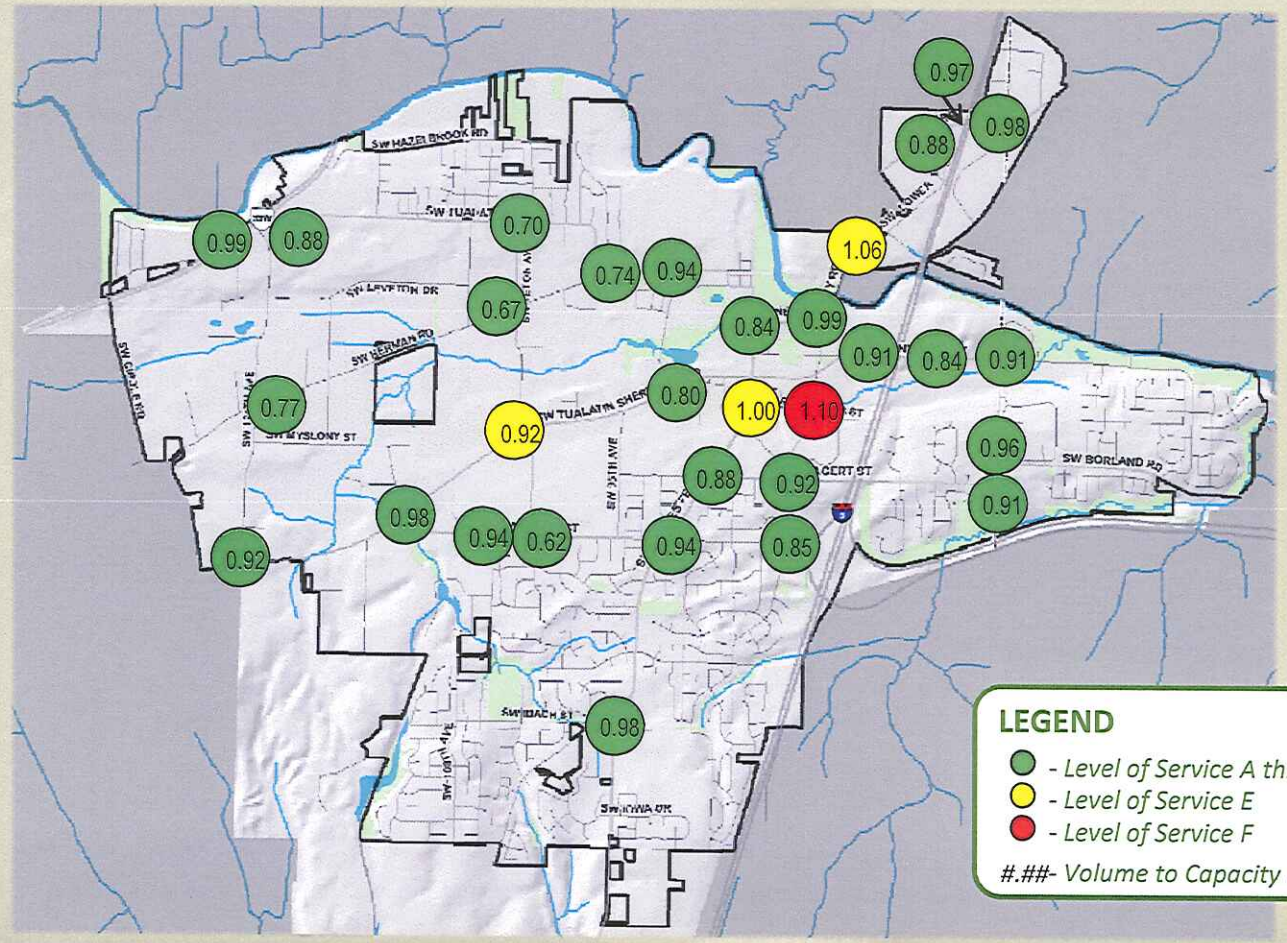


No-build Travel Times

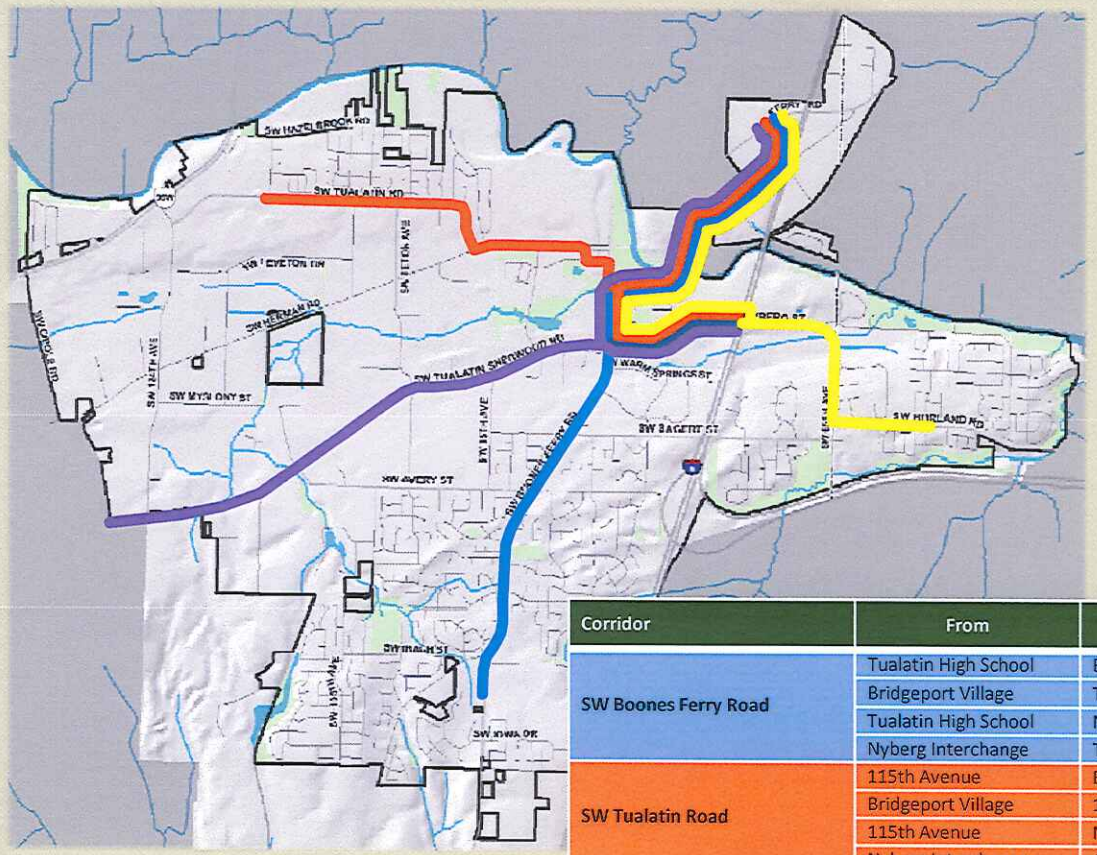


Corridor	From	To	Average Travel Time	Difference from Existing Conditions
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	+4 min, 45 sec
	Bridgeport Village	Tualatin High School	12 min, 10 sec	+3 min
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	+2 min, 15 sec
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	+1 min, 5 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	13 minutes	+4 min, 25 sec
	Bridgeport Village	115th Avenue	11 min, 40 sec	+3 min, 10 sec
	115th Avenue	Nyberg Interchange	10 min, 35 sec	+2 min, 35 sec
	Nyberg Interchange	115th Avenue	10 min, 25 sec	+1 min, 45 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	+5 min, 20 sec
	Bridgeport Village	Cipole Road	17 min, 20 sec	+ 4min, 20 sec
	Cipole Road	Nyberg Interchange	11 minutes 35 sec	+2min, 55 sec
	Nyberg Interchange	Cipole Road	11 min, 50 sec	+1 min, 45 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	+15 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	+1 min, 10 sec
	Bridgeport Elementary	Bridgeport Village	12 min, 55 sec	+3 min, 45 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	+6 min

Low Build Operations

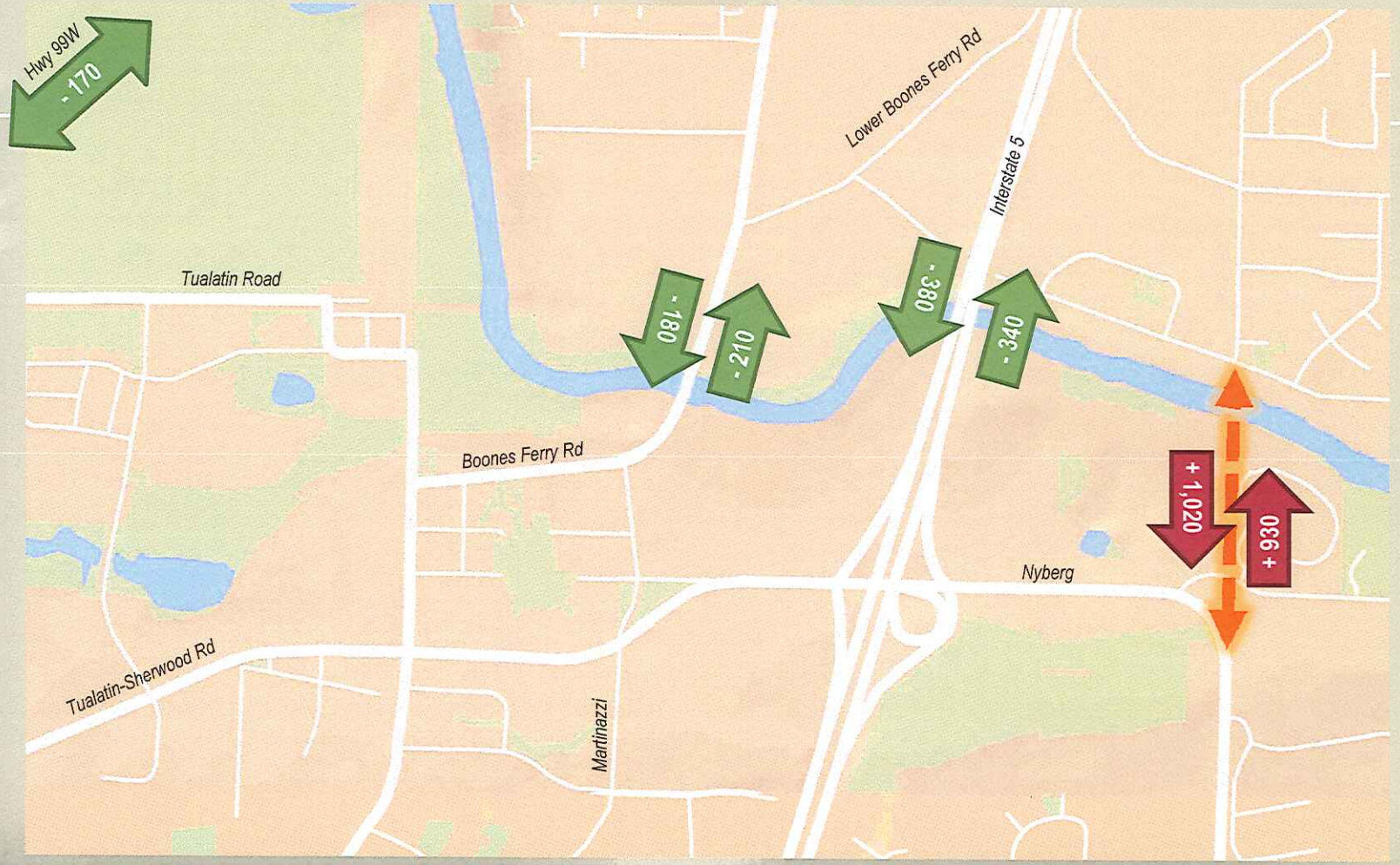


Low Build Travel Times

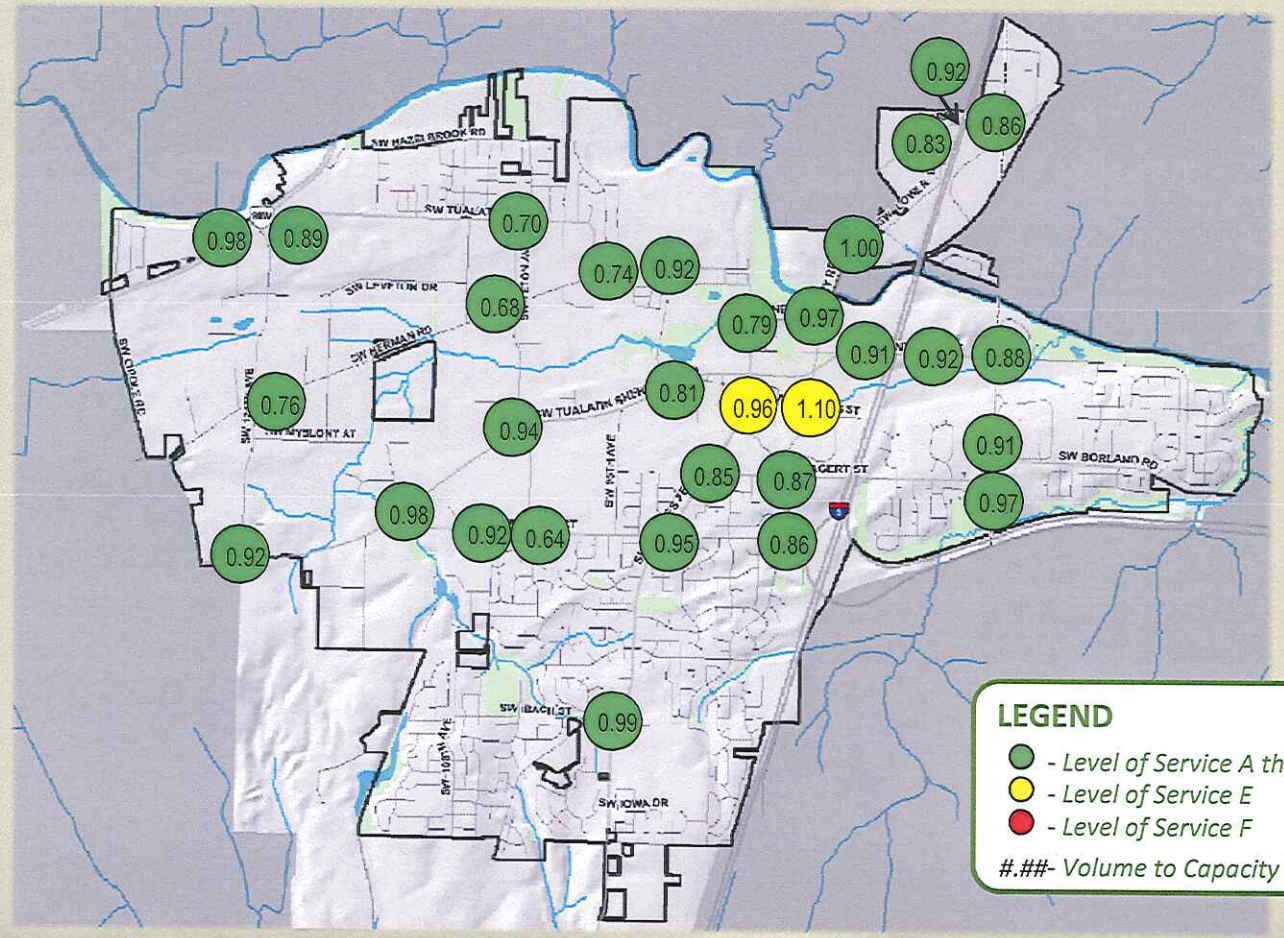


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	No difference
	Bridgeport Village	Tualatin High School	12 min, 10 sec	No difference
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	13 min, 30 sec	+30 sec
	Bridgeport Village	115th Avenue	12 minutes	+20 sec
	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 50 sec	+25 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	No difference
	Bridgeport Village	Cipole Road	17 min, 25 sec	+5 sec
	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	12 min, 50 sec	-5 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	No difference

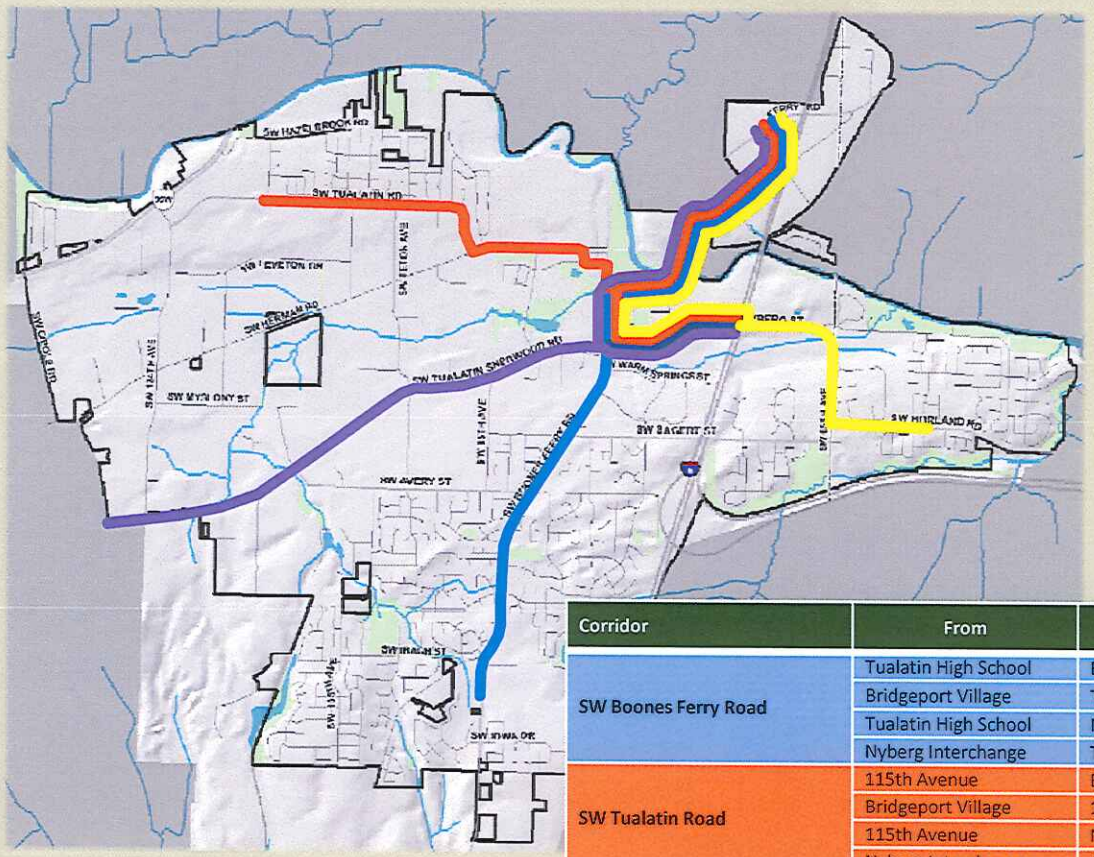
Low Build + 65th Ave Extension Volume Shifts



Low Build + 65th Ave Extension Operations

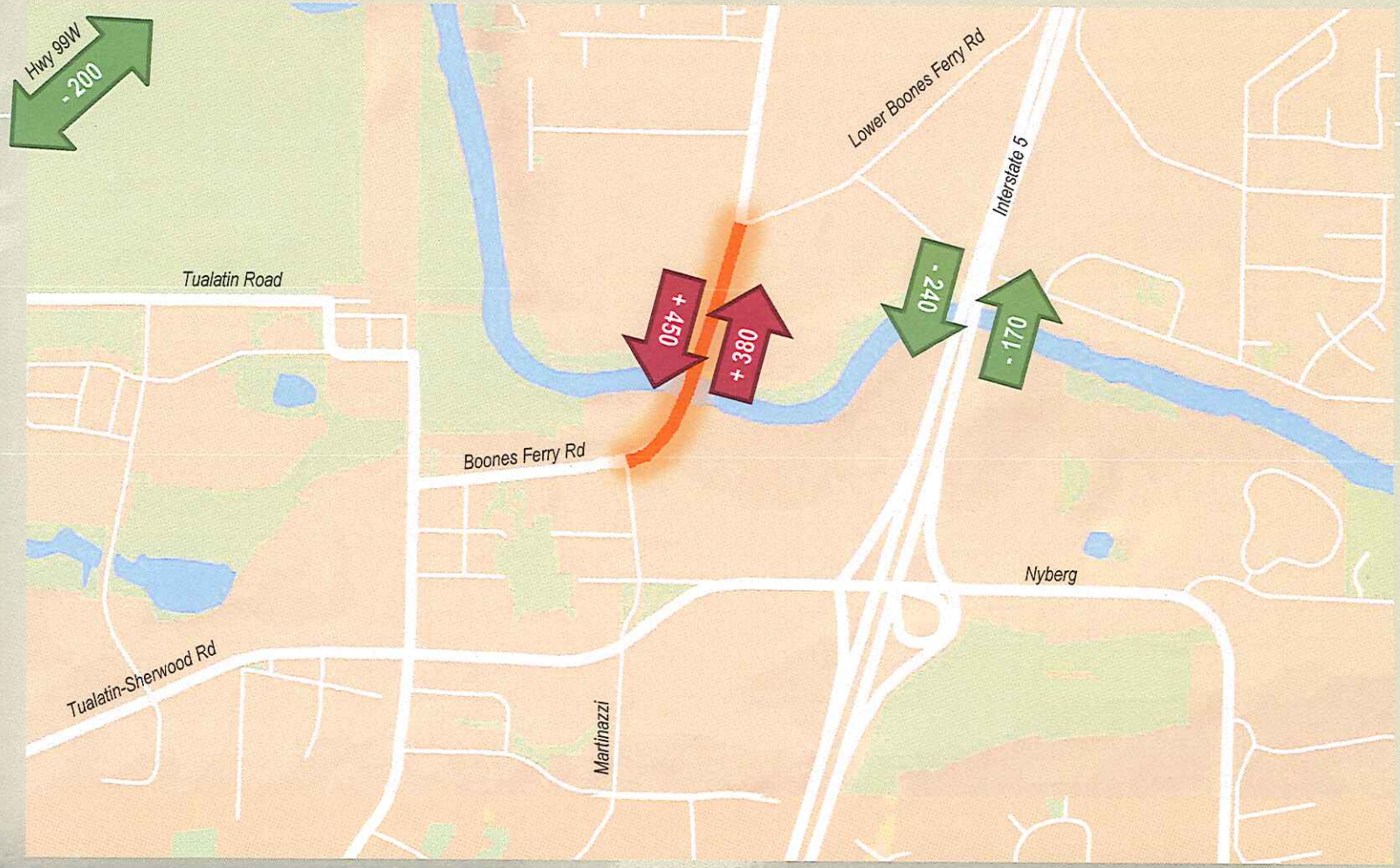


Low Build + 65th Ave Extension Travel Times

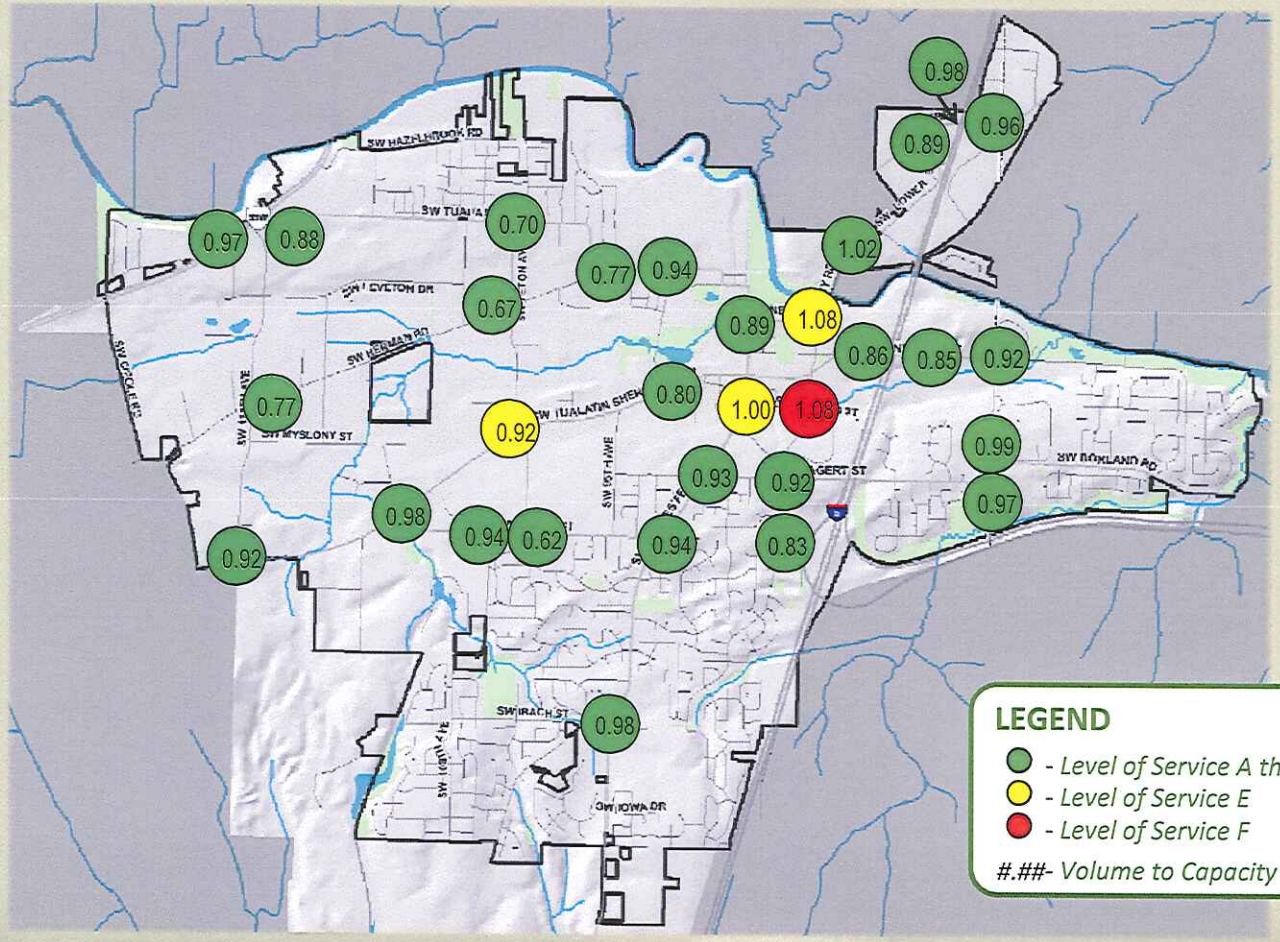


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin High School	11 min, 20 sec	-50 sec
	Tualatin High School	Nyberg Interchange	10 min	+20sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 20 sec	-40 sec
	Bridgeport Village	115th Avenue	11 min, 25 sec	-15 sec
	115th Avenue	Nyberg Interchange	11 min, 10 sec	+35 sec
	Nyberg Interchange	115th Avenue	11 min	+35 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	16 min	-1 min
	Bridgeport Village	Cipole Road	16 min 25 sec	-55 sec
	Cipole Road	Nyberg Interchange	12 min	+25 sec
	Nyberg Interchange	Cipole Road	12 min, 25 sec	+40 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	10 min, 40 sec	-2 min, 15 sec
	Bridgeport Village	Bridgeport Elementary	12 min, 10 sec	-2 min, 15 sec

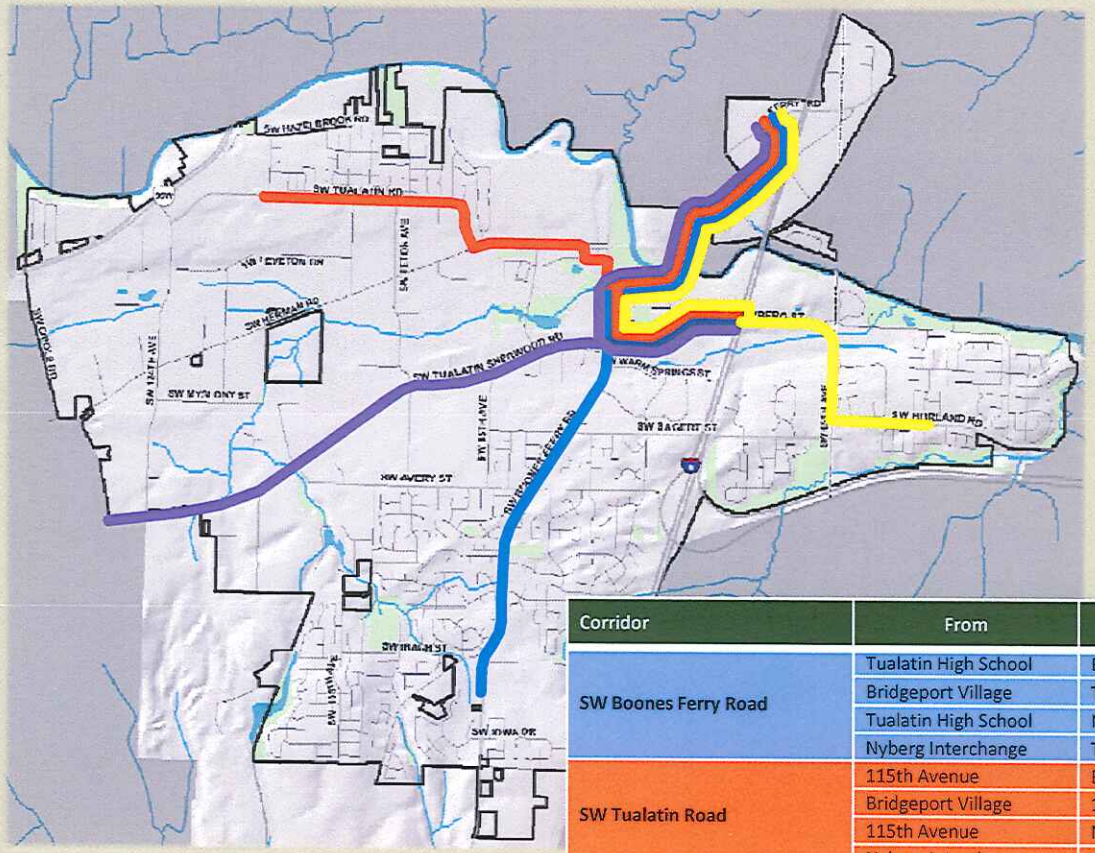
Low Build + Boones Ferry Road Widening Volume Shifts



Low Build + Boones Ferry Road Widening Operations

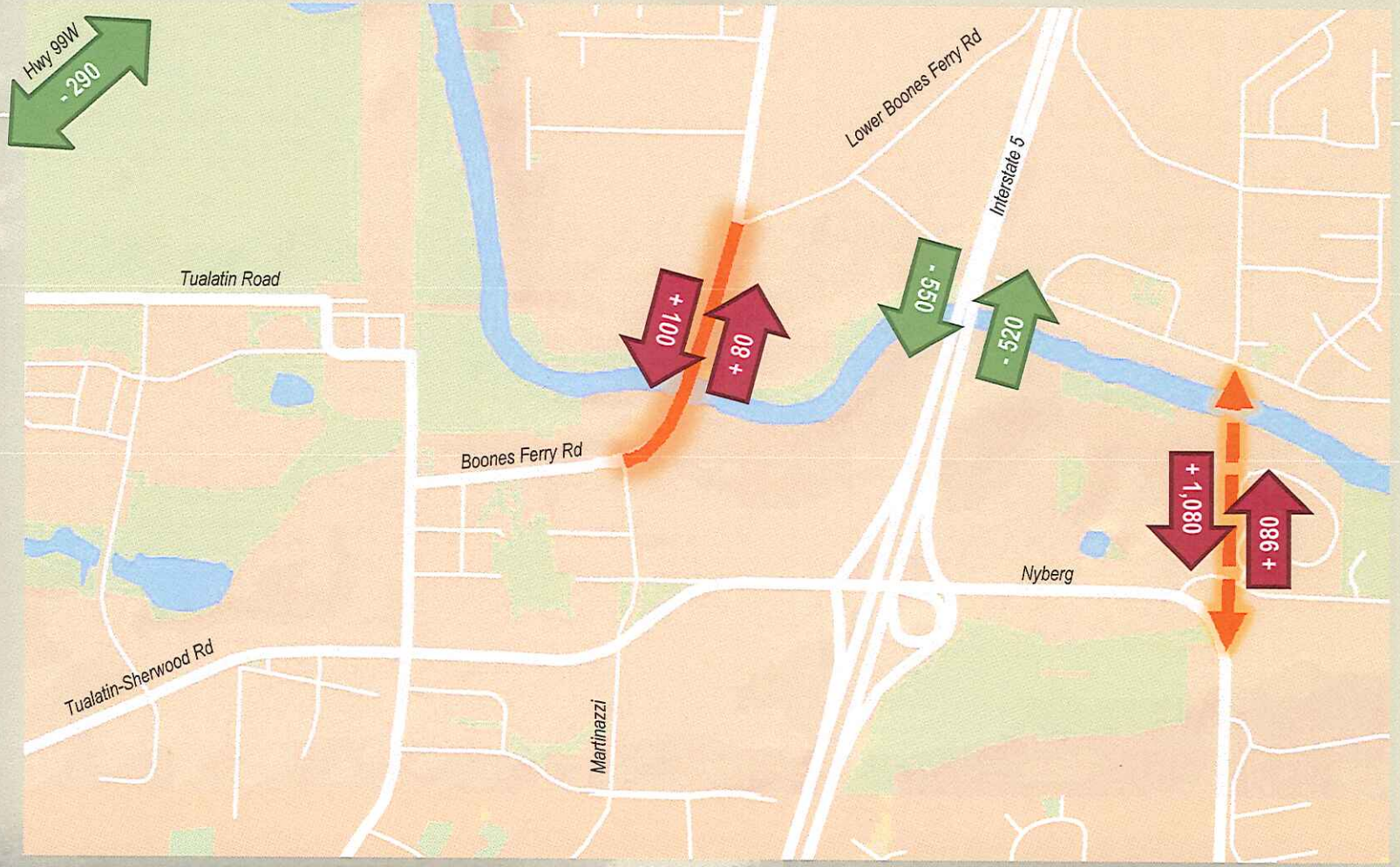


Low Build + Boones Ferry Road Widening Travel Times

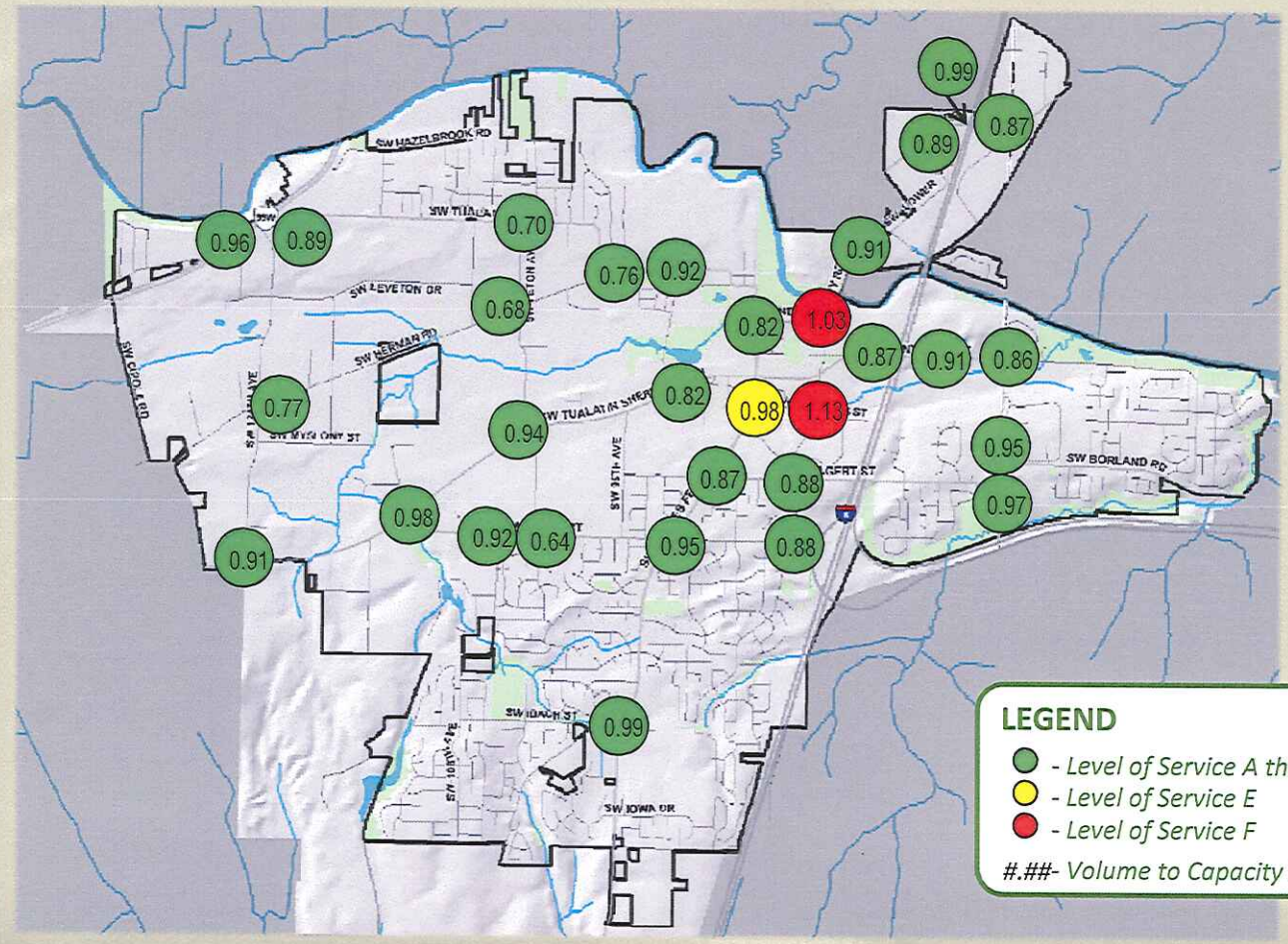


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin High School	11 min, 30 sec	-40 sec
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 30 sec	-30 sec
	Bridgeport Village	115th Avenue	11 min, 20 sec	-20 sec
	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 40 sec	+15 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	15 min, 50 sec	-1 min, 10 sec
	Bridgeport Village	Cipole Road	16 min, 40 sec	-40 sec
	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 25 sec	+5 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	12 min, 10 sec	-45 sec
	Bridgeport Village	Bridgeport Elementary	13 min, 40 sec	-45 sec

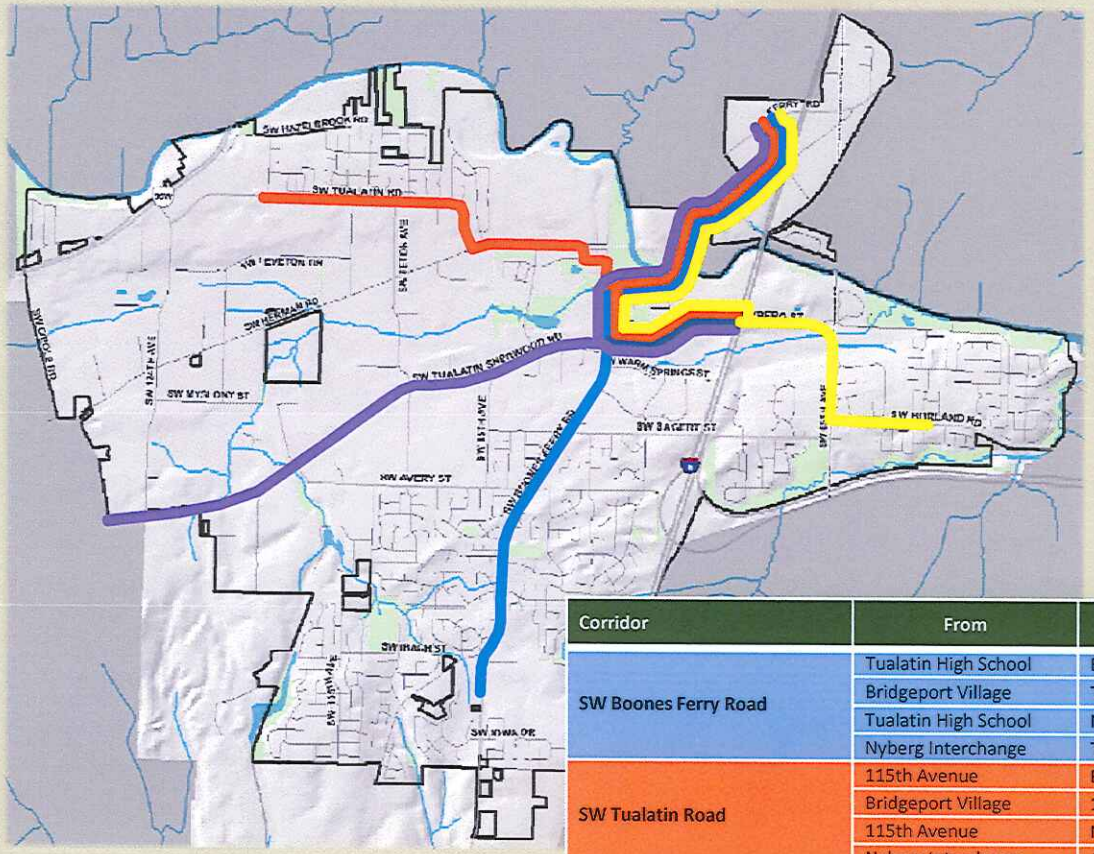
Low Build + 65th Ave + BFR Widening Volume Shifts



Low Build + 65th Ave + BFR Widening Operations



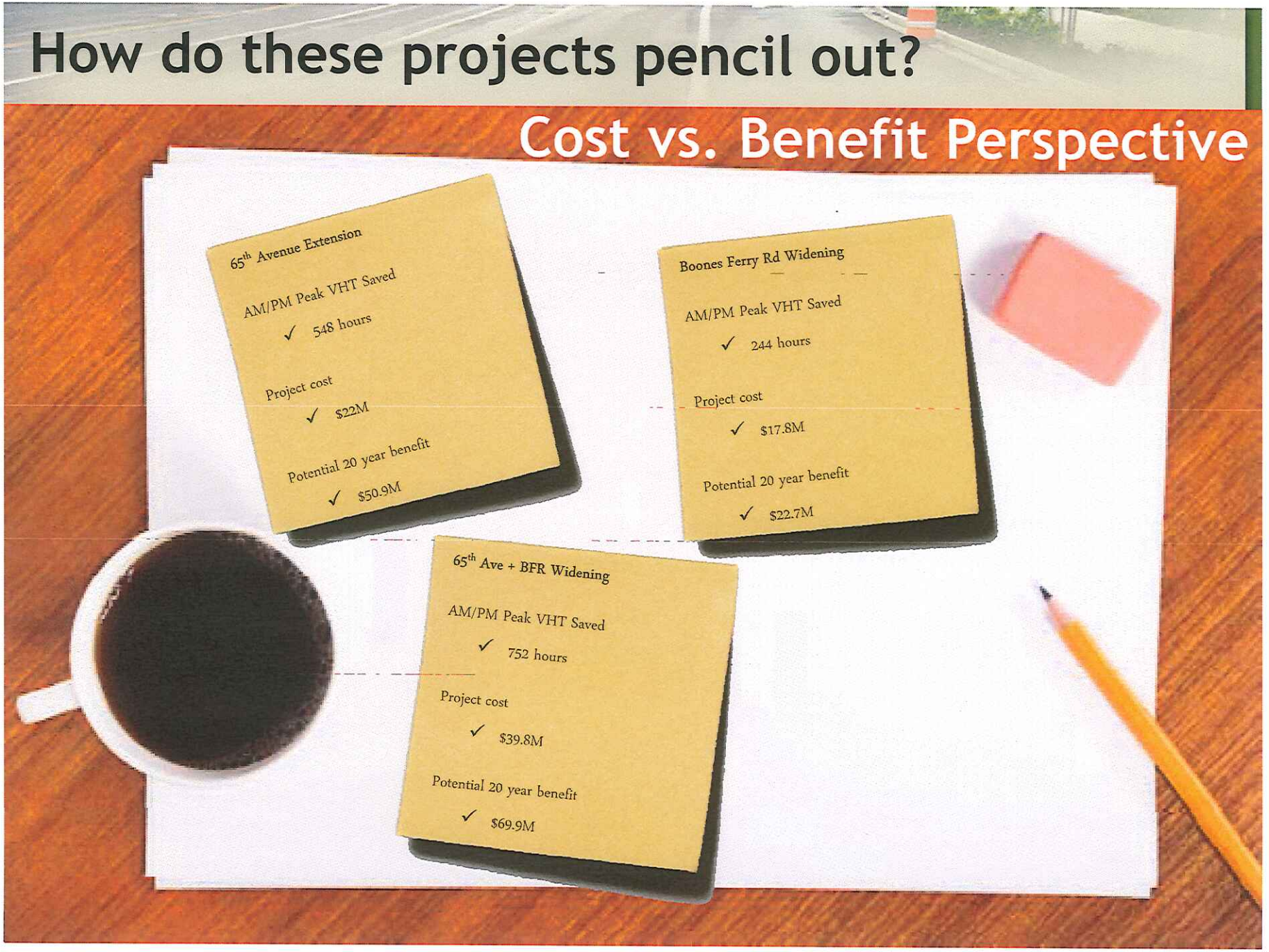
Low Build + 65th Ave + BFR Widening Travel Times



Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	12 min, 35 sec	-2 min, 30 sec
	Bridgeport Village	Tualatin High School	10 min, 35 sec	-1 min, 35 sec
	Tualatin High School	Nyberg Interchange	9 min, 50 sec	+10 sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	11 min, 30 sec	-1 min, 30 sec
	Bridgeport Village	115th Avenue	10 min, 55 sec	-45 sec
	115th Avenue	Nyberg Interchange	11 minutes	+25 sec
	Nyberg Interchange	115th Avenue	10 min, 55 sec	+30 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	14 min, 55 sec	-2 min, 5 sec
	Bridgeport Village	Cipole Road	15 min, 40 sec	-1 min, 40 sec
	Cipole Road	Nyberg Interchange	11 min, 50 sec	+15 sec
	Nyberg Interchange	Cipole Road	12 min, 20 sec	+30 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 30 sec	+10 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	10 min, 25 sec	-2 min, 30 sec
	Bridgeport Village	Bridgeport Elementary	11 min, 50 sec	-2 min, 35 sec

How do these projects pencil out?

Cost vs. Benefit Perspective



Summary of Operations and Travel Time Findings

- Tualatin becomes very congested in the future
- Low Build does a fair job of mitigating intersection operations, but minor travel time changes
- 65th Avenue extension pulls traffic from Boones Ferry Road and enhances that travel time
- Boones Ferry Road widening helps enhance travel times, but creates some intersection issues in downtown
- Combination of 65th Avenue and Boones Ferry Road widening enhances travel times in North Tualatin, but has similar downtown intersection issues

Technical Team Recommendation

- In addition to the Low Build projects, include:
  1. Include Boones Ferry Road widening project from Martinazzi to Lower Boones Ferry Road
  2. Include 65th Avenue extension as a **refinement plan** project
     - Establishes and acknowledges the need for improvements and connectivity in the area
     - Acknowledges the need to work collaboratively with surrounding jurisdictions
     - Identifies a project area that goes into deeper planning analysis to determine details

Environmental Justice

The Tualatin TSP considered the needs and impacts of its projects and policies to environmental justice populations as consistent with Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), the United States Department of Transportation (US DOT) Order on Environmental Justice (Order 5610.2), and Title VI of the Civil Rights Act. Executive Order 12898 requires that "impacts to low-income and minority populations be evaluated to determine if such populations bear an undue burden of high and adverse impacts caused by the action."[1] The policy of the DOT Order promotes the principles of environmental justice in all DOT programs.[2]

US DOT Order 5610.2 requires that agencies accomplish the following:

- Explicitly consider human health and environmental effects related to transportation projects that may have a disproportionately high and adverse effect on minority or low-income populations.
- Implement procedures to provide "meaningful opportunities for public involvement" by members of those populations during project planning and development (US DOT Order 5610.2, Section [§] 5[b][1]).

The US DOT Guidance defines the term "minority" as a person who is:

- Black (having origins in any of the black racial groups of Africa);
- Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
- Asian American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands);
- American Indian and Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition); or
- Native Hawaiian or Other Pacific Islander (a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands).

The US DOT Guidance defines the terms "low-income" and "low-income population" as:

- Low-Income means a person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

---

[1] President Clinton (02/11/1994). *Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* Available online at http://www.epa.gov/fedrgstr/eo/eo12898.pdf

[2] Department of Transportation (10/30/1997). *Department of Transportation Order 5610.2(a): Final DOT Environmental Justice Order.* Available online at http://www.fhwa.dot.gov/environment/environmental_justice/ej_at_dot/order_56102a/

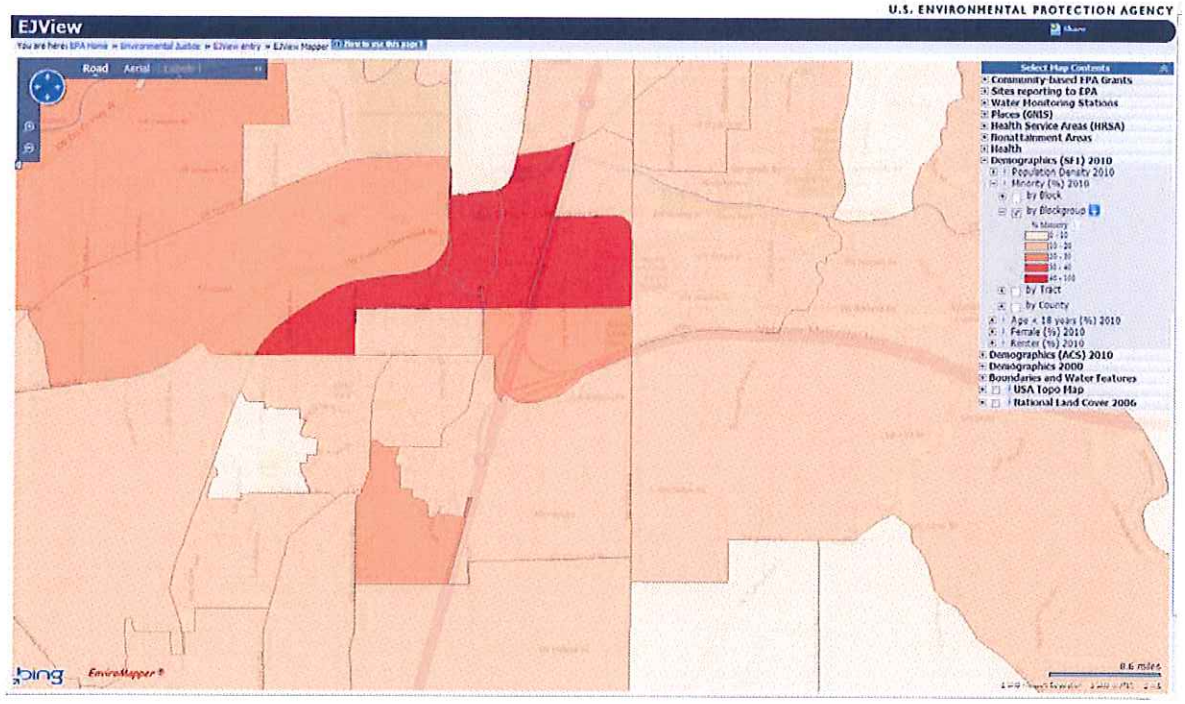
- Low-Income Population means any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed DOT program, policy or activity.

Title VI of the Civil Rights Act of 1964 requires that "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

In addition, Metro's Regional Transportation Functional Plan directs local TSPs to outreach to and identify effects of potential projects to "transit dependent" populations – including households with zero vehicles at home, those under 16 and above 65 years of age, and those with a physical disability that impacts travel.

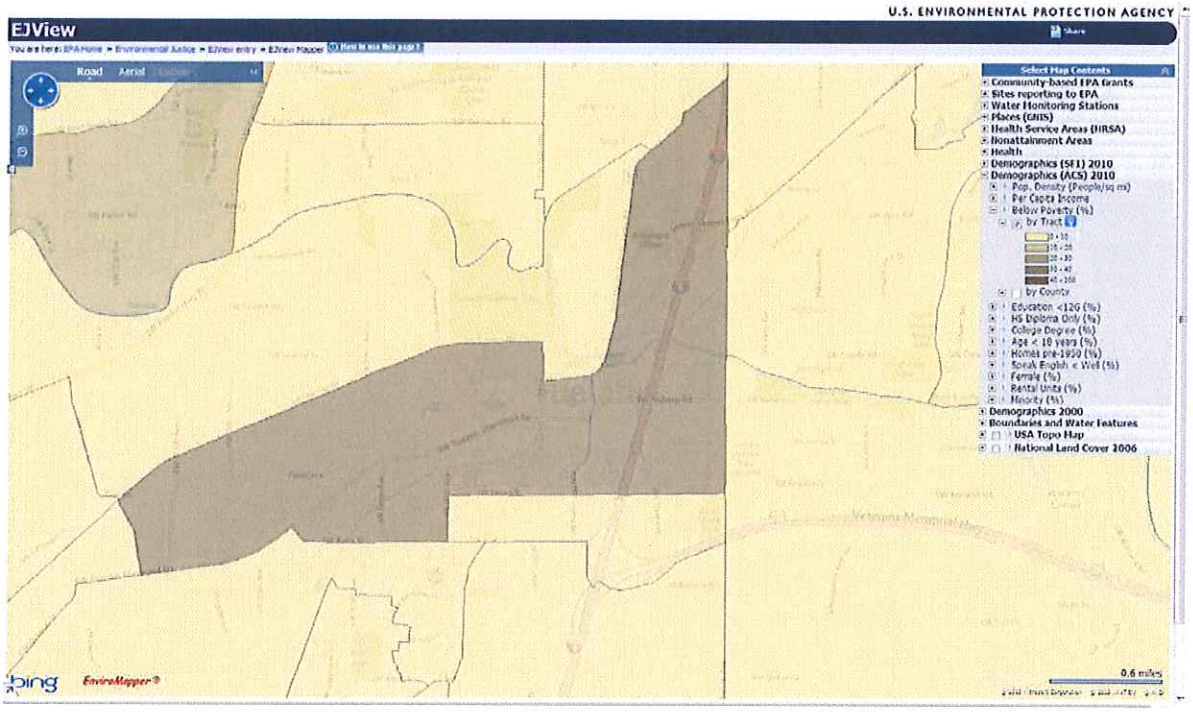
Documentation of Populations and Needs

At the beginning of the TSP process, the public involvement team documented the demographics and character of Tualatin in a memo dated March 2011. This memo documented that approximately 8 percent of families lived below the poverty level in Tualatin. Additionally, the majority (85 percent) of residents in Tualatin identify themselves as white/Caucasian; with 18 percent identifying themselves as Hispanic or Latino, and 15 percent of the population is foreign born. As per the U.S. Census Bureau 2010 Decennial Census approximately 10 percent of the population speaks Spanish at home and speak English less than "very well."



According to the 2010 Census block group data, concentrations of minority populations (40 percent or more) are located near downtown in the area east of I-5 between SW Nyberg Road, SW 65th Avenue, and SW Sagert Street. Other concentrations of minority populations occur west of I-5 between the river and SW Sagert Street, extending west to the railroad. The screen capture from the United States Environmental Protection Agency EJ View mapping tool show the areas of minority concentrations below. These areas of high minority concentrations also have high percentages of renter-occupied housing.

Household poverty data is reported at a larger scale than the minority data in the 2010 American Community Survey (ACS) three year data, and there are two census tracts with higher concentrations of households below the poverty line compared to the rest of the City. These two tracts are located along I-5 between SW Sagert Street and the northern City limits near Bridgeport Village where roughly 28 percent of households are below the poverty line, and the tract encompassing SW Tualatin-Sherwood Road west of SW Martinazzi Avenue and south of SW Herman Road and North of SW Avery Street where around 22 percent of households are below the poverty line. The remainder of the City has between 0 and 10 percent of householders below the poverty line.



Outreach

These environmental justice populations were documented and considered at the outset of the project to ensure the public involvement process provided adequate opportunities for these populations to be involved in the process. Several techniques were used to meet the needs of these identified groups.

- A banner was hung near the center of identified concentration areas at Tualatin Sherwood Road and Martinazzi to announce public events.
- Public meetings were held in locations near the center of the City, near these concentrations, and near bus routes. Meeting locations were ADA accessible.
- Food was provided at meetings.
- Children's activities were provided at meetings.
- Imagery and videos were used to explain project information so it would be accessible for all people.

Interviews with leaders in the Latino community held early in the process suggested several ways to engage the Spanish-speaking population of Tualatin. Following these suggestions, the project team:

- Made materials available in English and Spanish
- Visited bilingual Parent-Teacher organization at Bridgeport Elementary
- Provided materials at the library because families attend library events
- Shared information at local ESL classes
- Contacted local churches (Tualatin Spanish Seventh-day Adventist Church and Esperanza Iglesia)
- Left materials at local Hispanic businesses.

The team conducted interviews with Tualatin's Youth Advisory Council during development of the Public Involvement Plan. During the process or developing the plan, staff provided project updates in several local venues including at the Tualatin Senior Center.

Evaluation

The evaluation framework and the alternatives analysis process included consideration of equity impacts. Goal 4 of the TSP was equity: consider the distribution of benefits and impacts from potential transportation options, and work towards fair access to transportation facilities for all users, all ages, and all abilities. There were two objectives:

1. Promote a fair distribution of benefits to and burdens on different populations within the City (that is, low-income, transit-dependent, minority, age groups) and different neighborhoods and employment areas within the City.
2. Consider access to transit for all users.

All potential transportation investments considered in the Tualatin TSP process were evaluated in relation to this goal and the two objectives. Each project idea was scored in particular against population groups around and within the city, areas with low incomes and/or high minority populations, and the transit dependent population (e.g., zero vehicle households, those under 16 or over 65, and those with a physical disability). The full results of those evaluations are included in the alternatives analysis documentation. The end recommendations were assessed for broad distribution of benefits and effects to all populations including minority, low-income (as identified above) as well as geographic distribution – the conclusions were that the TSP provides multimodal investments throughout all sections of the city. Many of the recommendations will benefit these populations by providing safe walking areas, expanded transit service, intersection safety improvements, and multi-use pathways.

Appendix E
Transportation Funding and Improvement Costs

This Appendix describes existing transportation funding programs from federal, state and local sources, and well as potential sources that the City of Tualatin could pursue. The second section of this report also contains preliminary cost estimates for recommended alternatives. These cost estimates provide a general understanding of project costs and are intended for planning purposes only.

Established Funding Sources for Future Projects

A variety of established federal, state and local funding sources are available to fund future transportation projects in the Tualatin TSP, depending on the eligibility requirements.

Federal Funding Sources

Federal funding currently accounts for approximately 20 percent of total funding for transportation projects in Oregon. Allocation of federal funds is managed through Metro, Tualatin's Metropolitan Planning Organization (MPO). Metro generally programs federal funding for regional and local projects that affect the state transportation system, though some funds are made available directly for local projects. All projects utilizing federal funds must be programmed through Metro's 20-year Regional Transportation Plan (RTP) and the Metropolitan Transportation Improvement Program (MTIP), as well as the Statewide Transportation Improvement Program (STIP).

Most federal funding is available through the federal surface transportation program, supported by tax revenue to the Highway Trust Fund.

Federal Highway Trust Fund (HTF)

Revenues to the HTF are comprised of motor vehicle fuel taxes, sales taxes on heavy trucks and trailers, tire taxes, and annual heavy truck use fees. The fund is split into two accounts – the highway account and transit account. Funds are appropriated to individual states on an annual basis. The 2005 legislation for the federal surface transportation program (Safe, Accountable, Flexible and Efficient Transportation Equity Act – A Legacy for Users, referred to as SAFETEA-LU) will be replaced with Moving Ahead for Progress in the 21st Century (MAP-21), effective October 1st, 2012. This new 2-year program keeps total federal funding at the SAFETEA-LU rate, consolidates the 90 current programs under SAFETEA-LU into 30, eliminates transportation earmarks, and increases funding for the Transportation Infrastructure Finance and Innovation Program (TIFIA). The TIFIA program provides loans to finance transportation projects of regional or national significance, and seeks to leverage federal transportation dollars with local funds and private investment. Tualatin may be eligible to receive funding under the expanded TIFIA program.

Most federal funds must be matched with state or local funds; the current matching ratio for most projects is 10.27 percent.

Federal Transit Administration grants

The Federal Transit Administration (FTA) manages a number of grants available to transit agencies nationwide. The city of Tualatin could work with TriMet to fund transit projects serving the City.

Transit Expansion and Livable Communities Grants

Approximately $2.4 billion in funds was appropriated for this program in the current budget year. The goal of this initiative from the Federal Transit Administration is to advocate for and support projects and programs that improve the link between public transit and communities. Several formula and competitive grant programs are available through this initiative. Policy goals include better integrating transportation and land use planning, fostering multimodal systems, providing transportation options and improving access, reducing emissions, and increasing public participation in transportation decision-making. Tualatin and TriMet may be eligible for grant funding under this program.

Transportation for Elderly Persons and Persons with Disabilities (SAFETEA-LU §5310, MAP-21 §20009)

This formula grant program is managed by the state, with funds provided for capital projects that enhance the accessibility of older adults and those with disabilities.

Job Access Reserve Commute (JARC) program (SAFETEA-LU §5316, MAP-21 §20010)

Activities funded by the JARC program (formerly Section 5316 of SAFETEA-LU) have been preserved in MAP-21. The JARC program was established to address the transportation needs of welfare recipients and other low-income persons seeking to obtain or maintain employment. This program helps provide mobility to those whose work hours may fall outside traditional transit service hours and service areas. Under MAP-21, JARC activities have been integrated into the urban and rural formula grant programs. Financial assistance will be available for capital, planning and operations projects. In addition to local government and transit operators, private non-profits are eligible to receive funds. In 2012, the Chamber of Commerce received JARC monies that funded the industrial worker shuttle service.

Tri-Met is the current recipient of all JARC funds which are distributed to regional agencies through a competitive application process. Under MAP-21, the competitive application requirement has been removed. Tri-Met is currently developing its new JARC program in response to MAP-21; it is presently unclear how much funding will be available, or how agencies will apply for funding from the program. Approximately $600,000 has been available regionally under the program in recent funding cycles.

Other Federal Sources

Section 319 Non-Point Source Implementation Grants

Transportation projects that integrate stormwater treatment may be eligible to receive federal funding through Section 319 grants. This program, administered by the Oregon Department of Environmental Quality (DEQ), provides federal funds to address non-point pollution, including stormwater improvement projects. Funding is very competitive, with less than $500,000 available statewide in the most recent grant cycle. Projects that could be eligible for funding include applications of pervious pavements, stormwater detention and retention, and other low impact stormwater development tactics. Funds can be used for all or a portion of a project, but require a minimum 40 percent match. The Tualatin River and several of its tributaries are on the Clean Water Act 303(d) list for a number of pollutants, and projects within the river basin may be attractive for funding.

State Funding Sources

State funds are distributed via the Oregon Transportation Commission (OTC). The State Highway Fund is the most significant source of funding for the programs described below. To be eligible for funding, projects must be programmed through the Statewide Transportation Improvement Program (STIP).

State Highway Fund

State Highway Fund Revenues are received from a combination of fuel taxes, vehicle registration and title fees, driver's license fees, the truck weight-mile tax and federal monies. Fund revenues may only be used for construction and maintenance of state and local highways, bridges, and roadside rest areas. State law (ORS 366.514) specifies that a reasonable amount of highway funds must be spent on walkways and bikeways, and that in any given fiscal year, a minimum of 1 percent of State Highway Funds must be spent on these projects by funding recipients. However, cities and counties receiving may allocate these funds to a reserve fund, which they must expend within a period not to exceed 10 years. All funds must be expended on projects within road, street, or highway rights-of-way.

State Highway Funds are appropriated by the OTC on an annual basis. Sixty percent of fund revenues are kept at the state level, 24 percent is distributed to counties based on the number of vehicles registered in each county, and 16 percent is distributed to cities based on population.

Statewide Transportation Improvement Program (STIP)

The STIP is the 4-year capital improvement program for the state of Oregon. It provides a schedule and identifies funding for projects throughout the state. Projects included in the STIP are generally "regionally significant" and have been given a high priority through planning efforts and by the relevant area commission on transportation

(ACT) or metropolitan planning organization (MPO). For Tualatin, the relevant MPO is Metro. The current 2010-2013 STIP has six program categories: modernization, safety, preservation, bridge, operations, and special programs. All regionally significant state and local projects, as well as all federally-funded projects and programs, must be included in the STIP. The City of Tualatin does not have any projects in the 2010 – 2013 or 2012 – 2015 STIP.

The 2010-2013 STIP includes projects totaling $1.25 billion and covers the period from October 2009 to the end of September 2013. The 2012-2015 STIP was recently approved. About 80 percent of projects are expected to use federal funds. Federal funding levels projected for the 2010-2013 and 2012-2015 STIP are assumed to be at the same annual level distributed under SAFETEA-LU from 2005 to 2009.

ODOT has started the planning process for the 2015-2018 STIP. The STIP will be reorganized into two broad categories: "Fix-it" and "Enhance" that encompass the previous funding categories detailed in the 2012-2015 STIP. "Fix-it" projects are those that fix or preserve the current transportation system; "Enhance" projects are those that enhance, expand or improve the transportation system. The main purpose of this reorganization is to allow maximum flexibility to fund projects that reflect community and state values, rather than those that fit best into prescriptive programs. "Fix-it" activities will include:

- Bicycle and pedestrian facilities on state routes only
- Bridges (state owned)
- Culverts
- High Risk Rural Roads
- Illumination, signs and signals
- Landslides and Rockfalls
- Operations (includes ITS)
- Pavement Preservation
- Rail-Highway Crossings
- Safety
- Salmon (Fish Passage)
- Site Mitigation and Repair
- Stormwater Retrofit
- Transportation Demand Management (part of Operations)
- Work zone Safety (Project specific)

"Enhance" activities will include:

- Bicycle and/or Pedestrian facilities on or off the highway right-of-way
- Development STIP (D-STIP) projects (development work for projects that will not
- be ready for construction or implementation within the four years of the STIP)
- Modernization (projects that add capacity to the system, in accordance with ORS
- 366.507)
- Most projects previously eligible for Transportation Enhancement funds
- Projects eligible for Flex Funds (the Flexible Funds program funded Bicycle,
- Pedestrian, Transit and Transportation Demand Management (TDM) projects,
- plans, programs, and services)
- Protective Right-of-Way purchases
- Public Transportation
- (capital projects only, not operations)
- Safe Routes to School (infrastructure projects)
- Scenic Byways (construction projects)
- Transportation Alternatives (new with MAP-21, the federal transportation
- authorization)
- Transportation Demand Management

Under this new STIP organization, there will be one application for all projects eligible under the "Enhance" program. Communities will apply for the "Enhance" projects that best serve their community and ODOT will determine the appropriate funding mechanism. "Fix-it" projects will be selected through a collaborative process between ODOT and Metropolitan Planning Organizations. This new organization is primarily intended to increase funding flexibility and does not represent a fundamental change in the type of projects that will be funded through the STIP. The current "Enhance" application process for the 2015-2018 STIP will close at the end of November, 2012.

Other State Programs

*Connect*Oregon

*Connect*Oregon funds are lottery-backed bonds distributed to air, marine, rail, transit and other multimodal projects statewide. No less than 10 percent of *Connect*Oregon IV funds must be distributed to each of the five regions of the state, provided that there are qualified projects in the region. The objective is to improve the connections between the highway system and other modes of transportation.

Oregon Transportation Infrastructure Bank (OTIB)

The OTIB is a statewide revolving loan fund available to local governments for many transportation infrastructure improvements, including highway, transit and non-motorized projects. Most funds made available through this program are federal, and roads must be functionally classified as a major collector or higher to be eligible for loan funding.

Oregon Parks and Recreation Department: Recreational Trails Grant

The Oregon Parks and Recreation Department (OPRD) administers this program using Oregon Lottery revenues. These grants can fund recreational trail projects to build new recreation trails, including trail bridges and installing wayfinding signs, restoring existing trails, developing and rehabilititating trailhead facilities, and acquiring land and permanent easements for trails. OPRD has distributed $4 million annually under this program through a competitive grant process. A match of at least 20 percent is required, and cities are eligible to apply. Recent grants (2011) ranged from $10,000 to $130,000.

Oregon Immediate Opportunity Fund

The Oregon immediate opportunity fund supports primary economic development in Oregon through construction and improvements of streets and roads. Funds are discretionary and may only be used when other sources of financial support are unavailable or insufficient. The objectives of the Opportunity Fund are providing street or road improvements to influence the location, relocation, or retention of a firm in Oregon, providing procedures and funds for the OTC to respond quickly to economic development opportunities, and providing criteria and procedures for the Oregon Economic and Community Development Department (OECDD), other agencies, local government and the private sector to work with ODOT in providing road improvements needed to ensure specific job development opportunities for Oregon, or to revitalize business or industrial centers.

Regional Funding Sources

Metro, the elected regional government, coordinates two transportation grant programs relevant to Tualatin.

Flexible Funds

Metro manages the allocation of regional federal flexible funds. These funds come from two federal funding sources: the Surface Transportation program (STP) and the Congestion Mitigation/Air Quality program (CMAQ). These funds can be spent on a wide variety of projects. In the most recent funding round, $24 million was made available to Metro jurisdictions for various projects, including transit oriented development, high capacity transit, transportation system management, and regional planning projects. Funding is allocated through a competitive process.

Regional Travel Options grants

Metro also manages this federal grant source, distributing over $500,000 to several projects in the Metro region in the most recent round of funding. Projects are selected through a competitive process. Projects that improve air quality, address community health, reduce auto traffic or create more opportunities for walking and biking are all eligible for funding.

Nature in Neighborhoods Grants

Metro provides funds to communities to add vegetation and natural features in neighborhoods. Funds for Nature in Neighborhoods come from the voter-approved 2007 natural areas bond measure. Projects awarded grants involve the community, foster diverse partnerships and innovate, leading to bigger social and economic benefits, from jobs and economic development to livable neighborhoods and clean air. Metro has awarded $6.6 million to 23 projects. Up to $2.25 million is available annually, with $15 million available through the life of the program.

County Funding Sources

Washington County Gas Tax

Tualatin receives approximately $90,000 per year currently in county gas tax revenue. These funds can be spent on a wide variety of transportation projects, though are currently only spent on construction and maintenance of City streets.

Washington County Major Streets Transportation Improvement Program (MSTIP)

Washington County's MSTIP program provides funding for major transportation improvements on roads throughout the county. The program is funded through property taxes with approximately $35 million available each year. MSTIP has funded a wide variety of projects, including expansion of Highway 26, Intelligent Transportation System (ITS) and signal upgrades to Tualatin-Sherwood Road and numerous bicycle and pedestrian improvements. Only roads classified in the Washington County Functional Classification system are eligible for funding from MSTIP. Roads that would be eligible under this program include Tualatin-Sherwood Road, Boones Ferry Road, Nyberg Road, 65th Avenue, Sagert Street, and several others. Tualatin does not have any projects identified for funding in the current 5 year MSTIP program (MSTIP 3d), but several projects just outside the city, including the extension of 124th Avenue south to Tonquin Road, are funded. The city can continue to pursue funding for major improvements on these streets through this dedicated funding source.

Washington County Minor Betterment Program

Washington County administers the Minor Betterment Program (MBP), funded by an allocation from the County Road Fund (County Gas Tax). The Program funds small-scale interim improvements beyond routine maintenance but not large enough to be programmed as capital improvements. MBP projects are site-specific enhancements to the county's transportation system, projects are typically interim and intended to supplement routine maintenance and capital improvements. Eligible projects need to be on a county road, improve or resolve a specific situation, and address safety, capacity, environmental and/or connectivity issues. In fiscal year 2013/14 the County is funding sidewalk completing along SW Grahams Ferry Road with this funding source.

Local Funding Sources

This section describes existing local funding sources for the city of Tualatin. Major local funding sources include general fund revenues, road utility fees, system development charges, and the City's share of State Highway Fund revenue.

Road Utility Fees

This fee is assessed to all residential and non-residential properties in the city of Tualatin to fund upkeep of the City's road system. Approximately $650,000 in fee revenue was forecast for FY 2011. These revenues are made

available exclusively for road maintenance. These fees represent a significant source of funding for maintenance of existing roads. Per city code (TMC 3-4), these funds may be spent on pavement rehabilitation, sidewalk maintenance, landscaping enhancements, replacing street trees and street lighting.

Transportation Development Taxes (TDT)

Transportation Development Taxes (TDT) are one-time fees on new development that compensate for the increased traffic associated with new development, and are system development charges or impact fees for transportation. The City has authorized the collection of transportation system development charges since 1991. The former county-managed Transportation Impact Fee (TIF) program has been replaced with the Transportation Development Tax (TDT), approved by voters in 2008. TDTs cannot be expended on transportation operations or maintenance projects, and may be used exclusively for capital improvement projects. These taxes are payable to the City when a building or other development permit is issued. The outlook for TDT revenue is very uncertain, given limited development during the current economic downturn.

Potential Other Funding Sources for Future Projects

The following funding sources and strategies may be available to the City in addition to the established programs listed above.

Washington County Major Streets Transportation Improvement Program (MSTIP)

Washington County's MSTIP program provides funding for major transportation improvements on roads throughout the county. The program is funded through property taxes with approximately $35 million available each year. MSTIP has funded a wide variety of projects, including expansion of Highway 26, Intelligent Transportation System (ITS) and signal upgrades to Tualatin-Sherwood Road and numerous bicycle and pedestrian improvements. Only roads classified in the Washington County Functional Classification system are eligible for funding from MSTIP. Roads that would be eligible under this program include Tualatin-Sherwood Road, Boones Ferry Road, Nyberg Road, 65th Avenue, Sagert Street, and several others. Tualatin does not have any projects identified for funding in the current 5 year MSTIP program (MSTIP 3d), but several projects just outside the city, including the extension of 124th Avenue south to Tonquin Road, are funded. The city can continue to pursue funding for major improvements on these streets through this dedicated funding source.

Department of Energy: Energy Efficiency and Conservation Block Grants (EECBG)

This program was initially funded through the American Recovery and Reinvestment Act of 2009. The current funding authorization expired in April 2012. Future funding for this program is currently uncertain. The program provided formula grants to states and competitive grants for projects that reduce fossil fuel emissions, reduce total energy use of eligible grantees, and improve energy efficiency of transportation and other sectors. Tualatin may be eligible for competitive grants if this program is funded in future federal budgets.

Increased State Highway Fund revenues

Gas tax revenue to the State Highway Fund has not kept pace with inflation or demands of the state's transportation system. ODOT is exploring new revenue models to meet state transportation needs, which may result in increased funds for state transportation programs in coming years. Oregon is actively exploring a vehicle miles travelled (VMT) tax to replace the current gas tax, with full implementation of any VMT program expected to take up to 20 years.

Local Improvement Districts (LID)

LIDs are created by property owners within a district of a city to raise revenues for constructing improvements within the district boundaries. LIDs may be used to assess property owners for improvements that benefit properties and are secured by property liens. Property owners typically enter into LIDs because of the economic or personal advantages of the improvements. The City would work with property owners to acquire financing at lower interest rates than under typical financing methods. The formation of LIDs is governed by state law and local jurisdictional development codes. LID revenues can only be used on capital projects. LID revenues can be combined with other revenue sources to fully fund projects.

Transit Utility Fee

A number of jurisdictions in Oregon have implemented transportation utility fees that fund road system maintenance, transportation improvements, and transit service. The city of Corvallis, Oregon recently enacted a Transit Utility Fee in 2011 to support transit operations. These fees are typically collected on monthly residential and business utility bills and assessed on a per-housing unit basis, with businesses and industry charged rates based on the type of business or number of employees. A modest monthly fee could fund capital improvements and transit operations in Tualatin. Fee revenue can also be used to support or improve existing transit services in Tualatin, like the Chamber of Commerce's employee shuttle service. A transit utility fee would provide dedicated and reliable funding for transit projects identified in the Transit Plan.

Urban Renewal Areas

The City of Tualatin has successfully implemented two urban renewal areas over the past 25 years in the central area and Leveton. Both Urban renewal areas have expired and are no longer collecting revenue. Urban Renewal Areas (URA) remain an option for the City in the future whereby tax increment financing (TIF) can be used for a variety of improvements within the URA. With TIF, the county assessor "freezes" the assessed value of properties within the URA and the property taxes collected above those that were collected when the property values were frozen are used to pay for improvements within the URA. This financing method assumes that property values within the urban renewal area will increase over time. URA designations are primarily used as an economic development tool, but may be useful for targeting areas in the City with serious improvement needs.

Revenue and General Obligation Bonds

Bonding allows municipal and county government to finance construction projects by borrowing money and paying it back over time, with interest. Financing requires smaller regular payments over time compared to paying the full cost at once, but financing increases the total cost of the project by adding interest. General Obligation Bonds are often used to pay for construction of large capital improvements and must be approved by a vote of the public. These bonds add the cost of the improvement to property taxes over a period of time. Tualatin could consider issuing a General Obligation Bond to pay for significant transportation improvement projects identified within the City.

Parking Fees

The City does not currently charge for parking, but does charge an annual fee to business owners in the "core area parking district" that funds parking maintenance in the immediate core area. Income generated by charging parking fees could be used to implement a variety of transportation projects. The collection system would require purchase of parking meter infrastructure, careful study of where to install meters, and analysis of the appropriate fee amount to charge drivers.

Improvement Costs

This section contains cost estimates for projects included in the Tualatin TSP. Assumptions underlying each project cost estimate are also included.

Roadway Projects

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project R1 - Herman Road Imp. 124th to Cipole	Darren Hippenstiel	9/19/2012
DESIGN LEVEL:	Preliminary		
KIND OF WORK:	Roadway, Earthwork, Drainage, Lighting	**LENGTH (MILE):** 0.34	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.34	$935,700.00	$318,138
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	1.4	$412,500.00	$561,000
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	7,500	$7.50	$56,250
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.34	$260,000.00	$88,400
13	Landscaping	Mi.	0.34	$235,000.00	$79,900
14	Bridges	SF		$150.00	$0
15	Walls	SF	1,080	$50.00	$54,000
			SUBTOTAL		***$1,157,688***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$28,900
	TP & DT	3.0-8.0%	8.0%		$92,600
	Mobilization	8.0-10.0%	10.0%		$115,800
	Erosion Control	0.5-2.0%	2.0%		$23,200
	Contingency	30-40%	40.0%		$463,100
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$1,881,288***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	1	$100,000.00	$100,000
	Railroad Crossing	EA		$600,000.00	$0

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**24,500**	$5.00	$122,500
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$282,200
	Construction Engineering		10.0%		$188,100
			TOTAL PROJECT COST		**$2,574,000**

Assumptions: See next page

Assumptions:

- Project is for 3-L widening (2-12' lanes, 1-12' turn, 2-6' bike, 2-10' sidewalk/planter
- Improvements to the interseciton of Cipole and Herman Road, including improvements to the P&W rail crossing are included in other projects
- Existing ROW varies from 54' to 40' width.
- No impacts to the P&W railroad are included
- Landscaping and illumination are inlcuded for the length of improvements
- Assume 2' average height non-structural (<4' height) modular block retaining wall for property ties over 30% of the improvements length one side
- Full roadway reconstruction is assumed
- Due to flattness of area and other project experience, $100K allowance is included for natural resource impact mitigation

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	PREPARED BY:	DATE:
Project R2 - Hazelbrook Road Improvements	Darren Hippenstiel	10/11/2012
DESIGN LEVEL: Preliminary		
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting	**LENGTH (MILE):** 0.85	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.43	$935,700.00	$402,351
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	1.42	$412,500.00	$585,750
4	Overlay Existing Roadway	Lane-Mi.	1.99	$89,400.00	$177,906
5	New Signal	EA		$300,000.00	$0
6	Signal Modifications	EA		$75,000.00	$0
7	Earthwork (See Note)	CY	13,500	$7.50	$101,250
8	Illumination	Mi.	0.85	$260,000.00	$221,000
9	Landscaping	Mi.	0.43	$235,000.00	$101,050
10	Bridges - Long Span	SF		$250.00	$0
11	Bridges - Long Span (Multi-use)	SF		$250.00	$0
12	Walls	SF		$75.00	$0
			SUBTOTAL		***$1,589,307***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$39,700
	TP & DT	3.0-8.0%	8.0%		$127,100
	Mobilization	8.0-10.0%	10.0%		$158,900
	Erosion Control	0.5-2.0%	2.0%		$31,800
	Contingency	30-40%	40.0%		$635,700
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$2,582,507***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	0	$250,000.00	$0
	Railroad Crossing	EA	0	$600,000.00	$0
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF	63,000	$5.00	$315,000
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Engineering, Environmental Documents, Permitting		15.0%		$387,400
	Construction Engineering		10.0%		$258,300
			TOTAL PROJECT COST		**$3,543,000**

Assumptions: On Reverse Page

Assumptions Continued:

Roadway Section is 3-L section (3-12' lanes, 2-6' bike, 2-10' sidewalk/planter) - 68' total width
Existing roadway width is 28' curb to edge of pavement. Existing pavement overlay inlcuded
Existing curb and sidewalk on the southside to remain.
Curb & Gutter, Sidewalk and Drainage are halved (northside only)
Average existing ROW width is 60'. Total new width need is 68' plus 6' PUE
No structures impacted by improvements
No bridges, walls, or other structures included
illumination is included for the full length
Landscaping is included at half the improvements length (no landscaping southside)
Easrthwork inlcuded for shoulder widening (fill)

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project R3 - Herman Rd. Improvements Teton to Tualatin Rd.		
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	9/6/2012
KIND OF WORK:	Roadway, Earthwork, Drainage, Lighting,	LENGTH (MILE): 0.32	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.32	$935,700.00	$299,424
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	0.97	$412,500.00	$400,125
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	5,650	$7.50	$42,375
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.32	$260,000.00	$83,200
13	Landscaping	Mi.	0.32	$235,000.00	$75,200
14	Bridges	SF		$150.00	$0
15	Walls	SF	940	$50.00	$47,000
			SUBTOTAL		***$947,324***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$23,700
	TP & DT	3.0-8.0%	8.0%		$75,800
	Mobilization	8.0-10.0%	10.0%		$94,700
	Erosion Control	0.5-2.0%	2.0%		$18,900
	Contingency	30-40%	40.0%		$378,900
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$1,539,324***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	33,100	$5.00	$165,500
	Structure(s)	LS	All	$300,000.00	$300,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$230,900
	Construction Engineering		10.0%		$153,900
			TOTAL PROJECT COST		**$2,390,000**

Notes:

Project limits are from the end of the 3-L section east of Teton (~300') to Tualatin Road
Proposed width is 2-L section (3-12' lanes, 2-6' bike lanes, 2-10' sidewalk/planter)
Landscaping and illumination are included
Assume 1' average earthwork depth from Teton to 550' west of Tualatin Road
Assume 2' average earthwork depth from 550' west of Tualatin Road to Tualatin Road
No impacts to railroad or improvements to existing rail crossings.
3 structure assumed impacted by widening/improvements

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	PREPARED BY:	DATE:
Project R4 - Widen Teton to 3-L Herman To T-S Rd	Darren Hippenstiel	9/6/2012
DESIGN LEVEL: Preliminary		
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting	**LENGTH (MILE):** 0.47	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.47	$935,700.00	$439,779
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	0.47	$412,500.00	$193,875
4	Overlay Existing Roadway	Lane-Mi.	1.42	$89,400.00	$126,948
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	3,000	$7.50	$22,500
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.47	$260,000.00	$122,200
13	Landscaping	Mi.	0.47	$235,000.00	$110,450
14	Bridges	SF		$150.00	$0
15	Walls	SF	500	$50.00	$25,000
			SUBTOTAL		***$1,040,752***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$26,000
	TP & DT	3.0-8.0%	8.0%		$83,300
	Mobilization	8.0-10.0%	10.0%		$104,100
	Erosion Control	0.5-2.0%	2.0%		$20,800
	Contingency	30-40%	40.0%		$416,300
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$1,691,252***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	1	$250,000.00	$250,000
	Railroad Crossing	EA	0	$600,000.00	$0

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**20,000**	$5.00	$100,000
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$253,700
	Construction Engineering		10.0%		$169,100
			TOTAL PROJECT COST		**$2,464,000**

Assumptions: On Reverse Page

Assumptions Continued:

Total roadway section is 3-L (3-12' lanes, 2-6' bike lanes, 2-10' sidewalk/planters)
The existing roadway with is 36' curb-to-curb and will be rehabilitated with an overlay
The existing ROW varies but is estimated to average 60' width from Herman to T-S Road
10% of the total length, one side is estimated for a 2' average height (<4') modular block wall
Minor earthwork is assumed at 1' total depth over the width of the widening (lanes and sidewalk/planter)
The bridge across Hedges Creek and wetland will not require widening. The planter will be removed through this area.
Approaches to the bridge will require widening resulting in impacts to natural resources.
No impacts to signals at Herman Road or T-S Road
Length of improvements is estimated at 2,500LF beginning south of the P&W Railroad track south to T-S Road. No impacts to the railroad crossing are included.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	PREPARED BY:	DATE:
Project R6 - Widen SW Avery to 3-L Teton to T-S Rd.	Darren Hippenstiel	9/17/2012
DESIGN LEVEL: Preliminary		
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting	**LENGTH (MILE):** 0.53	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.61	$935,700.00	$570,777
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	0.4	$412,500.00	$165,000
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA	1	$300,000.00	$300,000
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	2,900	$7.50	$21,750
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.53	$260,000.00	$137,800
13	Landscaping	Mi.	0.53	$235,000.00	$124,550
14	Bridges	SF		$150.00	$0
15	Walls	SF	1,680	$50.00	$84,000
			SUBTOTAL		***$1,403,877***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$35,100
	TP & DT	3.0-8.0%	8.0%		$112,300
	Mobilization	8.0-10.0%	10.0%		$140,400
	Erosion Control	0.5-2.0%	2.0%		$28,100
	Contingency	30-40%	40.0%		$561,600
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$2,281,377***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	0	$250,000.00	$0
	Railroad Crossing	EA	1	$600,000.00	$600,000

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**29,700**	$5.00	$148,500
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$342,200
	Construction Engineering		10.0%		$228,100
			TOTAL PROJECT COST		**$3,600,000**

Assumptions: See Reverse

Assumptions:

3-L section is 2-12' lanes, 1-12' median, 2-6' bike and 2-10' planter/sidewalk. Total length - 2,800LF
Widening to the westside at T-S Road will not impact Hedges Creek
Utilities impacted will be relocated by utility.
Transmission towers near substation at SW 105th will not be impacted
Railroad crossing signals impacted and will need to be widened
Widening area is flat. Assume 1' total depth EW over length of improvements
No structural retaining walls needed. Assume short 2' average height wall for 30% of length
No signal modifications needed at T-S Road (3-L). New signal at SW Avery/Teton
Landscaping and lighting for entire length

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R7** - 105th/Blake/108th Ave Improvements		**PREPARED BY:** Darren Hippenstiel	**DATE:** 10/12/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Walls		**LENGTH (MILE):** 0.63	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.46	$935,700.00	$430,422
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	2.37	$412,500.00	$977,625
4	Guardrail	FT	450.00	$50.00	$22,500
5	New Signal	EA		$300,000.00	$0
6	Signal Modifications	EA		$75,000.00	$0
7	Earthwork (See Note)	CY	15,000	$7.50	$112,500
8	Illumination	Mi.	0.63	$260,000.00	$163,800
9	Landscaping	Mi.	0.46	$235,000.00	$108,100
10	Bridges - Short Span	SF	2,400	$185.00	$444,000
11	Walls (4'<)	SF		$75.00	$0
12	Walls (4'>)	SF	600	$50.00	$30,000
			SUBTOTAL		***$2,288,947***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$57,200
	TP & DT	3.0-8.0%	8.0%		$183,100
	Mobilization	8.0-10.0%	10.0%		$228,900
	Erosion Control	0.5-2.0%	2.0%		$45,800
	Contingency	30-40%	40.0%		$915,600
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$3,719,547***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	1	$100,000.00	$100,000
	Railroad Crossing	EA	0	$600,000.00	$0
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF	42,100	$8.00	$336,800
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Engineering, Environmental Documents, Permitting		15.0%		$557,900
	Construction Engineering		10.0%		$372,000
			TOTAL PROJECT COST		**$5,086,000**

Assumptions: On Reverse Page

Assumptions Continued:

- Roadway Section is 3-L section (3-12' lanes, 2-6' bike, 2-10' sidewalk/planter) - 68' width from Avery to Blake St
- Roadway Section is 2-L section (2-12' lanes, 2-6' bike, 2-12' sidewalk/planter) - 60' width from Blake to 200' north of Willow Ave.
- All existing roadway is assumed to be reconstructed.
- Existing curb and sidewalk on the eastside of SW 105th and westside of 108th will remain
- Assume a 50' length strcuture (culvert or bridge) over Hedges Creek
- Average existing ROW width is 50'. Total new width varies from 60'-68"
- No structure impacts are assumed
- Natural resource impacts and mitigation are assumed through the Hedges Creek corridor
- 3' average height wall between 108th and Blake Street reconstructed assumed 200' length
- illumination is included for the full length
- Landscaping is included but halved where sidewalks are to remain
- 450' length of guardrail assumed to replace existing guardrail along outside curve from Blake to 105th

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R8** - Boones Ferry Road Improvements		**PREPARED BY:**	**DATE:**
DESIGN LEVEL: Preliminary		Darren Hippenstiel	10/15/2012
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Walls		**LENGTH (MILE):** 0.21	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.12	$935,700.00	$112,284
2	New Roadway	Lane-Mi.	0.21	$412,500.00	$86,625
3	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
4	Guardrail	FT		$50.00	$0
5	New Signal	EA		$300,000.00	$0
6	Signal Modifications	EA		$75,000.00	$0
7	Earthwork (See Note)	CY	1,570	$7.50	$11,775
8	Illumination	Mi.	0.12	$260,000.00	$31,200
9	Landscaping	Mi.	0.12	$235,000.00	$28,200
10	Bridges - Short Span	SF		$185.00	$0
11	Walls (4'<)	SF		$75.00	$0
12	Walls (4'>)	SF	200	$50.00	$10,000
			SUBTOTAL		***$280,084***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$7,000
	TP & DT	3.0-8.0%	8.0%		$22,400
	Mobilization	8.0-10.0%	10.0%		$28,000
	Erosion Control	0.5-2.0%	2.0%		$5,600
	Contingency	30-40%	40.0%		$112,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
	TOTAL CONSTRUCTION COST				***$455,084***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	0	$100,000.00	$0
	Railroad Crossing	EA	0	$600,000.00	$0
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF	11,400	$8.00	$91,200
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Engineering, Environmental Documents, Permitting		15.0%		$68,300
	Construction Engineering		10.0%		$45,500
	TOTAL PROJECT COST				**$660,000**

Assumptions: On Reverse Page

Improvements are widening BFR to consistent 3-L section between Ibach and Norwood Road
Improvement limits are 700' south of Ibach to 500' north of Iowa, and 360' north of Norwood to Norwood
No signals, or bridges are included
ROW width varies from 60' near Ibach/Iowa, to 60-75' approaching Norwood
Includes a 2' average height wall for 100' approaching Norwood
Approximate average widening is 12' width
BFR is assumed serviceable and not reconstructed or rehabilitated.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R9** - Helenius Road Improvements		**PREPARED BY:** Darren Hippenstiel	**DATE:** 10/14/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Walls		**LENGTH (MILE):** 0.32	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.19	$935,700.00	$177,783
2	New Roadway	Lane-Mi.	0.50	$412,500.00	$206,250
3	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
4	Guardrail	FT		$50.00	$0
5	New Signal	EA		$300,000.00	$0
6	Signal Modifications	EA		$75,000.00	$0
7	Earthwork (See Note)	CY	2,700	$7.50	$20,250
8	Illumination	Mi.	0.19	$260,000.00	$49,400
9	Landscaping	Mi.	0.19	$235,000.00	$44,650
10	Bridges - Short Span	SF		$185.00	$0
11	Walls (4'<)	SF		$75.00	$0
12	Walls (4'>)	SF		$50.00	$0
			SUBTOTAL		***$498,333***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$12,500
	TP & DT	3.0-8.0%	8.0%		$39,900
	Mobilization	8.0-10.0%	10.0%		$49,800
	Erosion Control	0.5-2.0%	2.0%		$10,000
	Contingency	30-40%	40.0%		$199,300
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$809,833***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	0	$100,000.00	$0
	Railroad Crossing	EA	0	$600,000.00	$0
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF	48,840	$8.00	$390,720
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Engineering, Environmental Documents, Permitting		15.0%		$121,500
	Construction Engineering		10.0%		$81,000
			TOTAL PROJECT COST		**$1,403,000**

Assumptions: On Reverse Page

Roadway is 2-L section (2-12' lanes, 2-6' bike or 2-6' parking, 2-12' sidewalk/planter) total 60-64' width
60' width Grahams Ferry Road to east of 106th, 64' east of 106th to 108th, 30' 108th to end of project.
Existing ROW is 30' GFR to east of 106th, 40' east of 106th to 108th, 30' 108th to end of project
No structures, walls or natural resource impacts assumed
Existing pavement width is 24' from east of 106th to end of project.
Full pavement reconstructio from east of 106th to GFR
Grade is flat, assumed 1' total depth earthwork over widening areas

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	PREPARED BY:	DATE:
Project R10 - Norwood Road Improvements	Darren Hippenstiel	10/14/2012
DESIGN LEVEL: Preliminary		
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Walls	**LENGTH (MILE):** 0.49	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.49	$935,700.00	$458,493
2	New Roadway	Lane-Mi.	0.98	$412,500.00	$404,250
3	Overlay Existing Roadway	Lane-Mi.	0.98	$89,400.00	$87,612
4	Guardrail	FT		$50.00	$0
5	New Signal	EA		$300,000.00	$0
6	Signal Modifications	EA		$75,000.00	$0
7	Earthwork (See Note)	CY	5,700	$7.50	$42,750
8	Illumination	Mi.	0.49	$260,000.00	$127,400
9	Landscaping	Mi.	0.49	$235,000.00	$115,150
10	Bridges - Short Span	SF		$185.00	$0
11	Walls (4'<)	SF		$75.00	$0
12	Walls (4'>)	SF	2,400	$50.00	$120,000
			SUBTOTAL		***$1,355,655***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$33,900
	TP & DT	3.0-8.0%	8.0%		$108,500
	Mobilization	8.0-10.0%	10.0%		$135,600
	Erosion Control	0.5-2.0%	2.0%		$27,100
	Contingency	30-40%	40.0%		$542,300
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$2,203,055***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	0	$100,000.00	$0
	Railroad Crossing	EA	0	$600,000.00	$0
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF	8,800	$8.00	$70,400
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Engineering, Environmental Documents, Permitting		15.0%		$330,500
	Construction Engineering		10.0%		$220,300
			TOTAL PROJECT COST		**$2,824,000**

Assumptions: On Reverse Page

3-L roadway (3-12' lanes, 2-6' bike, 2-12' s/w & planter) total width 72'
Existing pavement width is 24' and is assumed serviceable with an overlay
Existing bridge over I-5 is not impacted by project
ROW width is 71' for all but 200' feet approaching BFR. 40' width for 200' approaching BFR
4' average height at back of walk assumed for 600' between 89th and Vermillion
1' depth earthwork assumed over entire widening (48' width)
Additional 2' average depth earthwork assumed on northside between 89th and Vermillion
Illumination and landscaping included

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	PREPARED BY:	DATE:
Project R11 - Widen Sagert Bridge	Darren Hippenstiel	9/19/2012
DESIGN LEVEL: Preliminary		
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Structures	**LENGTH (MILE):** 0.19	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.19	$935,700.00	$177,783
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	0.1	$412,500.00	$37,125
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Guardrail	FT	1,430	$50.00	$71,500
7	Guardrail Terminals	EA	4	$2,500.00	$10,000
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	5,250	$7.50	$39,375
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.		$260,000.00	$0
13	Landscaping	Mi.		$235,000.00	$0
14	Bridges	SF	5,120	$250.00	$1,280,000
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$1,615,783***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$40,400
	TP & DT	3.0-8.0%	8.0%		$129,300
	Mobilization	8.0-10.0%	10.0%		$161,600
	Erosion Control	0.5-2.0%	2.0%		$32,300
	Contingency	30-40%	40.0%		$646,300
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$2,625,683***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$393,900
	Construction Engineering		10.0%		$262,600
			TOTAL PROJECT COST		**$3,282,000**

Assumptions

Project widens I-5 overcrossing structure on Sagert Street, 16' total width, 320' length
Roadway widened to include bike lanes and sidewalks 200' west and 800' east of bridge.
Guardrail is replaced east and west of structure to accommodate widening
Sidewalks are improved to connect with existing sidewalks east and west of the structure
Bridge structure is widened symmetrically
EW assumed at 8' average depth both sides for sliver fill
No natural resource or ROW impacts are assumed
No lighting or landscaping is included.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R12** - Sidewalk Gaps on Boones Ferry Road		PREPARED BY: Darren Hippenstiel	DATE: 9/17/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Structures		LENGTH (MILE): 0.08	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.06	$935,700.00	$56,142
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	SF	2,600	$7.00	$18,200
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	1,350	$7.50	$10,125
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.06	$260,000.00	$15,600
13	Landscaping	Mi.	0.06	$235,000.00	$14,100
14	Bridges	SF		$150.00	$0
15	Walls	SF	690	$50.00	$34,500
			SUBTOTAL		***$148,667***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$3,700
	TP & DT	3.0-8.0%	8.0%		$11,900
	Mobilization	8.0-10.0%	10.0%		$14,900
	Erosion Control	0.5-2.0%	2.0%		$3,000
	Contingency	30-40%	40.0%		$59,500
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$241,667***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	2,600	$5.00	$13,000
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$36,300
	Construction Engineering		10.0%		$24,200
			TOTAL PROJECT COST		**$315,000**

Assumptions

BFR sidewalk gaps at the south end of BFR in the City Limits approximately 400' north of Norwood on the west side and approximately 250' north of Norwood on the east side.
Improvements include sidewalk, curb, drainage, and roadway widening (minor)
A 3' average height non-structural wall will be used to retain the slope on the Westside for ~200'
Assume 2' average height cut for project widening limits
Landscaping and illumination in planter strip is included.
ROW width existing is 60'. Widened section is 68'. Assume 8' width needed over length of project

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	**Project R17** - Multiuse Path on Norwood Road	PREPARED BY:	DATE:
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	9/18/2012
KIND OF WORK:	Multiuse Path, Earthwork	LENGTH (MILE): 0.46	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.		$935,700.00	$0
2	Multi-use Path	Mi.	0.46	$173,700.00	$79,902
3	New Roadway	Lane-Mi.		$412,500.00	$0
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	1,070	$7.50	$8,025
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.		$260,000.00	$0
13	Landscaping	Mi.	0.23	$235,000.00	$54,050
14	Bridges	SF		$150.00	$0
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$141,977***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$3,500
	TP & DT	3.0-8.0%	8.0%		$11,400
	Mobilization	8.0-10.0%	10.0%		$14,200
	Erosion Control	0.5-2.0%	2.0%		$2,800
	Contingency	30-40%	40.0%		$56,800
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$230,677***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**5,600**	$5.00	$28,000
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		10.0%		$23,100
	Construction Engineering		10.0%		$23,100
			TOTAL PROJECT COST		**$305,000**

Assumptions:

Project reconstructs the narrow MUP on Norwood Road to 12' width from the I-5 over crossing to BFR
Existing ROW is adequate from 180' east of BFR to Norwood Road.
ROW at BFR is 20' wide from centerline. Assume width needed is 51' to match existing east of BFR
Lighting is not included in this estimate
Landscaping is included at 1/2 length since improvements are to one side only.
Walls and other structures are not included in this estimate. The path alignment and existing grade are relatively flat
1' depth of earthwork is assumed for preparation of path grade

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R18**- Cipole Road Improvements		**PREPARED BY:**	**DATE:**
DESIGN LEVEL: Preliminary		Darren Hippenstiel	11/29/2012
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Walls		**LENGTH (MILE):** 1.20	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.45	$935,700.00	$421,065
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	1.65	$412,500.00	$680,625
4	Overlay Existing Roadway	Lane-Mi.	0.22	$89,400.00	$19,668
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA	1.0	$300,000.00	$300,000
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	10,000	$7.50	$75,000
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.45	$260,000.00	$117,000
13	Landscaping	Mi.	0.45	$235,000.00	$105,750
14	Bridges	SF		$150.00	$0
15	Walls	SF	500	$50.00	$25,000
			SUBTOTAL		***$1,744,108***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$43,600
	TP & DT	3.0-8.0%	8.0%		$139,500
	Mobilization	8.0-10.0%	10.0%		$174,400
	Erosion Control	0.5-2.0%	2.0%		$34,900
	Contingency	30-40%	40.0%		$697,600
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$2,834,108***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Cipole Road Improvements North of Herman Road (Factored 2007 RTP)	LS	1	$ 15,817,000	$15,817,000
	Railroad Crossing	EA	1	$600,000.00	$600,000

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**14,160**	$5.00	$70,800
	Structure(s)	LS	All	$0.00	$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$425,100
	Construction Engineering		10.0%		$283,400
			TOTAL PROJECT COST		**$20,030,000**

Assumptions: On Reverse Page

Assumptions Continued:

Improvements are from OR99W to SW T-S Road. Costs for the improvements from OR99W to SW Herman Road are from the 2007 RTP update factored to 2012 dollars. Cost for Improvements south of SW Herman Road are included in this form.

Improvements south of SW Herman Road are for a major collector, 3-L (2-12' lanes, 1-14' turn, 2-6' bike, 2-6' planter, & 2-6' sidewalks)

Existing roadway width north of T-S Road to the end of existing curb is 360LF and will be rehabilitated.

Existing roadway width to be rehabbed is 38' curb to curb. New width is 50' curb to curb.

Total length of improvements from T-S Road to Herman Road is 2,360 LF

Improvements will include a rail crossing upgrade at the P&W Rail line

Improvements will include a new signal at SW Herman Road and SW Cipole Road.

A 2' average height wall is included over 10% of the project length

Planter strip landscaping and illumination is included.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R19** - Boones Ferry Road North Improvements		**PREPARED BY:**	**DATE:**
DESIGN LEVEL: Preliminary		Darren Hippenstiel	8/22/2012
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Structures		**LENGTH (MILE):** 0.45	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.39	$935,700.00	$364,923
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	0.59	$412,500.00	$243,375
4	Overlay Existing Roadway	Lane-Mi.	1.57	$438,900.00	$689,073
5	New Signal	EA	1	$300,000.00	$300,000
6	Signal Modifications	EA	1	$75,000.00	$75,000
7	Earthwork (See Note)	CY	3,700	$7.50	$27,750
8	Illumination	Mi.	0.45	$260,000.00	$117,000
9	Landscaping	Mi.	0.39	$235,000.00	$91,650
10	Bridges - Short Span	SF		$185.00	$0
11	Bridges - Long Span	SF	24,000	$250.00	$6,000,000
12	Walls	SF	3,800	$75.00	$285,000
			SUBTOTAL		***$8,193,771***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$204,800
	TP & DT	3.0-8.0%	8.0%		$655,500
	Mobilization	8.0-10.0%	10.0%		$819,400
	Erosion Control	0.5-2.0%	2.0%		$163,900
	Contingency	30-40%	40.0%		$3,277,500
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$13,314,871***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	1	$250,000.00	$250,000
	Railroad Crossing	EA	1	$600,000.00	$600,000
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF	40,600	$8.00	$324,800
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Engineering, Environmental Documents, Permitting		15.0%		$1,997,200
	Construction Engineering		10.0%		$1,331,500
			TOTAL PROJECT COST		**$17,818,000**

Assumptions: On Reverse Page

Assumptions Continued:

Roadway section varies from Martinazzi to Upper/Lower BFR Intersection
- Martinazzi to the Tualatin River Bridge is 4-L (4-12' lanes, 2-6' bike, 2-10' S/W & Planter)
- Tualatin River Bridge is 4-L (4-12', 2-6' bike, 2-8' S/W, 2-2' bridge rail)
- Tualatin River Bridge to Upper/Lower BFR is 5-L (5-12' lane, 2-6' bike, 2-10' S/W & Planter)

Bridge height at the same elevation as the existing bridge, minimizing additional earthwork
Improvement length is 2,370 LF including improvements along Upper and Lower BFR for tapers
Bridge structure over Tualatin River is 300LF long, 80' wide. Piers will be on the bank not in the river.
Embankment would have 4:1 slope on both sides
Average roadway cut/fill height is assumed 2' where widening occurs
Retaining walls assumed at the bridge ends and along the widening
- 10' height walls at bridge ends for the entire bridge width (80')
- 6' average height wall on the north side of BFR south of the T. River bridge (150' length)
- 3' average height wall on the south side of BFR south of the T. River bridge (100' length)
- 2' average height wall west side of BFR north of the bridge, south of the tracks (200' length)
- 3' average height wall west side of BFR north of the tracks (200' length)

Landscaping and lighting would be included for the entire length. (no landscaping on the bridge)
New traffic signal assumed at the intersection of Upper/Lower BFR
Signal Modification at BFR/Martinazzi
Narrow ROW and Easement (PUE) needed along entire alignment (varying width)
No structures are impacted and no full takes are assumed

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R20-** Widen T-S Road from Cipole to Teton		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/4/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Walls		**LENGTH (MILE):** 1.55	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	1.55	$935,700.00	$1,450,335
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	3.1	$412,500.00	$1,282,875
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS	1	$35,000.00	$35,000
8	New Signal	EA	3.5	$300,000.00	$1,050,000
9	Signal Modifications	EA	1	$75,000.00	$75,000
10	Earthwork (See Note)	CY	7,300	$7.50	$54,750
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	1.55	$260,000.00	$403,000
13	Landscaping	Mi.	1.55	$235,000.00	$364,250
14	Bridges	SF		$150.00	$0
15	Walls	SF	1,230	$50.00	$61,500
			SUBTOTAL		***$4,776,710***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$119,400
	TP & DT	3.0-8.0%	8.0%		$382,100
	Mobilization	8.0-10.0%	10.0%		$477,700
	Erosion Control	0.5-2.0%	2.0%		$95,500
	Contingency	30-40%	40.0%		$1,910,700
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$7,762,110***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	1	$500,000.00	$500,000

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**36,000**	$5.00	$180,000
	Structure(s)	LS	All	$500,000.00	$500,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$1,164,300
	Construction Engineering		10.0%		$776,200
			TOTAL PROJECT COST		**$10,883,000**

Assumptions: On Reverse Page

Assumptions Continued:

Existing roadway is 3-L (3-12' lanes, 2-6' bikes). No reconstruction of existing roadway
New roadway is for 2-12' lane widening.
Signal reconstruction assumed at 112th Ave, 115th Ave (1/2 only), 124th Ave & Cipole
Signal modification included for 115th Avenue signal.
ROW need assumed from existing widths shown on taxmap subtracted from ROW need (92')
Proposed roadway width is 92', 5-lane section (5-12' lanes, 2-6' bike, 2-10' s/w & planter)
Earthwork is assumed 1' total depth over entire widening limits
Modular block wall, less than 4' height is assumed over 5% of the total length, one side only
Roadway widening will occur adjacent to sensitive areas including over Hedges Creek and two other culvert crossings. Allowance for impact mitigation included at $500K
Landscaping and lighting will be impacted and require reconstruction over entire project length.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R21** - Borland Road Improvements (5-L)		**PREPARED BY:** Darren Hippenstiel	**DATE:** 10/12/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Walls, Signals		**LENGTH (MILE):** 0.95	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.62	$935,700.00	$580,134
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	2.92	$412,500.00	$1,204,500
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	New Signal	EA	2	$300,000.00	$600,000
6	Signal Modifications	EA		$75,000.00	$0
7	Earthwork (See Note)	CY	22,600	$7.50	$169,500
8	Illumination	Mi.	0.85	$260,000.00	$221,000
9	Landscaping	Mi.	0.43	$235,000.00	$101,050
10	Bridges - Short Span	SF	2,400	$185.00	$444,000
11	Walls (4'<)	SF	2,800	$75.00	$210,000
12	Walls (4'>)	SF	1,000	$50.00	$50,000
			SUBTOTAL		***$3,580,184***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$89,500
	TP & DT	3.0-8.0%	8.0%		$286,400
	Mobilization	8.0-10.0%	10.0%		$358,000
	Erosion Control	0.5-2.0%	2.0%		$71,600
	Contingency	30-40%	40.0%		$1,432,100
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$5,817,784***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	1	$100,000.00	$100,000
	Railroad Crossing	EA	0	$600,000.00	$0
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF	128,000	$8.00	$1,024,000
	Structure(s)	LS	All	$1,250,000.00	$1,250,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Engineering, Environmental Documents, Permitting		15.0%		$872,700
	Construction Engineering		10.0%		$581,800
			TOTAL PROJECT COST		**$9,646,000**

Assumptions: On Reverse Page

Assumptions Continued:

Roadway Section is 5-L section (4-12' lanes, 1-14' median, 2-6' bike, 2-12' sidewalk/planter) - 98' width
Existing roadway width is 40' from 65th to Wilke and 30' from Wilke to Eastern Limits
Curb & Gutter, Sidewalk and Drainage are halved (Southside only)
Average existing ROW width is 60'. Total new width need is 98'
5 structures are assumed impacted by the widening project
4' average height structural wall is assumed for 700' along the northside near Prosperity Park Road
2' average height non-structural wall assumed over 10% of the project length (one side only)
Illumination is included for the full length
Landscaping is included at half the improvements length (no landscaping northside)
Include short span bridge/culvert structure over Saum Creek
New signals at 65th Avenue and at 56th Terrace

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R24** - Upper/Lower BFR Ped. & Bike Imp.		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/19/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Structures		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Concrete Sidewalk	SF	360	$5.00	$1,800
2	Concrete Curb	FT	60	$15.00	$900
3	New Roadway	SF	120	$7.00	$840
4	Bike Lane Colored Marking	SF	1,200	$2.00	$2,400
			SUBTOTAL		***$5,940***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$100
	TP & DT	3.0-8.0%	8.0%		$500
	Mobilization	8.0-10.0%	10.0%		$600
	Erosion Control	0.5-2.0%	2.0%		$100
	Contingency	30-40%	40.0%		$2,400
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$9,640***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering				$0
	Construction Engineering				$0
			TOTAL PROJECT COST		**$10,000**

Assumptions

Project location is the intersection of Lower and Upper Boones Ferry Road

Sidewalk improvements are to fill gap at the SW quadrant of the intersection and provide an accessible ramp for pedestrians.

Bike lane improvements add colored pavement marking in the bike lane through the right turn lane extension line along the south leg of the intersection

Colored pavement marking in the bike lane is durable MMA or Thermoplastic

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R26** - Fill Sidewalk Gaps on Borland Road		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/19/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Structures		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.30	$935,700.00	$280,710
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	SF	17,700	$7.00	$123,900
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	6,900	$7.50	$51,750
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.56	$260,000.00	$145,600
13	Landscaping	Mi.		$235,000.00	$0
14	Walls (Non-Structural)	SF	2,400	$50.00	$120,000
15	Walls (Structural)	SF	7,200	$75.00	$540,000
			SUBTOTAL		***$1,261,960***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$31,500
	TP & DT	3.0-8.0%	8.0%		$101,000
	Mobilization	8.0-10.0%	10.0%		$126,200
	Erosion Control	0.5-2.0%	2.0%		$25,200
	Contingency	30-40%	40.0%		$504,800
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$2,050,660***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	8,000	$5.00	$40,000
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$307,600
	Construction Engineering		10.0%		$205,100
			TOTAL PROJECT COST		**$2,603,000**

Assumptions

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	**Project R28** - Myslony Street Improvements 115th to 112th	**PREPARED BY:** Darren Hippenstiel	**DATE:** 10/14/2012
DESIGN LEVEL:	Preliminary		
KIND OF WORK:	Roadway, Earthwork, Drainage, Lighting, Structures	**LENGTH (MILE):** 0.09	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.09	$935,700.00	$84,213
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	0.3	$412,500.00	$115,500
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Earthwork (See Note)	CY	2,200	$7.50	$16,500
7	Traffic Calming	5-10%		-	$0
8	Illumination	Mi.	0.09	$260,000.00	$23,400
9	Landscaping	Mi.	0.09	$235,000.00	$21,150
10	Bridges	SF	6,400	$150.00	$960,000
11	Walls	SF		$75.00	$0
			SUBTOTAL		***$1,220,763***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$30,500
	TP & DT	3.0-8.0%	8.0%		$97,700
	Mobilization	8.0-10.0%	10.0%		$122,100
	Erosion Control	0.5-2.0%	2.0%		$24,400
	Contingency	30-40%	40.0%		$488,300
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$1,983,763***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	1	$100,000.00	$100,000
	Railroad Crossing	EA	0	$600,000.00	$0
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF	2,550	$5.00	$12,750
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$297,600
	Construction Engineering		10.0%		$198,400
			TOTAL PROJECT COST		**$2,593,000**

Assumptions

3-L roadway (3-12' lanes, 2-6' bikes, 2-12' sidewalk/planter) total width - 72'
All new construction including roadway, curb, gutter, sidewalk, drainage, illumination and landscaping
Bridge over Hedges Creek L=100', width is 64' total 60' roadway (minus planter) plus 4' rails
2' EW total over entire project for clearance over Hedges Creek
Limits of project are from SW 112th Ave to the existing end of Myslony Street
Existing ROW is 46.5' west of Hedges Creek and 74' east of Hedges Creek
No walls included
$100k allowance included for impacts to sensitive natural resources

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project R32 - Remove Trees at SW 108th/Tualatin		
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	9/17/2012
KIND OF WORK:	Clearing	LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Tree Removal	EA	5.00	$1,000.00	$5,000
			SUBTOTAL		***$5,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$100
	TP & DT	3.0-8.0%	8.0%		$400
	Mobilization	8.0-10.0%	10.0%		$500
	Erosion Control	0.5-2.0%	2.0%		$100
	Contingency	30-40%	40.0%		$2,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$8,100***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		0.0%		$0
	Construction Engineering		0.0%		$0
			TOTAL PROJECT COST		**$8,000**

Notes:

5 Trees are assumed to be removed at the SW corner of SW Tualatin Road and SW 108th Avenue

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R34** - Roundabout at Tualatin/Herman Road Intersection		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/4/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.25	$935,700.00	$233,925
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	SF	47,680	$7.00	$333,760
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	3,250	$7.50	$24,375
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.22	$260,000.00	$57,200
13	Landscaping	Mi.	0.22	$235,000.00	$51,700
14	Bridges	SF		$150.00	$0
15	Walls	SF	310	$75.00	$23,250
			SUBTOTAL		***$724,210***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$18,100
	TP & DT	3.0-8.0%	8.0%		$57,900
	Mobilization	8.0-10.0%	10.0%		$72,400
	Erosion Control	0.5-2.0%	2.0%		$14,500
	Contingency	30-40%	40.0%		$289,700
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$1,176,810***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	2,000	$5.00	$10,000
	Structure(s)	LS	All	$150,000.00	$150,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$176,500
	Construction Engineering		10.0%		$117,700
			TOTAL PROJECT COST		**$1,631,000**

Notes:

Standard 1-L roundabout with assumed 100' diameter. 3-L roadway section on approaches
Cheyenne Way becomes right-in/right-out at Tualatin Road
West leg (450'), East leg (400'), North leg (300'); reconstruction
3rd lane on approaches (center lane) is 100' length, 12' width concrete island at roundabout
No impacts to Railroad ROW are assumed
Existing intersection signal will be removed
Project is mostly at grade with little slope. Assume only 1' of excavation over entire project for earthwork
A short wall is assumed (2' average height) along the north side of the west leg
Lighting and landscaping on approaches only.
structure impact and 10' width ROW take assumed 200' along west leg

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R36** - SB Turn Pocket Teton to Avery		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/4/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Walls		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.03	$935,700.00	$28,071
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	3,825	$7.00	$26,775
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	225	$7.50	$1,688
11	Signs	EA	3	$500.00	$1,500
12	Illumination	Mi.		$260,000.00	$0
13	Landscaping	Mi.	0.09	$235,000.00	$21,150
14	Bridges	SF		$150.00	$0
15	Walls	SF	550.0	$50.00	$27,500
			SUBTOTAL		***$106,684***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$2,700
	TP & DT	3.0-8.0%	8.0%		$8,500
	Mobilization	8.0-10.0%	10.0%		$10,700
	Erosion Control	0.5-2.0%	2.0%		$2,100
	Contingency	30-40%	40.0%		$42,700
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$173,384***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**3,825**	$15.00	$57,375
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$26,000
	Construction Engineering		10.0%		$17,300
			TOTAL PROJECT COST		**$274,000**

Notes:

17' widening for turn pocket includes 12' lane and 5' bike. Pocket is 100' long with 100' taper
curb radius is flattened for trucks/busses
Curb and sidewalk reconstruction length is half turn pocket length for half street improvement
2' average height wall included behind sidewalk to minimize slope impacts from widening.
ROW and parking impacted at NW intersection quadrant. Assume 17' needed for widening
ROW cost increased due to parking impacts

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R37** - Install Signal at SW Avery and Teton Ave		PREPARED BY: Darren Hippenstiel	DATE: 9/6/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Signals		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.00	$935,700.00	$0
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.		$412,500.00	$0
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA	1	$300,000.00	$300,000
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY		$7.50	$0
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.00	$260,000.00	$0
13	Landscaping	Mi.	0.00	$235,000.00	$0
14	Bridges	SF		$150.00	$0
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$300,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$7,500
	TP & DT	3.0-8.0%	8.0%		$24,000
	Mobilization	8.0-10.0%	10.0%		$30,000
	Erosion Control	0.5-2.0%	2.0%		$6,000
	Contingency	30-40%	40.0%		$120,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$487,500***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$73,100
	Construction Engineering		10.0%		$48,800
			TOTAL PROJECT COST		**$609,000**

Assumptions

Project installs a signal at SW Avery Street and SW Teton Avenue
No ROW is impacted with installation
No roadway improvements are included with installation

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R38** - Local Traffic Signage only on Tualatin Road		PREPARED BY:	DATE:
DESIGN LEVEL: Preliminary		Darren Hippenstiel	9/17/2012
KIND OF WORK: Signing		LENGTH (MILE): 2.30	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	16.00	$500.00	$8,000
			SUBTOTAL		***$8,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$200
	TP & DT	3.0-8.0%	8.0%		$600
	Mobilization	8.0-10.0%	10.0%		$800
	Erosion Control	0.5-2.0%	2.0%		$200
	Contingency	30-40%	40.0%		$3,200
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$13,000***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		30.0%		$3,900
	Construction Engineering		20.0%		$2,600
			TOTAL PROJECT COST		**$20,000**

Notes:

Project installs signs for no trucks/through movements on SW 105th and SW 108th south of Avery St.
1 sign on SW 124th North of Tualatin Road
1 sign every 2,000 FT on SW Tualatin Road
2 signs on BFR (1 south and 1 east) of Tualatin Road

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R39** - SW 105th/108th Signing (No Trucks)	PREPARED BY: Darren Hippenstiel	DATE: 9/3/2012
DESIGN LEVEL: Preliminary		
KIND OF WORK: Striping	LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	10.00	$500.00	$5,000
			SUBTOTAL		***$5,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$100
	TP & DT	3.0-8.0%	8.0%		$400
	Mobilization	8.0-10.0%	10.0%		$500
	Erosion Control	0.5-2.0%	2.0%		$100
	Contingency	30-40%	40.0%		$2,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$8,100***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		30.0%		$2,400
	Construction Engineering		20.0%		$1,600
			TOTAL PROJECT COST		**$12,000**

Notes:

Project installs signs for no trucks/through movements on SW 105th and SW 108th south of Avery St.
1 sign on Avery east and west of SW 105th (2 total)
1 sign every 2,000 FT on SW 105th, SW Blake Street & SW 108th Ave.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R40** - K-Mart Site Roadway Improvements		**PREPARED BY:** Darren Hippenstiel	**DATE:** 10/15/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Walls		**LENGTH (MILE):** 0.35	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.35	$935,700.00	$327,495
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	1.2	$412,500.00	$482,625
4	New Roadway	SF	14,600	$7.00	$102,200
5	Signal	EA		$300,000.00	$0
6	Earthwork (See Note)	CY	4,200	$7.50	$31,500
7	Traffic Calming	5-10%		-	$0
8	Illumination	Mi.	0.35	$260,000.00	$91,000
9	Landscaping	Mi.	0.35	$235,000.00	$82,250
10	Bridges	SF		$150.00	$0
11	Walls	SF	370	$50.00	$18,500
			SUBTOTAL		***$1,135,570***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$28,400
	TP & DT	3.0-8.0%	8.0%		$90,800
	Mobilization	8.0-10.0%	10.0%		$113,600
	Erosion Control	0.5-2.0%	2.0%		$22,700
	Contingency	30-40%	40.0%		$454,200
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$1,845,270***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	0	$100,000.00	$0
	Railroad Crossing	EA	0	$600,000.00	$0
	RIGHT OF WAY COSTS	**UNIT**	**QUANTITY**	**UNIT COST**	**COST**
	New Right of Way Acquisition	SF		$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$276,800
	Construction Engineering		10.0%		$184,500
			TOTAL PROJECT COST		**$2,307,000**

Assumptions

Alignment 1 is from Boones Ferry Road to T-S Road (L=1,250FT). Alignment 2 is from Martinazzi to Alignment 1 (600FT). Roadway section is 2-L (2-12' lanes, 2-8' parking, 2-10' sidewalk)

Alignment 1 widens to 5-L with 2-6' bike lanes for 400' approaching T-S Road

Existing development structures and elements are assumed removed by other projects and not included

No ROW acquisition is included.

New signal is assumed at T-S Road

Additional 150' of 12' widening assumed on BFR north of the connection with Alignment 1

Walls are assumed at 2' average height, non-structural, for 10% of the total length on one side.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R41** - Bus Pullouts on Boones Ferry Road		PREPARED BY: Darren Hippenstiel	DATE: 9/17/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Bus Pullout	EA	10.00	$20,000.00	$200,000
	SUBTOTAL				***$200,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$5,000
	TP & DT	3.0-8.0%	8.0%		$16,000
	Mobilization	8.0-10.0%	10.0%		$20,000
	Erosion Control	0.5-2.0%	2.0%		$4,000
	Contingency	30-40%	40.0%		$80,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
	TOTAL CONSTRUCTION COST				***$325,000***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		10.0%		$32,500
	Construction Engineering		10.0%		$32,500
	TOTAL PROJECT COST				**$390,000**

Assumptions:

Project adds 10 bus pullouts at locations along Boones Ferry Road, 5 in each direction

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R42** - T-S Rd. EB Right Turn Pocket to BFR		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/19/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Structures		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.03	$935,700.00	$28,071
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	SF	5,100	$7.00	$35,700
4	Intersection Widening	EA		$76,500.00	$0
5	Interconnect Signal	LS		$35,000.00	$0
6	New Signal	EA		$300,000.00	$0
7	Signal Modifications	EA	1	$75,000.00	$75,000
8	Earthwork (See Note)	CY	350	$7.50	$2,625
9	Traffic Calming	5-10%		-	$0
10	Illumination	Mi.	0.06	$260,000.00	$15,600
11	Landscaping	Mi.	0.12	$235,000.00	$28,200
12	Bridges	SF		$150.00	$0
13	Walls	SF		$75.00	$0
			SUBTOTAL		***$185,196***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$4,600
	TP & DT	3.0-8.0%	8.0%		$14,800
	Mobilization	8.0-10.0%	10.0%		$18,500
	Erosion Control	0.5-2.0%	2.0%		$3,700
	Contingency	30-40%	40.0%		$74,100
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$300,896***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Water Quality Treatment	LS	1	$20,000.00	$20,000
	Railroad Crossing	EA	1	$300,000.00	$300,000

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**4,200**	$5.00	$21,000
	Site Impacts	LS	All	$75,000.00	$75,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$45,100
	Construction Engineering		10.0%		$30,100
			TOTAL PROJECT COST		**$792,000**

Assumptions

Turn pocket is 350' long measured from BFR west curbline. Widening width is 17' (5' bike, 12' lane)
Taper length for turn pocket is 100' long
Existing ROW is assumed at the back of walk ~13' from face of curb
Widening is measured from edge of traveled way, ~2' from face of curb. Total ROW need is 12'
Impacts are assumed to the railroad crossing (extended), signal bridge, gate, and traffic signal ped pole
No impacts are assumed to the railroad signal controller.
Existing water quality facility south of T-S Road impacted. Allowance included for mechanical treatment

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	**Project R43** - Restriping BFR Between T-S Rd and Nyberg St	**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/19/2012
DESIGN LEVEL:	Preliminary		
KIND OF WORK:	Roadway, Earthwork, Drainage, Lighting, Structures	**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Stripe Removal	FT	1,610	$0.65	$1,047
2	Thermoplastic Pavement Striping	FT	1,610	$1.00	$1,610
3	Thermoplastic Pavement Arrows	EA	4.0	$500.00	$2,000
			SUBTOTAL		***$4,657***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$100
	TP & DT	3.0-8.0%	8.0%		$400
	Mobilization	8.0-10.0%	10.0%		$500
	Erosion Control	0.5-2.0%	2.0%		$100
	Contingency	30-40%	40.0%		$1,900
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$7,657***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		0.0%		$0
	Construction Engineering		0.0%		$0
			TOTAL PROJECT COST		**$8,000**

Assumptions

Project is to restripe BFR turn lanes between T-S Road and Nyberg Street to provide more storage for left turning traffic to T-S Rd.

4" lines are assumed in unit cost

Length between T-S Rd and Nyberg Street is 400'

Turn pockets are 170' long at Nyberg St and 100' long at T-S Road existing

Project is considered maintenance/operations and therefore no engineering is included.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project R44 - Sight Dist. Imp. I-5 SB Off-Ramp		
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	9/3/2012
KIND OF WORK:	Guardrail, Earthwork	LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Guardrail	LF	45.00	$50.00	$2,250
2	Earthwork (See Note)	CY	300	$7.50	$2,250
3	Landscaping	SF	2000.00	$5.60	$11,200
			SUBTOTAL		***$15,700***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$400
	TP & DT	3.0-8.0%	8.0%		$1,300
	Mobilization	8.0-10.0%	10.0%		$1,600
	Erosion Control	0.5-2.0%	2.0%		$300
	Contingency	30-40%	40.0%		$6,300
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$25,600***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$3,800
	Construction Engineering		10.0%		$2,600
			TOTAL PROJECT COST		**$32,000**

Notes:

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R45** - Redesign WB/NB Nyberg Interchange On-Ramp		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/17/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Signals		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.03	$935,700.00	$28,071
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	SF	12,400	$7.00	$86,800
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA	1	$300,000.00	$300,000
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	500	$7.50	$3,750
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.03	$260,000.00	$7,800
13	Landscaping	Mi.	0.03	$235,000.00	$7,050
14	Concrete Barrier	LF	400	$50.00	$20,000
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$453,471***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$11,300
	TP & DT	3.0-8.0%	8.0%		$36,300
	Mobilization	8.0-10.0%	10.0%		$45,300
	Erosion Control	0.5-2.0%	2.0%		$9,100
	Contingency	30-40%	40.0%		$181,400
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$736,871***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF		$5.00	$0
	Structure(s)	LS	All	$150,000.00	$150,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$110,500
	Construction Engineering		10.0%		$73,700
			TOTAL PROJECT COST		**$1,071,000**

Notes:

Widening along WB right turn pocket for 2 lanes, assume 10' widening
Concrete island is reconstructed smaller than existing
Widening/reconstruction of ramp 150' north of island to tie lanes/improvements
Signal assumed reconstructed due to pole impact at island
No ROW or structures impacted for improvements
Lighting and landscaping included for length of turn pocket improvements

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project R46 - Signage Improvements WB/NB On Ramp		
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	9/17/2012
KIND OF WORK:	Signing	LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	2.00	$500.00	$1,000
			SUBTOTAL		***$1,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$0
	TP & DT	3.0-8.0%	8.0%		$100
	Mobilization	8.0-10.0%	10.0%		$100
	Erosion Control	0.5-2.0%	2.0%		$0
	Contingency	30-40%	40.0%		$400
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$1,600***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		0.0%		$0
	Construction Engineering		0.0%		$0
			TOTAL PROJECT COST		**$2,000**

Notes:

Project installs signs for "no stopping" at concrete island on NB ramp
Assume 1 sign on I-5 NB on-ramp
Assume 1 sign on concrete island north of Nyberg Road

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R47** - Crosswalk Improvements Nyberg/Fred Meyer	**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/17/2012
DESIGN LEVEL: Preliminary		
KIND OF WORK: Concrete, Striping	**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Sidewalk	SF	800	$5.00	$4,000
2	Concrete Island	SF	2,440	$12.00	$29,280
3	New Roadway	SF	1,100	$7.00	$7,700
4	Signal Modification	EA	0.25	$75,000.00	$18,750
5	Signs	EA		$500.00	$0
6	Bike Lane Striping	SF		$2.00	$0
7	Landscaping	SF		$5.60	$0
			SUBTOTAL		***$59,730***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$1,500
	TP & DT	3.0-8.0%	20.0%		$11,900
	Mobilization	8.0-10.0%	10.0%		$6,000
	Erosion Control	0.5-2.0%	2.0%		$1,200
	Contingency	30-40%	40.0%		$23,900
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$104,230***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		30.0%		$31,300
	Construction Engineering		20.0%		$20,800
			TOTAL PROJECT COST		**$156,000**

Notes:

Improvements are to the pedestrian crossing T-S Road at the Fred Meyer/K-Mart intersection
Improvements are to the west leg of the intersection only to provide refuge only, not a multi-stage cross
Improvements inlcude new ADA ramps and sidewalk at the corners
Traffic Control increased due to volumes on T-S Road and construction times for concrete
Crossing assumed to be reconstructed with concrete
Assume 1/4 typical signal modification since one leg only

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R48** - Turn Pocket Widening Teton/T-S Road		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/4/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Signals		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.06	$935,700.00	$56,142
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	SF	6,000	$7.00	$42,000
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA	1.00	$300,000.00	$300,000
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	370	$7.50	$2,775
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.00	$260,000.00	$0
13	Landscaping	Mi.	0.00	$235,000.00	$0
14	Fence Reconstruction	LF	250	$25.00	$6,250
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$407,167***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$10,200
	TP & DT	3.0-8.0%	8.0%		$32,600
	Mobilization	8.0-10.0%	10.0%		$40,700
	Erosion Control	0.5-2.0%	2.0%		$8,100
	Contingency	30-40%	40.0%		$162,900
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$661,667***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Private Utility Relocations	LS	1	$50,000.00	$50,000

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	2,500	$5.00	$12,500
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$99,300
	Construction Engineering		10.0%		$66,200
			TOTAL PROJECT COST		**$890,000**

Notes:

Widening for right turn pocket from Teton NB to T-S Road WB. 17' total widening (12' lane, 5' bike)
Turn pocket is 250' long. Taper from 0-17' over 100'
Curb and sidewalk construction from T-S Road to Manhasset (650' total length)
Curb length is divided in half due to half street improvement
Existing signal pole and controller at NW quadrant is impacts. Assume signal reconstruction
10' ROW is needed for sidewalk and utilities at back of walk. 17' exists from curb to ROW line

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R49** - Right Turn Pocket T-S Rd. to SW 124th		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/19/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting		**LENGTH (MILE):** 0.06	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.03	$935,700.00	$28,071
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	SF	3,300	$7.00	$23,100
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA	1	$75,000.00	$75,000
10	Earthwork (See Note)	CY	250	$7.50	$1,875
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.06	$260,000.00	$15,600
13	Landscaping	Mi.	0.06	$235,000.00	$14,100
14	Bridges	SF		$150.00	$0
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$157,746***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$3,900
	TP & DT	3.0-8.0%	8.0%		$12,600
	Mobilization	8.0-10.0%	10.0%		$15,800
	Erosion Control	0.5-2.0%	2.0%		$3,200
	Contingency	30-40%	40.0%		$63,100
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$256,346***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$38,500
	Construction Engineering		10.0%		$25,600
			TOTAL PROJECT COST		**$320,000**

Assumptions

Turn pocket width is 12' lane plus 5' bike lane. 10' sidewalk/planter included
ROW width is adequate for widening. No ROW acquisition is included
No signals impacts are included. Signal modification will be needed for turn pocket light
Lighting and landscaping are included
1' average depth earthwork is included for the turn pocket widening.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
Project R50 - Improve Signing to I-5		Darren Hippenstiel	9/18/2012
DESIGN LEVEL: Preliminary		LENGTH (MILE):	SHEET: 1 of 1
KIND OF WORK: Signing, Structures			

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Sign Structure - Mast Arm	EA	2.00	$50,000.00	$100,000
2	Signing (Type G Panels)	SF	640	$120.00	$76,800
			SUBTOTAL		***$176,800***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$4,400
	TP & DT	3.0-8.0%	8.0%		$14,100
	Mobilization	8.0-10.0%	10.0%		$17,700
	Erosion Control	0.5-2.0%	2.0%		$3,500
	Contingency	30-40%	40.0%		$70,700
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$287,200***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		10.0%		$28,700
	Construction Engineering		10.0%		$28,700
			TOTAL PROJECT COST		**$345,000**

Assumptions

- Sign supports will be cantilever mast arm type structures
- Two sign panels assumed per support
- Signs are estimated to be 6' high X 10' wide
- Signs are Type G metal panels
- Locations of supports to be determined by design
- No other physical impacts or improvements assumed (i.e. curb line, sidewalk, roadway, etc.)

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project R51** - Install Signal at SW 65th Ave and SW Sagert St		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/6/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Structures		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.00	$935,700.00	$0
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.		$412,500.00	$0
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS	1	$35,000.00	$35,000
8	New Signal	EA	1	$300,000.00	$300,000
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY		$7.50	$0
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.00	$260,000.00	$0
13	Landscaping	Mi.	0.00	$235,000.00	$0
14	Bridges	SF		$150.00	$0
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$335,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$8,400
	TP & DT	3.0-8.0%	8.0%		$26,800
	Mobilization	8.0-10.0%	10.0%		$33,500
	Erosion Control	0.5-2.0%	2.0%		$6,700
	Contingency	30-40%	40.0%		$134,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$544,400***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$81,700
	Construction Engineering		10.0%		$54,400
			TOTAL PROJECT COST		**$681,000**

Assumptions

Project installs a signal at SW 65th Avenue and SW Sagert Street
No ROW is impacted with installation
No roadway improvements are included with installation

Bicycle/Pedestrian Projects

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP1** - Safe Routes to School Way finding Signs		PREPARED BY: Darren Hippenstiel	DATE: 9/18/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Signing		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	90	$500.00	$45,000
			SUBTOTAL		***$45,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$1,100
	TP & DT	3.0-8.0%	8.0%		$3,600
	Mobilization	8.0-10.0%	10.0%		$4,500
	Erosion Control	0.5-2.0%	2.0%		$900
	Contingency	30-40%	40.0%		$18,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$73,100***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		0.0%		$0
	Construction Engineering		0.0%		$0
			TOTAL PROJECT COST		**$73,000**

Assumptions:

Project installs way finding signage along routes to schools

Assume 6 signs per route, 3 routes per school & 5 total schools

Bicycle/Pedestrian Projects

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP1** - Safe Routes to School Way finding Signs		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/18/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Signing		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	90	$500.00	$45,000
			SUBTOTAL		***$45,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$1,100
	TP & DT	3.0-8.0%	8.0%		$3,600
	Mobilization	8.0-10.0%	10.0%		$4,500
	Erosion Control	0.5-2.0%	2.0%		$900
	Contingency	30-40%	40.0%		$18,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$73,100***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		0.0%		$0
	Construction Engineering		0.0%		$0
			TOTAL PROJECT COST		**$73,000**

Assumptions:

Project installs way finding signage along routes to schools

Assume 6 signs per route, 3 routes per school & 5 total schools

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP2** - Bicycle Improvements At Bridgeport Village		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/17/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Striping		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Colored Pavement Marking	SF	3,240	$2.00	$6,480
			SUBTOTAL		***$6,480***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$200
	TP & DT	3.0-8.0%	8.0%		$500
	Mobilization	8.0-10.0%	10.0%		$600
	Erosion Control	0.5-2.0%	2.0%		$100
	Contingency	30-40%	40.0%		$2,600
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$10,480***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		0.0%		$0
	Construction Engineering		0.0%		$0
			TOTAL PROJECT COST		**$10,000**

Assumptions

No pedestrian improvements included in the improvement plan as sidewalks and crosswalks were constructed by Bridgeport project and are in good condition

Improvements to bicycle facilities are for colored bike lanes extensions through right turn lanes

Material is assumed to be durable MMA or Thermoplastic

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP3** - BFR Mid-Block Crossing North of Tualatin River		PREPARED BY: Darren Hippenstiel	DATE: 11/29/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Concrete Sidewalk	SF	340	$5.00	$1,700
2	Concrete Islands	SF	240	$12.00	$2,880
3	Concrete Curb	LF	125	$15.00	$1,875
4	Signing	EA	6	$500.00	$3,000
5	Striping	LF	360	$1.00	$360
6	Crosswalks/Stopbars (Thermo)	SF	248	$10.00	$2,480
	Illumination	EA	2	$5,000.00	$10,000
			SUBTOTAL		***$22,295***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$600
	TP & DT	3.0-8.0%	8.0%		$1,800
	Mobilization	8.0-10.0%	10.0%		$2,200
	Erosion Control	0.5-2.0%	2.0%		$400
	Contingency	30-40%	40.0%		$8,900
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$36,195***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		20.0%		$7,200
	Speed Study		LS		$10,000
	Construction Engineering		15.0%		$5,400
			TOTAL PROJECT COST		**$59,000**

Assumptions

Project is for mid-block crossing of Boones Ferry Road north of the Tualatin River at the Tualatin View Apartments

Improvements include concrete islands (30' x 8'), sidewalk ramps, signage and striping

Striping is for ladder style cross walk. 12" width x 10' long markings

Sidewalk ramps assume 10' wings each side and 6' throat, parallel type ramps

illumination poles (non-decorative) assumed both sides of BFR

A speed study was requested by ODOT in 2008 to determine desirability to extend an existing 30MPH spreed zone to encompass the crossing in both traffic directions. Estimate inlcudes costs for data collection, analyzing results, and preparing a technical memorandum with recommendations

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project BP4 - Improve Crosswalk Visibility at Siletz/BFR		
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	9/17/2012
KIND OF WORK:	Signing, Lighting	LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	4	$500.00	$2,000
2	Illumination	EA	2	$5,000.00	$10,000
			SUBTOTAL		***$12,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$300
	TP & DT	3.0-8.0%	8.0%		$1,000
	Mobilization	8.0-10.0%	10.0%		$1,200
	Erosion Control	0.5-2.0%	2.0%		$200
	Contingency	30-40%	40.0%		$4,800
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$19,500***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$2,900
	Construction Engineering		10.0%		$2,000
			TOTAL PROJECT COST		**$24,000**

Assumptions:

Project is to improve awareness and visibility at the intersection of SW Siletz Drive and SW BFR

1 pedestrian warning sign approaching the intersection on each leg is assumed

Lighting around the intersection is low (due to distance from nearest lights). Assume 2 lights installed near the intersection to improve lighting

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project BP5 - Bike Lane Through Avery At BFR		
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	9/3/2012
KIND OF WORK:	Roadway, Drainage	LENGTH (MILE): 0.00	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.04	$935,700.00	$37,428
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.	0.04	$412,500.00	$16,500
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	100	$7.50	$750
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.00	$260,000.00	$0
13	Landscaping	Mi.	0.00	$235,000.00	$0
14	Bridges	SF		$150.00	$0
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$54,678***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$1,400
	TP & DT	3.0-8.0%	8.0%		$4,400
	Mobilization	8.0-10.0%	10.0%		$5,500
	Erosion Control	0.5-2.0%	2.0%		$1,100
	Contingency	30-40%	40.0%		$21,900
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$88,978***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	1,200	$5.00	$6,000
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$13,300
	Construction Engineering		10.0%		$8,900
			TOTAL PROJECT COST		**$117,000**

Notes:

Minor widening 200' east of the intersection of Avery and Boones Ferry Road
All widening is to the northside
Cross section proposed is 3-12' lanes, 2-6' bike lanes, 2-6' sidewalks
0-12' of ROW acquisition is assumed.

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP6** - Improve Bridge Behind Hagens		PREPARED BY: Darren Hippenstiel	DATE: 9/17/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Surfacing, Lighting		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Bridges	SF	2,600	$19.00	$49,400
			SUBTOTAL		***$49,400***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$1,200
	TP & DT	3.0-8.0%	8.0%		$4,000
	Mobilization	8.0-10.0%	10.0%		$4,900
	Erosion Control	0.5-2.0%	2.0%		$1,000
	Contingency	30-40%	40.0%		$19,800
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$80,300***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$12,000
	Construction Engineering		10.0%		$8,000
			TOTAL PROJECT COST		**$100,000**

Assumptions

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP10** - Trail Near SW105th/SW Blake/SW108th		PREPARED BY: Hippenstiel	DATE: 12/6/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Structures		LENGTH (MILE): 0.32	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.		$935,700.00	$0
2	Multi-Use Path	Mi.	0.11	$173,700.00	$19,107
3	New Roadway	Lane-Mi.		$412,500.00	$0
4	New Roadway	SF	1,950	$7.00	$13,650
5	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
6	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
7	Intersection Widening	EA		$76,500.00	$0
8	Interconnect Signal	LS		$35,000.00	$0
9	New Signal	EA		$300,000.00	$0
10	Signal Modifications	EA		$75,000.00	$0
11	Earthwork (See Note)	CY	870	$7.50	$6,525
12	Traffic Calming	5-10%		-	$0
13	Illumination	Mi.		$260,000.00	$0
14	Landscaping	Mi.		$235,000.00	$0
15	Bridges - MUP (Wooden)	SF	3,500	$90.00	$315,000
16	Walls	SF		$75.00	$0
17	Mitigation (Natural Resources)	LS	1	$35,000.00	$35,000
			SUBTOTAL		***$389,282***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.0%		$7,800
	TP & DT	3.0-8.0%	8.0%		$31,100
	Mobilization	8.0-10.0%	10.0%		$38,900
	Erosion Control	0.5-2.0%	2.0%		$7,800
	Contingency	30-40%	40.0%		$155,700
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$630,582***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	315	$5.00	$1,575
	Structure(s)	LS	All		$0
	ENGINEERING COSTS		**PERCENTAGE**		**COST**
	Design Engineering, Permitting		15.0%		$94,600
	Permitting		2.5%		$15,800
	Construction Engineering		10.0%		$63,100
			TOTAL PROJECT COST		**$810,000**

Notes:

Alternative includes minor widening of shoulders and off-alignment 10' shared use path
Avg. H=5' cut of inside curve 105th/Blake to improve sight distance ~15' width
Avg. H=3' cut of outside curve behind g-rail for shared use path ~16' width
Avg. H=1' minor fill north side Blake/108th for shoulder improvements
Avg. H=1' minor fill eastside approaching Paulina to connect shared use patht to sidewalk
Wooden bridge type structure for shared use path behind guardrail through sensitive area, eastside
May require utility relocations (assumed by utility) to move poles out of shared use path
Assumes minor ROW acquisition at inside curve 108th/Blake

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP12** - Tonquin Trail Neighborhood Connections		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/19/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Multiuse Path, Earthwork, Drainage, Structures		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.28	$935,700.00	$261,996
2	Multi-use Path	Mi.	0.18	$173,700.00	$31,266
3	New Roadway	Lane-Mi.		$412,500.00	$0
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY	1,320	$7.50	$9,900
11	Traffic Calming	5-10%		-	$0
12	Illumination	Mi.	0.00	$260,000.00	$0
13	Landscaping	Mi.	0.18	$235,000.00	$42,300
14	Bridges	SF	21,000	$150.00	$3,150,000
15	Walls	SF	500	$75.00	$37,500
			SUBTOTAL		***$3,532,962***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$88,300
	TP & DT	3.0-8.0%	8.0%		$282,600
	Mobilization	8.0-10.0%	10.0%		$353,300
	Erosion Control	0.5-2.0%	2.0%		$70,700
	Contingency	30-40%	40.0%		$1,413,200
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$5,741,062***

ANTICIPATED ADDITIONAL COSTS

		UNIT	QUANTITY	UNIT COST	COST
	Sensitive Area Impact Mitigation	LS	1	$150,000.00	$150,000
	Railroad Crossing	EA	1	$150,000.00	$150,000

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**30,000**	$5.00	$150,000
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$861,200
	Construction Engineering		10.0%		$574,100
			TOTAL PROJECT COST		**$7,626,000**

Assumptions: Next Page

Assumptions:

Estimate excludes Blake Street connection. That estimate prepared previously from 2009 SW Tualatin Concept Plan Update.
Clearance over railroad to bottom of structure 23'6". Depth of structure estimated at 5'6"
Maximum slope for path is 5% and was used in developing path approach lengths to bridge
1 access assumed almost entirely on structure due to major sensitive resource impacts and excessive embankment heights
1 access improvement area assumed existing at grade rail crossing used for the path. Minor improvements included for the rail crossing
Sidewalk and curb are added to the at grade location to connect to SW 105th
15' ROW is assumed for the MUP approaches on structure and easement for the at grade connection

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP13** - Colored Bike Lane Through Nyberg Interchange		PREPARED BY: Darren Hippenstiel	DATE: 9/3/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Striping		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Curb, Gutter, Sidewalks & Drainage	Mi.	0.00	$935,700.00	$0
2	Multi-use Path	Mi.		$173,700.00	$0
3	New Roadway	Lane-Mi.		$412,500.00	$0
4	Overlay Existing Roadway	Lane-Mi.		$89,400.00	$0
5	Reconstruct Existing Roadway	Lane-Mi.		$438,900.00	$0
6	Intersection Widening	EA		$76,500.00	$0
7	Interconnect Signal	LS		$35,000.00	$0
8	New Signal	EA		$300,000.00	$0
9	Signal Modifications	EA		$75,000.00	$0
10	Earthwork (See Note)	CY		$7.50	$0
11	Bike Lane Striping	SF	4,920	$2.00	$9,840
12	Illumination	Mi.	0.00	$260,000.00	$0
13	Landscaping	Mi.	0.00	$235,000.00	$0
14	Bridges	SF		$150.00	$0
15	Walls	SF		$75.00	$0
			SUBTOTAL		***$9,840***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$200
	TP & DT	3.0-8.0%	8.0%		$800
	Mobilization	8.0-10.0%	10.0%		$1,000
	Erosion Control	0.5-2.0%	2.0%		$200
	Contingency	30-40%	40.0%		$3,900
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$15,940***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		30.0%		$4,800
	Construction Engineering		20.0%		$3,200
			TOTAL PROJECT COST		**$24,000**

Notes:

Project to add roadway striping only. No new pavement or roadway construction is assumed.
Pavement marking will be applied between existing bike lane lines. No striping removal will be required.
Colored pavement marking will be applied at ramp terminal crossings only.
Material is assumed MMA or Thermoplastic

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP14** - Bike Lane Striping Across I-5 SB Off-ramp		PREPARED BY:	DATE:
DESIGN LEVEL: Preliminary		Darren Hippenstiel	9/3/2012
KIND OF WORK: Striping		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Striping	Lane-Mi.	0.06	$8,700.00	$522
			SUBTOTAL		***$522***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$0
	TP & DT	3.0-8.0%	8.0%		$0
	Mobilization	8.0-10.0%	10.0%		$100
	Erosion Control	0.5-2.0%	2.0%		$0
	Contingency	30-40%	40.0%		$200
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
	TOTAL CONSTRUCTION COST				***$822***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	0	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering				$1,000
	Construction Engineering		0.0%		$0
	TOTAL PROJECT COST				**$2,000**

Notes:

Existing stripe removal
Two stripes, 150' length each
Striping across ramp is an operations/maintenance activity. DE cost is included to estimate Admin time/costs

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP15** - Bike Lane Re-design Nyberg Interchange East		**PREPARED BY:** Darren Hippenstiel	**DATE:** 9/3/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Concrete, Guardrail, Striping		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Guardrail	LF	160	$50.00	$8,000
2	Concrete Island	SF	480	$12.00	$5,760
3	New Roadway	SF	300	$7.00	$2,100
4	Earthwork (See Note)	CY	300	$7.50	$2,250
5	Signs	EA	2	$500.00	$1,000
6	Bike Lane Striping	SF	300	$2.00	$600
7	Landscaping	SF	1,000	$5.60	$5,600
			SUBTOTAL		***$25,310***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$600
	TP & DT	3.0-8.0%	8.0%		$2,000
	Mobilization	8.0-10.0%	10.0%		$2,500
	Erosion Control	0.5-2.0%	2.0%		$500
	Contingency	30-40%	40.0%		$10,100
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$41,010***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		30.0%		$12,300
	Construction Engineering		20.0%		$8,200
			TOTAL PROJECT COST		**$62,000**

Notes:

No lane revisions. New Roadway is for bike lane pavement widening only (assumed 0-6' W X 100' L)
Guardrail reconstructed between bridge rail end pieces (Nyberg Bridge to Ramp bridge)
Concrete island reconstructed to better align bikes for 90° crossing 20'± up the ramp
Sliver fill along bike lane revisions, 100'
Add two warning signs at interchange (standard signs and posts)
Add colored pavement marking in bike lane crossing of I-5 NB loop ramp terminal

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project BP16** - Improve Bike/Ped Rail Crossings		PREPARED BY: Darren Hippenstiel	DATE: 8/1/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Roadway, Earthwork, Drainage, Lighting, Structures		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Sidewalk	SF	3,210	$5.00	$16,050
2	Railroad Crossing Panels	FT	335	$402.00	$134,670
3	Earthwork (See Note)	CY	260	$7.50	$1,950
			SUBTOTAL		***$152,670***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$3,800
	TP & DT	3.0-8.0%	8.0%		$12,200
	Mobilization	8.0-10.0%	10.0%		$15,300
	Erosion Control	0.5-2.0%	2.0%		$3,100
	Contingency	30-40%	40.0%		$61,100
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$248,170***

	RIGHT OF WAY COSTS	UNIT	QUANTITY	UNIT COST	COST
	New Right of Way Acquisition	SF	**0**	$5.00	$0
	Structure(s)	LS	All		$0
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$37,200
	Construction Engineering		10.0%		$24,800
			TOTAL PROJECT COST		**$310,000**

Assumptions

Estimate includes two project sites. Site 1 is along SW Boones Ferry Road just north of the Tualatin River. Site 2 is along SW Lower Boones Ferry Road at the east city limits.

Site 1 improvements are to the crossing panels only. Crossing signal, gates, and sidewalk exist but the panels are settled and deteriorated.

Site 2 improvements include sidewalks each side of the track and crossing panel improvements.

Sidewalks at site 2 are estimated to run behind existing curb, parallel to existing tracks, and cross at 90° angles to the track.

Panels are improved across travel lanes to provide improved crossing for bicycles.

Assumes panel improvements for bikes would trigger improvements across all lanes

Transit Projects

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	**Project T1** - Provide Bus Transit Service on SW Herman Road	PREPARED BY:	DATE:
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	11/8/2012
KIND OF WORK:	Signing, Bus Shelter	LENGTH (MILE): 2.00	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	16	$500.00	$8,000
2	Bus Shelter	EA	1	$5,000.00	$5,000
			SUBTOTAL		***$13,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$300
	TP & DT	3.0-8.0%	8.0%		$1,000
	Mobilization	8.0-10.0%	10.0%		$1,300
	Erosion Control	0.5-2.0%	2.0%		$300
	Contingency	30-40%	40.0%		$5,200
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$21,100***

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	Bus	EA	1	$440,000.00	$440,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$3,200
	Construction Engineering		10.0%		$2,100
			SUBTOTAL CAPITAL COST		**$466,000**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	1300	$128.95	$167,635
			SUBTOTAL OPERATING COST		**$168,000**
			TOTAL PROJECT COST		**$634,000**

Assumptions:

Bus Stop Frequency = 1 per direction per 0.25 miles
(Matches average existing stop frequency on Boones Ferry Road)
1 sign/post per stop
1 shelter per route
Average Travel Speed = 25 mph
Dwell/Layover Time = 18% of Travel Time
Hours of Service = 6am to 7pm, Monday to Friday only
Service Frequency = 1 bus per 30 minutes
Service Period = 1 year
Operating unit cost per hour ($128.95/hr) provided by TriMet
New bus cost at $440K per bus provided by TriMet

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:	**Project T2** - Provide Bus Transit Service on SW 124th Street	PREPARED BY:	DATE:
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	11/8/2012
KIND OF WORK:	Signing, Bus Shelter	LENGTH (MILE): 1.40	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	12	$500.00	$6,000
2	Bus Shelter	EA	1	$5,000.00	$5,000
			SUBTOTAL		***$11,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$300
	TP & DT	3.0-8.0%	8.0%		$900
	Mobilization	8.0-10.0%	10.0%		$1,100
	Erosion Control	0.5-2.0%	2.0%		$200
	Contingency	30-40%	40.0%		$4,400
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$17,900***

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	Bus	EA	1	$440,000.00	$440,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$2,700
	Construction Engineering		10.0%		$1,800
			SUBTOTAL CAPITAL COST		**$462,000**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	884	$128.95	$113,992
			SUBTOTAL OPERATING COST		**$114,000**
			TOTAL PROJECT COST		**$576,000**

Assumptions:

Bus Stop Frequency = 1 per direction per 0.25 miles
(Matches average existing stop frequency on Boones Ferry Road)
1 sign/post per stop
1 shelter per route
Average Travel Speed = 25 mph
Dwell/Layover Time = 18% of Travel Time
Hours of Service = 6am to 7pm, Monday to Friday only
Service Frequency = 1 bus per 30 minutes
Service Period = 1 year
Operating unit cost per hour ($128.95/hr) provided by TriMet
New bus cost at $440K per bus provided by TriMet

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project T3 - Provide Bus Transit Service on SW Avery Street		
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	11/8/2012
KIND OF WORK:	Signing, Bus Shelter	LENGTH (MILE): 1.10	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	10	$500.00	$5,000
2	Bus Shelter	EA	1	$5,000.00	$5,000
			SUBTOTAL		***$10,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$300
	TP & DT	3.0-8.0%	8.0%		$800
	Mobilization	8.0-10.0%	10.0%		$1,000
	Erosion Control	0.5-2.0%	2.0%		$200
	Contingency	30-40%	40.0%		$4,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$16,300***

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	Bus	EA	1	$440,000.00	$440,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$2,400
	Construction Engineering		10.0%		$1,600
			SUBTOTAL CAPITAL COST		**$460,000**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	754	$128.95	$97,228
			SUBTOTAL OPERATING COST		**$97,000**
			TOTAL PROJECT COST		**$557,000**

Assumptions:

Bus Stop Frequency = 1 per direction per 0.25 miles
(Matches average existing stop frequency on Boones Ferry Road)
1 sign/post per stop
1 shelter per route
Average Travel Speed = 25 mph
Dwell/Layover Time = 18% of Travel Time
Hours of Service = 6am to 7pm, Monday to Friday only
Service Frequency = 1 bus per 30 minutes
Service Period = 1 year
Operating unit cost per hour ($128.95/hr) provided by TriMet
New bus cost at $440K per bus provided by TriMet

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project T4 - Provide Bus Transit Service on SW Tualatin Road	Darren Hippenstiel	11/8/2012
DESIGN LEVEL:	Preliminary		
KIND OF WORK:	Signing, Bus Shelter	**LENGTH (MILE):** 1.50	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	20	$500.00	$10,000
2	Bus Shelter	EA	1	$5,000.00	$5,000
			SUBTOTAL		***$15,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$400
	TP & DT	3.0-8.0%	8.0%		$1,200
	Mobilization	8.0-10.0%	10.0%		$1,500
	Erosion Control	0.5-2.0%	2.0%		$300
	Contingency	30-40%	40.0%		$6,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$24,400***

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	Bus	EA	1	$440,000.00	$440,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$3,700
	Construction Engineering		10.0%		$2,400
			SUBTOTAL CAPITAL COST		**$471,000**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	1430	$128.95	$184,399
			SUBTOTAL OPERATING COST		**$184,000**
			TOTAL PROJECT COST		**$655,000**

Assumptions:

Bus Stop Frequency = 1 per direction per 0.25 miles
(Matches average existing stop frequency on Boones Ferry Road)
1 sign/post per stop
1 shelter per route
Average Travel Speed = 25 mph
Dwell/Layover Time = 18% of Travel Time
Hours of Service = 6am to 7pm, Monday to Friday only
Service Frequency = 1 bus per 30 minutes
Service Period = 1 year
Operating unit cost per hour ($128.95/hr) provided by TriMet
New bus cost at $440K per bus provided by TriMet

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project T5** - Provide Bus Transit Service on SW T-S Road		**PREPARED BY:** Darren Hippenstiel	**DATE:** 11/28/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Signing, Bus Shelter		**LENGTH (MILE):** 2.70	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	22	$500.00	$11,000
2	Bus Shelter	EA	1	$5,000.00	$5,000
			SUBTOTAL		***$16,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$400
	TP & DT	3.0-8.0%	8.0%		$1,300
	Mobilization	8.0-10.0%	10.0%		$1,600
	Erosion Control	0.5-2.0%	2.0%		$300
	Contingency	30-40%	40.0%		$6,400
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$26,000***

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	Bus	EA	1	$440,000.00	$440,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$3,900
	Construction Engineering		10.0%		$2,600
			SUBTOTAL CAPITAL COST		**$473,000**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	1690	$128.95	$217,926
			SUBTOTAL OPERATING COST		**$218,000**
			TOTAL PROJECT COST		**$691,000**

Assumptions:

Bus Stop Frequency = 1 per direction per 0.25 miles
(Matches average existing stop frequency on Boones Ferry Road)
1 sign/post per stop
1 shelter per route
Average Travel Speed = 25 mph
Dwell/Layover Time = 18% of Travel Time
Hours of Service = 6am to 7pm, Monday to Friday only
Service Frequency = 1 bus per 30 minutes
Service Period = 1 year
Operating unit cost per hour ($128.95/hr) provided by TriMet
New bus cost at $440K per bus provided by TriMet

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project T6 - Extend Bus Service to East Tualatin		
DESIGN LEVEL:	Preliminary	Darren Hippenstiel	11/8/2012
KIND OF WORK:	Signing, Bus Shelter	LENGTH (MILE): 1.10	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	16	$500.00	$8,000
2	Bus Shelter	EA	1	$5,000.00	$5,000
			SUBTOTAL		***$13,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$300
	TP & DT	3.0-8.0%	8.0%		$1,000
	Mobilization	8.0-10.0%	10.0%		$1,300
	Erosion Control	0.5-2.0%	2.0%		$300
	Contingency	30-40%	40.0%		$5,200
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$21,100***

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	Bus	EA	1	$440,000.00	$440,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$3,200
	Construction Engineering		10.0%		$2,100
			SUBTOTAL CAPITAL COST		**$466,000**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	754	$128.95	$97,228
			SUBTOTAL OPERATING COST		**$97,000**
			TOTAL PROJECT COST		**$563,000**

Assumptions:

Bus Stop Frequency = 1 per direction per 0.25 miles
(Matches average existing stop frequency on Boones Ferry Road)
1 sign/post per stop
1 shelter per route
Average Travel Speed = 25 mph
Dwell/Layover Time = 18% of Travel Time
Hours of Service = 6am to 7pm, Monday to Friday only
Service Frequency = 1 bus per 30 minutes
Service Period = 1 year
Operating unit cost per hour ($128.95/hr) provided by TriMet
New bus cost at $440K per bus provided by TriMet

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project T7 - Extend Service Hours For All Transit	Darren Hippenstiel	11/8/2012
DESIGN LEVEL:	Preliminary		
KIND OF WORK:	Bus Service Hours	LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
					$0
					$0
	SUBTOTAL				*$0*

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$0
	TP & DT	3.0-8.0%	8.0%		$0
	Mobilization	8.0-10.0%	10.0%		$0
	Erosion Control	0.5-2.0%	2.0%		$0
	Contingency	30-40%	40.0%		$0
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
	TOTAL CONSTRUCTION COST				*$0*

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$0
	Construction Engineering		10.0%		$0
	SUBTOTAL CAPITAL COST				**$0**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	8400	$128.95	$1,083,180
	SUBTOTAL OPERATING COST				**$1,083,000**
	TOTAL PROJECT COST				**$1,083,000**

Assumptions: On Reverse Page

Assumptions Continued:

Mileage of each bus line only includes portion within study limits.
Average Travel Speed = 25 mph
All bus lines assumed to be bi-directional.
Dwell / Layover Time = 18% of travel time
Existing buses will be used for extended lines, so no new buses are needed.
Hours of Service / Frequency: Line 12
Weekday and Weekend
5am to 10am, 1 bus per 15 minutes
10am to 3pm, 1 bus per 30 minutes
3pm to 7pm, 1 bus per 15 minutes
Hours of Service / Frequency: Lines 36, 37, 38
Weekday
6am to 9am, 1 bus per 15 minutes
9am to 4pm, 1 bus per 30 minutes
4pm to 7pm, 1 bus per 15 minutes
Weekend
6am to 7pm, 1 bus per 30 minutes
Hours of Service / Frequency: Line 76
Weekday and Weekend
6am to 9am, 1 bus per 15 minutes
9am to 4pm, 1 bus per 30 minutes
4pm to 7pm, 1 bus per 15 minutes
7pm to 9:30 pm, 1 bus per 30 minutes
Hours of Service / Frequency: Line 96
Weekday
6am to 9am, 1 bus per 15 minutes
9am to 4pm, 1 bus per 30 minutes
4pm to 7pm, 1 bus per 15 minutes
7pm to 9 pm, 1 bus per 30 minutes
Weekend
6am to 7pm, 1 bus per 30 minutes
Service Period = 1 year

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT:		PREPARED BY:	DATE:
	Project T8 - Provide Shuttle between Bridgeport Village and Tualatin	Darren Hippenstiel	11/8/2012
DESIGN LEVEL:	Preliminary		
KIND OF WORK:	New Shuttle Service	LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
					$0
					$0
	SUBTOTAL				*$0*

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$0
	TP & DT	3.0-8.0%	8.0%		$0
	Mobilization	8.0-10.0%	10.0%		$0
	Erosion Control	0.5-2.0%	2.0%		$0
	Contingency	30-40%	40.0%		$0
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
	TOTAL CONSTRUCTION COST				*$0*

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	Shuttle	EA	1	$50,000.00	$50,000
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$0
	Construction Engineering		10.0%		$0
	SUBTOTAL CAPITAL COST				**$50,000**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	2392	$128.95	$308,448
	SUBTOTAL OPERATING COST				**$308,000**
	TOTAL PROJECT COST				**$358,000**

Assumptions Continued:

1 new shuttle van operates constantly within hours of service, including 18% dwell / layover time.
Cost of shuttle van assumed at $50K/ea.
Hours of Service
6 hours on weekdays (Mon-Fri)
8 hours on weekends (Sat-Sun)
Service Period = 1 year

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project T9** - Expand Shuttle for Industrial/Manufacturing Workers		PREPARED BY: Darren Hippenstiel	DATE: 11/8/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Shuttle Service Hours		LENGTH (MILE):	SHEET: 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
					$0
					$0
	SUBTOTAL				*$0*

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$0
	TP & DT	3.0-8.0%	8.0%		$0
	Mobilization	8.0-10.0%	10.0%		$0
	Erosion Control	0.5-2.0%	2.0%		$0
	Contingency	30-40%	40.0%		$0
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
	TOTAL CONSTRUCTION COST				*$0*

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$0
	Construction Engineering		10.0%		$0
	SUBTOTAL CAPITAL COST				**$0**

NO.	OPERATING COSTS	UNIT	QUANTITY	UNIT COST	COST
1	Total Service Hours	HRS	1625	$35.61	$57,866
	SUBTOTAL OPERATING COST				**$58,000**
	TOTAL PROJECT COST				**$58,000**

Assumptions Continued:

2 existing shuttle vans operate constantly within hours of service, including 18% dwell / layover time.
Increase in Hours of Service (weekdays only)
Van 1: 4.25 additional hours (all day from 5:30 am to 6:15pm)
Van 2: 2 additional hours
Service Period = 1 year
Cost per day of operation provided by the Tualatin Chamber of Commerce. Cost per hour is computed by dividing cost per day ($373.78) by 10.5 hours (current operating hours per day total for both vans)

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project T11** - Park-And-Ride Locations In West Tualatin		**PREPARED BY:** Darren Hippenstiel	**DATE:** 11/8/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Signing, Bus Pullout		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	10	$500.00	$5,000
2	Bus Pullout	EA	1	$20,000.00	$20,000
			SUBTOTAL		***$25,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$600
	TP & DT	3.0-8.0%	8.0%		$2,000
	Mobilization	8.0-10.0%	10.0%		$2,500
	Erosion Control	0.5-2.0%	2.0%		$500
	Contingency	30-40%	40.0%		$10,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$40,600***

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$6,100
	Construction Engineering		10.0%		$4,100
			TOTAL PROJECT COST		**$51,000**

Assumptions:

Project utilizes existing parking lots for parking spaces. No paving or striping is included for parking.
Bus pull out added for bus stop/parking during service
10 signs/posts per lot
1 bus pullout per lot

TUALATIN TSP - ORDER OF MAGNITUDE ESTIMATE

PROJECT: **Project T12** - Park-And-Ride Locations In South Tualatin		**PREPARED BY:** Darren Hippenstiel	**DATE:** 11/8/2012
DESIGN LEVEL: Preliminary			
KIND OF WORK: Signing, Bus Pullout		**LENGTH (MILE):**	**SHEET:** 1 of 1

NO.	ITEM	UNIT	QUANTITY	UNIT COST	COST
1	Signs	EA	10	$500.00	$5,000
2	Bus Pullout	EA	1	$20,000.00	$20,000
			SUBTOTAL		***$25,000***

	ADDITIONAL CONST. COSTS	SUGGESTED	PERCENTAGE		COST
	Construction Surveying	1.0-2.5%	2.5%		$600
	TP & DT	3.0-8.0%	8.0%		$2,000
	Mobilization	8.0-10.0%	10.0%		$2,500
	Erosion Control	0.5-2.0%	2.0%		$500
	Contingency	30-40%	40.0%		$10,000
	Escalation (per year)	0.5-2.0%	0.0%		$0
	Design Year				
	Construction Year		2012		
			TOTAL CONSTRUCTION COST		***$40,600***

	ANTICIPATED ITEMS	UNIT	QUANTITY	UNIT COST	COST
	ENGINEERING COSTS	**SUGGESTED**	**PERCENTAGE**		**COST**
	Design Engineering		15.0%		$6,100
	Construction Engineering		10.0%		$4,100
			TOTAL PROJECT COST		**$51,000**

Assumptions:

Project utilizes existing parking lots for parking spaces. No paving or striping is included for parking.
Bus pull out added for bus stop/parking during service
10 signs/posts per lot
1 bus pullout per lot

Factored Cost Estimates

FACTORED ESTIMATES FOR ROADWAY PROJECTS

Revised No.	No.	Project	Description	Estimated Cost	*Source*	2012 Costs Adj from 1993 @ 4%/yr	2012 Costs Adj from 2001 @ 4%/yr	2012 Costs Adj from 2007 @ 4%/yr	2012 Costs Adj from 2009 @ 4%/yr	2012 Costs Adj from 2010 @ 4%/yr
						19	*11*	*5*	*3*	*2*
Project R16 -	BP7 (BPU21)	Multiuse Path along 65th Avenue	Multiuse path from Tualatin River to I-205 on the westside of 65th Avenue	$8,000,000	*2007 RTP*			$ 9,734,000.00		
Project R35 -	R1 (I11)	SW Sagert/SW Martinazzi Signal		$1,700,000	*2007 RTP*			$ 2,069,000.00		
Project R18 -	U6 (UU22)	Improve SW Cipole Road	From Tualatin-Sherwood Road to OR99W	$13,000,000	*2007 RTP*			$ 15,817,000.00		
Project R5 -	U7 (UU29)	Widen SW Myslony Street	From 124th to 112th	$9,400,000	*2007 RTP*			$ 11,437,000.00		
Project R25 -	U9 (BPU18)	Fill Sidewalk Gaps								
	a	SW Grahams Ferry Road		$797,000	*1993 Bike/Ped*	$ 1,680,000.00				
Project R15 -	U14 (BPU20)	Add bicycle facilities to SW 95th Ave.	From T-S Road to SW Avery	$2,400,000	*2007 RTP*			$ 2,920,000.00		
Project R14 -	BP27 (BPU19)	Add Bike Lanes on Martinazzi		$860,000						$ 931,000.00
Project R29 -	U17	SW Tualatin Concept Plan Roadways	excludes Tonquin Road and SW 124th Ave	$27,955,000					$ 31,446,000.00	
Project R23 -	U17b	Tonquin Road from Waldo Way to Grahams Ferry Road		$9,950,000					$ 11,193,000.00	

FACTORED ESTIMATES FOR BICYCLE AND PEDESTRIAN PROJECTS

Revised No.	No.	Project	Description	Estimated Cost	*Source*	2012 Costs Adj from 1993 @ 4%/yr	2012 Costs Adj from 2001 @ 4%/yr	2012 Costs Adj from 2007 @ 4%/yr	2012 Costs Adj from 2009 @ 4%/yr	2012 Costs Adj from 2010 @ 4%/yr
						19	*11*	*5*	*3*	*2*
Project BP11 -	BP8 (BPU14)	Multiuse Path near Fred Meyer under I-5	Multiuse crossing under I-5 near Fred Meyer	$1,600,000	*2007 RTP*			$ 1,947,000.00		
Project BP17 -	BP12 (BPU8)	Multiuse path bridges over Tualatin River	At Jurgens Park and north of SW Cipole Road in conjunction with Westside Trail (cost per each bridge)	$2,000,000	*2007 RTP*			$ 2,434,000.00		
Project BP8 -	BP16	Multiuse path as part of the Tualatin Trail	Eastside Trail	$1,013,000	*1993 Bike/Ped*	$ 2,135,000.00				
Project BP7 -	BP17 (BPU10)	Construct the multi-use path projects from the previously adopted Tualatin Pedestrian Plan								
	a	Tualatin River Path (Bike)		$3,152,000	*1993 Bike/Ped*	$ 6,641,000.00				
	b	TRP Connections (Bike)		$859,000	*1993 Bike/Ped*	$ 1,810,000.00				
	c	Nyberg Creek Path (Bike)		$605,000	*1993 Bike/Ped*	$ 1,275,000.00				
	d	NCP Connections (Bike)		$165,000	*1993 Bike/Ped*	$ 348,000.00				
	e	Hedges Creek Path (Bike)		$418,000	*1993 Bike/Ped*	$ 881,000.00				
	f	Tualatin High School Path (Bike)		$176,000	*1993 Bike/Ped*	$ 371,000.00				
	g	I-5 Path (Bike)		$1,540,000	*1993 Bike/Ped*	$ 3,245,000.00				
	h	I-5 Path Connections (Bike)		$99,000	*1993 Bike/Ped*	$ 209,000.00				
	i	Saum Creek Path (Bike)		$1,013,000	*1993 Bike/Ped*	$ 2,135,000.00				
	j	Norwood Expressway Path (Bike)		$1,783,000	*1993 Bike/Ped*	$ 3,757,000.00				
	k	Tualatin River Bridges (Bike)		$1,500,000	*1993 Bike/Ped*	$ 3,161,000.00				
	l	Saum Creek Path Trail (Ped)		$170,000	*1993 Bike/Ped*	$ 359,000.00				
	m	SCOP Ped Connections (Ped)		$14,000	*1993 Bike/Ped*	$ 30,000.00				
	n	Hedges Creek Ped Connections (Ped)		$94,000	*1993 Bike/Ped*	$ 199,000.00				
	o	Nyberg Creek Path (Ped)		$11,000	*1993 Bike/Ped*	$ 24,000.00				
	p	Indian Meadows Path (Ped)		$9,100	*1993 Bike/Ped*	$ 20,000.00				
Project BP9 -		Tualatin River Greenway - east side	Fill in gaps	$123,000	*1993 Bike/Ped*	$ 260,000.00				

Unit Costs

Unit Costs (Based on Development Pricing)

Curb, Gutter, Sidewalks, & Enclosed Drainage (Unit: Mile)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Concrete Curb and Gutter	LF	10,560	$15.00	$158,400.00	For Both Sides of Rdwy
Concrete Sidewalk	SF	63,360	$5.00	$316,800.00	For Both Sides of Rdwy, 6' Wide
15 Inch Storm Sewer Pipe, 10' deep	LF	5,280	$65.00	$343,200.00	Long. Storm Pipe, Including Trenching/Backfill
Storm Manhole	EA	21	$2,400.00	$50,400.00	Every 250' (21 in a mile)
Standard Catch Basin	EA	42	$1,200.00	$50,400.00	Every 250' (21 in a mile*2 for both sides= 42)
			SUBTOTAL	$919,200.00	
Clearing and Grubbing - 0.6%				$5,515.20	
Removal of Structures - 1.2%				$11,030.40	
			TOTAL UNIT COST	$935,700.00	

Multi-use Path (Unit: Mile)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Asphalt	TN	802	$95.00	$76,168.89	12' Lane, 5280' long, depth=2 IN, density=2.050 TN/CY
Aggregate Base	TN	3,618	$20.00	$72,355.56	10' Lane, 5280' long, depth=12 IN, density=1.850 TN/CY
12 Inch Storm Sewer Pipe, 5' deep	LF	260	$85.00	$22,100.00	Lateral Culverts: 20' long, every 400 LF (13/mile)
			SUBTOTAL	$170,624.44	
Clearing and Grubbing - 0.6%				$1,023.75	
Removal of Structures - 1.2%				$2,047.49	
			TOTAL UNIT COST	$173,700.00	

New Roadway (Unit: Lane-Mile)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Asphalt	TN	3,207	$95.00	$304,675.56	12' Lanes, 5280' long, depth=8 IN, density=2.050 TN/CY
Aggregate Base	TN	4,341	$20.00	$86,826.67	12' Lanes, 5280' long, depth=12 IN, density=1.850 TN/CY
15 Inch Storm Sewer Pipe, 10' deep	LF	130	$65.00	$8,450.00	Lateral Culverts: 13' per lane, every 250 LF (21/mile)
Excavation	CY	-	$7.50	$0.00	
Embankment	CY	-	$7.50	$0.00	See Below For Earthwork
Thermoplastic Pavement Striping	LF	5,280	$1.00	$5,280.00	1 solid stripe per lane
			SUBTOTAL	$405,232.22	
Clearing and Grubbing - 0.6%				$2,431.39	
Removal of Structures - 1.2%				$4,862.79	
			TOTAL UNIT COST	$412,500.00	

New Roadway (Unit: SF)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
New Roadway/SF per Lane Mile	SF	1	$6.51	$6.51	See New Roadway (Unit: Lane-Mile) for Breakdown
			TOTAL UNIT COST	$7.00	

Overlay Existing Roadway (Unit: Lane-Mile)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Asphalt	TN	802	$95.00	$76,168.89	12' Lanes, 5280' long, depth=2 IN, density=2.050 TN/CY
Cold Plane Pavement Removal	SF	15,840	$0.50	$7,920.00	12' Lanes, 5280' long, 25% of extg. rdwy.
Thermoplastic Pavement Striping	LF	5,280	$1.00	$5,280.00	1 solid stripe per lane
			TOTAL UNIT COST	$89,400.00	

Reconstruct Existing Roadway (Unit: Lane-Mile)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Excavation	CY	3,520	$7.50	$26,400.00	Removal of 4in. AC and 14in Aggregate Base
New Roadway	-	-	-	$412,500.00	See 'New Roadway' Sheet for Cost Breakdown
			TOTAL UNIT COST	$438,900.00	

Intersection Widening (Unit: Each)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Asphalt	TN	296	$95.00	$28,130.56	26' of widening per approach, 2 approaches, 150' long, depth=6 IN, density=2.050 TN/CY
Aggregate Base	TN	624	$20.00	$12,470.37	26' of widening per approach, 2 approaches, 150' long, depth=14 IN, density=1.850 TN/CY
Concrete Curb and Gutter	LF	600	$15.00	$9,000.00	300' per approach, 2 approaches
Sidewalk	SF	4,200	$5.00	$21,000.00	300' per approach, 2 approaches, 7' Wide
Demolition of Extg. Curb/Sidewalk	CY	200	$15.00	$3,000.00	300' per approach, 2 approaches, 9' Wide, 1' Deep
Thermoplastic Pavement Striping	LF	1,200	$1.00	$1,200.00	2 solid stripes per lane, 4 new lanes, 150' long
			SUBTOTAL	$74,800.93	
Clearing and Grubbing - 0.6%				$448.81	
Removal of Structures - 1.2%				$897.61	
Landscaping - 0.5%				$374.00	
			TOTAL UNIT COST	$76,500.00	

Large Roundabouts (Unit: Each)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Asphalt	TN		$95.00	$0.00	26' of widening per approach, 2 approaches, 150' long, depth=6 IN, density=2.050 TN/CY
Aggregate Base	TN		$20.00	$0.00	26' of widening per approach, 2 approaches, 150' long, depth=14 IN, density=1.850 TN/CY
Concrete Curb and Gutter	LF		$15.00	$0.00	300' per approach, 2 approaches
Concrete Sidewalk	SF		$5.00	$0.00	300' per approach, 2 approaches, 7' Wide
Concrete Islands	SF		$12.00		
Demolition of Extg. Curb/Sidewalk	CY		$15.00	$0.00	300' per approach, 4 approaches, 9' Wide, 1' Deep
Thermoplastic Pavement Striping	LF		$1.00	$0.00	2 solid stripes per lane, 4 new lanes, 150' long
			SUBTOTAL	$0.00	
Clearing and Grubbing - 0.6%				$0.00	
Removal of Structures - 1.2%				$0.00	
Landscaping - 0.5%				$0.00	
Roundabout OLD	EA	1	$1,100,000.00	$1,100,000.00	Includes all costs associated with the construction of a One Lane Roundabout where an existing intersection is located. Cost per Rick Kuehn.
			TOTAL UNIT COST	$1,100,000.00	

Small Roundabouts (Unit: Each)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Asphalt	TN		$95.00	$0.00	26' of widening per approach, 2 approaches, 150' long, depth=6 IN, density=2.050 TN/CY
Aggregate Base	TN		$20.00	$0.00	26' of widening per approach, 2 approaches, 150' long, depth=14 IN, density=1.850 TN/CY
Concrete Curb and Gutter	LF		$15.00	$0.00	300' per approach, 2 approaches
Concrete Sidewalk	SF		$5.00	$0.00	300' per approach, 2 approaches, 7' Wide
Concrete Islands	SF		$12.00		
Demolition of Extg. Curb/Sidewalk	CY		$15.00	$0.00	300' per approach, 4 approaches, 9' Wide, 1' Deep
Thermoplastic Pavement Striping	LF		$1.00	$0.00	2 solid stripes per lane, 4 new lanes, 150' long
			SUBTOTAL	$0.00	
Clearing and Grubbing - 0.6%				$0.00	
Removal of Structures - 1.2%				$0.00	
Landscaping - 0.5%				$0.00	
Roundabout OLD	EA	1	$1,100,000.00	$400,000.00	Includes all costs associated with the construction of a One Lane Roundabout in virgin ground. Cost per Rick Kuehn.
			TOTAL UNIT COST	$400,000.00	

Restriping Existing Roadway (Unit: Lane-Mile)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Stripe Removal	LF	5,280	$0.65	$3,432.00	1 solid stripe removed per lane
Thermoplastic Pavement Striping	LF	5,280	$1.00	$5,280.00	1 solid stripe per lane
			TOTAL UNIT COST	$8,700.00	

Bike Lane Colored Marking (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Bike Lane Colored Marking	SF	1	$2.00	$2.00	Durable marking (MMA or Thermoplastic)
			TOTAL UNIT COST	$2.00	

Interconnnect Signal (Unit: Lump Sum)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Interconnect Signal System	LS	1	$35,000.00	$35,000.00	Includes all costs to interconnect
			TOTAL UNIT COST	$35,000.00	

New Signal (Unit: Each)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
New Signal	LS	1	$300,000.00	$300,000.00	Includes signal system and all appurtenances (pole, wiring, detectiion devices, etc.) for 1 intersection
			TOTAL UNIT COST	$300,000.00	

Signal Modifications (Unit: Each)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Modify Signal	LS	1	$75,000.00	$75,000.00	Includes all evaluations and modifications to the signal at one intersection
			TOTAL UNIT COST	$75,000.00	

Earthwork (Unit: CY)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Excavation	CY	2,933	$7.50	$22,000.00	Length=5280/2=2640LF, Max depth = 5'
Embankment	CY	2,347	$7.50	$17,600.00	Length=5280/2=2640LF, Max depth = 4'
			TOTAL UNIT COST	$39,600.00	

Earthowrk Estimated (Unit: CY)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Earthwork (Cut/Fill)	CY	1	$7.50	$7.50	Unit Cost
			TOTAL UNIT COST	$7.50	

Illumination (Unit: Mile)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Luminaire and appurtenances	EA	52	$ 5,000.00	$260,000.00	Luminaire, pole, wiring, etc (1 pole on each side every 200'=52 poles)
			TOTAL UNIT COST	$260,000.00	

Illumination (Unit: EA)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Luminaire and appurtenances	EA	1	$ 5,000.00	$5,000.00	Per Each Luminaire Estimated Cost
			TOTAL UNIT COST	$5,000.00	

Landscaping (Unit: Mile)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Landscaping	LS	1	$ 235,000.00	$235,000.00	Plantings, Trees, Topsoil, and Irrigation sums up to aproximately $235,000 per mile (for both sides of roadway)
			TOTAL UNIT COST	$235,000.00	

Landscaping (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Landscaping	SF	1	$ 5.56	$5.56	Per mile landscaping cost divided by 2-4' planter widths at 5,280 LF
			TOTAL UNIT COST	$5.60	

Bridges - Short Span (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
	SF	1	$185.00	$185.00	The cost of this item is project dependent; see note 3 of the directions tab for more information
			TOTAL UNIT COST	$185.00	

Bridges - Long Span (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
	SF	1	$250.00	$250.00	The cost of this item is project dependent; see note 3 of the directions tab for more information
			TOTAL UNIT COST	$250.00	

Bridges - MUP (Wooden) (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
	SF	1	$19.00	$19.00	The cost of this item is project dependent; see note 3 of the directions tab for more information
			TOTAL UNIT COST	$19.00	

Walls (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Retaining Wall (H>=4')	LS	1	$75.00	$75.00	
			TOTAL UNIT COST	$75.00	

Walls (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Retaining Wall (H<4')	LS	1	$50.00	$50.00	
			TOTAL UNIT COST	$50.00	

Right-of-Way - Undeveloped (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Right-of-Way Acquisition	LS	1	$5.00	$5.00	ROW acquisition cost is approx. $5/SF
			TOTAL UNIT COST	$5.00	

Right-of-Way - Developed (Unit: Square Foot)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Right-of-Way Acquisition	LS	1	$8.00	$8.00	ROW acquisition cost is approx. $5/SF
			TOTAL UNIT COST	$8.00	

Fence Reconstruction (Unit: LF)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Fence Construction	LF	1	$25.00	$25.00	Includes Removal
			TOTAL UNIT COST	$25.00	

New Signs - Small (Unit: EA)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Signs	EA	1	$500.00	$500.00	Includes Post, In place complete
			TOTAL UNIT COST	$500.00	

New Signs - Large (Unit: SF)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Signs	SF	1	$120.00	$120.00	Assumes Type G1 Panels, Sign only
			TOTAL UNIT COST	$120.00	

New Signs Supports (Unit: EA)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Sign Supports	EA	1	$50,000.00	$50,000.00	Mast Arm Type Structure
			TOTAL UNIT COST	$50,000.00	

Guardrail (Unit: LF)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Guardrail	LF	1	$50.00	$50.00	
			TOTAL UNIT COST	$50.00	

Tree Removal (Unit: EA)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Tree Removal	EA	1	$1,000.00	$1,000.00	
			TOTAL UNIT COST	$1,000.00	

Concrete Barrier (Unit: LF)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Concrete Barrier	LF	1	$50.00	$50.00	
			TOTAL UNIT COST	$50.00	

Bus Pullouts (Unit: EA)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Bus Pullouts	EA	1	$20,000.00	$20,000.00	
			TOTAL UNIT COST	$20,000.00	

Bus Shelter (Unit: EA)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Bus Shelter	EA	1	$5,000.00	$5,000.00	Bus shelter only, no pullout (see previous)
			TOTAL UNIT COST	$5,000.00	

Bus (Unit: EA)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Bus	EA	1	$440,000.00	$440,000.00	New bus (per TriMet)
			TOTAL UNIT COST	$440,000.00	

Shuttle (Unit: EA)

ITEM	UNIT	AMOUNT	UNIT COST	TOTAL	COMMENTS
Shuttle	EA	1	$50,000.00	$50,000.00	New Shuttle (large van)
			TOTAL UNIT COST	$50,000.00	

Appendix F
TPR and RTFP Compliance

TPR Requirements	Tualatin TSP Compliance
660-012-0015 Preparation and Coordination of TSPs	
(3) Cities and counties shall prepare, adopt and amend local TSPs for lands within their planning jurisdiction in compliance with this division:	
(a) Local TSPs shall establish a system of transportation facilities and services adequate to meet identified local transportation needs and shall be consistent with regional TSPs and adopted elements of the state TSP;	Chapter 2 of the TSP includes facilities and services to meet identified transportation needs. Needs are identified in Appendixes B and C, existing and future conditions and needs. The Tualatin TSP has been compared to regional (RTP and RTFP) requirements for consistency
(5) The preparation of TSPs shall be coordinated with affected state and federal agencies, local governments, special districts, and private providers of transportation services.	The TTF described in Chapter 2 included regional agency representatives to coordinate the TSP process for all required coordination
(6) Mass transit, transportation, airport and port districts shall participate in the development of TSPs for those transportation facilities and services they provide. These districts shall prepare and adopt plans for transportation facilities and services they provide. Such plans shall be consistent with and adequate to carry out relevant portions of applicable regional and local TSPs. Cooperative agreements executed under ORS 197.185(2) shall include the requirement that mass transit, transportation, airport and port districts adopt a plan consistent with the requirements of this section.	The TTF described in Chapter 2 included a TriMet representative and participated throughout the development of the TSP. The Tualatin TSP is consistent with TriMet agency plans.
660-012-0020 Elements of TSPs	
(2) The TSP Shall include the following elements (a) A determination of transportation needs as provided in OAR 660-012-0030	Transportation needs are included in Appendixes B and C: Existing and Future Conditions and Needs The TSP also includes a summary of needs for each transportation element

TPR Requirements	Tualatin TSP Compliance
(b) A road plan for a system of arterials and collectors and standards for the layout of local streets and other important non-collector street connections. Functional classifications of roads in regional and local TSP's shall be consistent with functional classifications of roads in state and regional TSPs and shall provide for continuity between adjacent jurisdictions. The standards for the layout of local streets shall provide for safe and convenient bike and pedestrian circulation necessary to carry out OAR 660-012-0045(3)(b). New connections to arterials and state highways shall be consistent with designated access management categories. The intent of this requirement is to provide guidance on the spacing of future extensions and connections along existing and future streets which are needed to provide reasonably direct routes for bicycle and pedestrian travel. The standards for the layout of local streets shall address: (A) Extensions of existing streets (B) Connections to existing or planned streets, including arterials and collectors; and (C) Connections to neighborhood destinations.	The Roadway element of the TSP (first section in Chapter 2) includes a functional classification plan and roadway standards to address this requirement. The Functional Classification plan shows extensions of existing streets, connections to existing and planned streets, including arterials and collectors, and connections to neighborhood destinations.

TPR Requirements	Tualatin TSP Compliance
(c) A public transportation plan which: (A) Describes public transportation services for the transportation disadvantaged and identifies service inadequacies; (B) Describes intercity bus and passenger rail service and identifies the location of terminals; (C) For areas within an urban growth boundary which have public transit service, identifies existing and planned transit trunk routes, exclusive transit ways, terminals and major transfer stations, major transit stops, and park-and-ride stations. Designation of stop or station locations may allow for minor adjustments in the location of stops to provide for efficient transit or traffic operation or to provide convenient pedestrian access to adjacent or nearby uses. (D) For areas within an urban area containing a population greater than 25,000 persons, not currently served by transit, evaluates the feasibility of developing a public transit system at buildout. Where a transit system is determined to be feasible, the plan shall meet the requirements of paragraph (2)(c)(C) of this rule.	The transit modal plan in Chapter 2 includes the existing public transportation services and identifies service inadequacies. It also describes the intercity bus and passenger rail service and the location of stations and transfer stations. Appendix B: Existing conditions describes existing transit routes, transit ways, terminals and major transfer stations, stops, and park-and-ride stations.
(d) A bicycle and pedestrian plan for a network of bicycle and pedestrian routes throughout the planning area. The network and list of facility improvements shall be consistent with the requirements of ORS 366.514;	The Pedestrian, Bicycle, and Multi-Use Path Modal Plan in Chapter 2 includes a plan for bicycle and pedestrian route networks.
(e) An air, rail, water and pipeline transportation plan which identifies where public use airports, mainline and branchline railroads and railroad facilities, port facilities, and major regional pipelines and terminals are located or planned within the planning area. For airports, the planning area shall include all areas within airport imaginary surfaces and other areas covered by state or federal regulations;	Chapter 2 includes an air, rail, water, and pipeline plans. Appendix B Existing conditions includes information on existing facilities.
(f) For areas within an urban area containing a population greater than 25,000 persons a plan for transportation system management and demand management;	Chapter 2 includes a Transportation System Management and Transportation sections

TPR Requirements	Tualatin TSP Compliance
(g) A parking plan in MPO areas as provided in OAR 660-012-0045(5)(c);	Chapter 2 includes a parking plan
(h) Policies and land use regulations for implementing the TSP as provided in OAR 660-012-0045;	Chapter 3 includes a section on Policy and Code language to implement the TSP. Appendix F includes the full text of the implementing ordinances
(i) For areas within an urban growth boundary containing a population greater than 2500 persons, a transportation financing program as provided in OAR 660-012-0040.	Appendix E includes transportation funding and improvement costs. Project tables in Chapter 2 include potential funding sources and cost estimates
(a) An inventory and general assessment of existing and committed transportation facilities and services by function, type, capacity and condition: (A) The transportation capacity analysis shall include information on: (i) The capacities of existing and committed facilities; (ii) The degree to which those capacities have been reached or surpassed on existing facilities; and (iii) The assumptions upon which these capacities are based. (B) For state and regional facilities, the transportation capacity analysis shall be consistent with standards of facility performance considered acceptable by the affected state or regional transportation agency; (C) The transportation facility condition analysis shall describe the general physical and operational condition of each transportation facility (e.g., very good, good, fair, poor, very poor).	Chapter 2 includes a summary of roadway capacity. Appendixes B and C existing and future conditions include an in-depth analysis of existing and project future capacity issues on the transportation network.
(3) (b) A system of planned transportation facilities, services and major improvements. The system shall include a description of the type or functional classification of planned facilities and services and their planned capacities and performance standards;	Chapter 2 includes modal plans which describe the planned transportation facilities, services, and major improvements, including the type or functional classification of planned facilities and services. Performance standards are in the street section.
660-012-0025 Complying with the Goals in Preparing TSPs	

TPR Requirements	Tualatin TSP Compliance
(1) Except as provided in section (3) of this rule, adoption of a TSP shall constitute the land use decision regarding the need for transportation facilities, services and major improvements and their function, mode, and general location.	In process
(2) Findings of compliance with applicable statewide planning goals and acknowledged comprehensive plan policies and land use regulations shall be developed in conjunction with the adoption of the TSP.	In process
660-012-0030 Determination of Transportation Needs	
(1) The TSP shall identify transportation needs relevant to the planning area and the scale of the transportation network being planned including: (a) State, regional, and local transportation needs; (b) Needs of the transportation disadvantaged; (c) Needs for movement of goods and services to support industrial and commercial development planned for pursuant to OAR 660-009 and Goal 9 (Economic Development).	Appendixes B and C include a determination of transportation needs in the planning area including state, regional, and local transportation needs, needs of transportation disadvantaged, and needs for goods movement to support industrial and commercial development.
(3) Within urban growth boundaries, the determination of local and regional transportation needs shall be based upon: (a) Population and employment forecasts and distributions that are consistent with the acknowledged comprehensive plan, including those policies that implement Goal 14. Forecasts and distributions shall be for 20 years and, if desired, for longer periods; and (b) Measures adopted pursuant to OAR 660-012-0045 to encourage reduced reliance on the automobile.	Appendix C, future conditions, includes population and employment forecasts consistent with Metro's 2040 plan, with 2035 as the study year. Modal targets from Metro's 2040 plan are included in the Transportation Demand Management section and are designed to reduce reliance on the automobile. Bicycle, pedestrian, and multi-use path policies and projects will also help reduce reliance on the automobile
660-012-0035 Evaluation and Selection of Transportation System Alternatives	
(1) The TSP shall be based upon evaluation of potential impacts of system alternatives that can reasonably be expected to meet the identified transportation needs in a safe manner and at a reasonable cost with available technology. The following shall be evaluated as components of system alternatives:	The TSP system and network of improvements includes considerations of impacts on identified transportation needs.
(a) Improvements to existing facilities or services;	Improvements to existing facilities and services were considered before new facilities and are high priorities in this TSP for all modal elements

TPR Requirements	Tualatin TSP Compliance
(b) New facilities and services, including different modes or combinations of modes that could reasonably meet identified transportation needs;	All new facilities were evaluated based on their ability to include all modes or combinations of travel modes to meet the need
(c) Transportation system management measures;	The Transportation System Management section in Chapter 2 includes measures to better manage existing facilities to meet anticipated demand
(d) Demand management measures; and	Transportation Demand Management strategies in Chapter 2 includes measure to manage demand within the City
(e) A no-build system alternative required by the National Environmental Policy Act of 1969 or other laws.	Appendix C, future conditions documents the "no-build" system alternative and the deficiencies to meet Tualatin's future transportation system needs
(3) The following standards shall be used to evaluate and select alternatives:	Appendix D includes documentation of the alternatives evaluation and selection process. Goals and objectives developed in the first phase of the project guided alternative selection
(a) The transportation system shall support urban and rural development by providing types and levels of transportation facilities and services appropriate to serve the land uses identified in the acknowledged comprehensive plan;	Appendix C, future conditions documents the anticipated land uses and the TSP projects include consideration of these land uses in determining an appropriate transportation system
(b) The transportation system shall be consistent with state and federal standards for protection of air, land and water quality including the State Implementation Plan under the Federal Clean Air Act and the State Water Quality Management Plan;	Appendix D, Alternatives Analysis includes an evaluation of project alternatives against adopted state and federal standards.
(c) The transportation system shall minimize adverse economic, social, environmental and energy consequences;	Appendix D, Alternatives Analysis includes an evaluation of project alternatives for impacts to economic, social, environmental, and energy metrics
(d) The transportation system shall minimize conflicts and facilitate connections between modes of transportation; and	Appendix D, Alternatives Analysis includes an evaluation of project alternatives for ability to minimize conflicts and facilitate connections between modes of transportation
(e) The transportation system shall avoid principal reliance on any one mode of transportation by increasing transportation choices to reduce principal reliance on the automobile.	Chapter 2 includes transit and bicycle, pedestrian, and multi-use trail modal plans which increase transportation choices to reduce reliance on the automobile

TPR Requirements	Tualatin TSP Compliance
(4) In MPO areas, regional and local TSPs shall be designed to achieve adopted standards for increasing transportation choices and reducing reliance on the automobile. Adopted standards are intended as means of measuring progress of metropolitan areas towards developing and implementing transportation systems and land use plans that increase transportation choices and reduce reliance on the automobile. It is anticipated that metropolitan areas will accomplish reduced reliance by changing land use patterns and transportation systems so that walking, cycling, and use of transit are highly convenient and so that, on balance, people need to and are likely to drive less than they do today.	The Transportation Demand Management section in Chapter 2 includes the regional goals for non-drive-alone Modal Targets. The TSP update works to achieve these standards by increasing access to transit, increasing and filling gaps in the bicycle, pedestrian, and multi-use trail system, and increasing the locally-run Chamber of Commerce Shuttle. Additionally, the Transportation Demand Management and Transportation System Management sections include strategies to reduce single-occupancy vehicles.
(7) Regional and local TSPs shall include benchmarks to assure satisfactory progress towards meeting the approved standard or standards adopted pursuant to this rule at regular intervals over the planning period. MPOs and local governments shall evaluate progress in meeting benchmarks at each update of the regional transportation plan. Where benchmarks are not met, the relevant TSP shall be amended to include new or additional efforts adequate to meet the requirements of this rule.	The City will continue to coordinate closely with Metro and other regional planning partners to evaluate progress toward established regional benchmarks
660-012-0040 Transportation Financing Program	
(1) For areas within an urban growth boundary containing a population greater than 2,500 persons, the TSP shall include a transportation financing program.	Funding for individual transportation projects in the TSP is included in Chapter 2 modal plans, and in the Implementation Section of Chapter 2. Full documentation of the financing plan is included in Appendix E
(2) A transportation financing program shall include the items listed in (a)-(d):	
(a) A list of planned transportation facilities and major improvements;	The modal elements in Chapter 2 include planned transportation facilities and major improvements
(b) A general estimate of the timing for planned transportation facilities and major improvements;	Tables in the modal element sections include an estimated timing for planned facilities and major improvements
(c) A determination of rough cost estimates for the transportation facilities and major improvements identified in the TSP; and	Tables in the modal element sections include rough cost estimates for planned facilities and major improvements. Full documentation of the cost estimates is included in Appendix E

TPR Requirements	Tualatin TSP Compliance
(d) In metropolitan areas, policies to guide selection of transportation facility and improvement projects for funding in the short-term to meet the standards and benchmarks established pursuant to 0035(4)-(6). Such policies shall consider, and shall include among the priorities, facilities and improvements that support mixed-use, pedestrian friendly development and increased use of alternative modes.	The implementation chapter includes information on selection of improvements including mixed-use, pedestrian friendly development.
(3) The determination of rough cost estimates is intended to provide an estimate of the fiscal requirements to support the land uses in the acknowledged comprehensive plan and allow jurisdictions to assess the adequacy of existing and possible alternative funding mechanisms. In addition to including rough cost estimates for each transportation facility and major improvement, the transportation financing plan shall include a discussion of the facility provider's existing funding mechanisms and the ability of these and possible new mechanisms to fund the development of each transportation facility and major improvement. These funding mechanisms may also be described in terms of general guidelines or local policies.	The funding section and funding sources in the tables indicates cost estimate and how the project will be implemented.
(5) The transportation financing program shall provide for phasing of major improvements to encourage infill and redevelopment of urban lands prior to facilities and improvements which would cause premature development of urbanizable lands or conversion of rural lands to urban uses.	The streets plan includes phasing and roadways to be development as adjacent land uses are developed.

Attachment A: Findings of TPR Compliance

TPR Requirement	RTFP or Local Development Code Reference
OAR 660-012-0045	
(1) Each local government shall amend its land use regulations to implement the TSP.	
(b) To the extent, if any, that a transportation facility, service, or improvement concerns the application of a comprehensive plan provision or land use regulation, it may be allowed without further land use review if it is permitted outright or if it is subject to standards that do not require interpretation or the exercise of factual, policy or legal judgment.	The TDC permits transportation facilities and improvements in its planning districts
(c) Where a transportation facility, service or improvement is determined to have a significant impact on land use or requires interpretation or the exercise of factual, policy or legal judgment regarding the application of a comprehensive plan or land use regulation, the local government shall provide a review and approval process that is consistent with 660-012-0050 (Transportation Project Development). Local governments shall amend regulations to provide for consolidated review of land use decisions required to permit a transportation project.	There are existing references to coordination with other agencies, and specifically ODOT, in the review notice procedures for architectural review in TDC Section 31.074(2)(b), for notice procedures for quasi-judicial hearings in TDC Section 31.077(2)(a), and for notice procedures for proposed amendments in TDC Section 1.031(1). Proposed amendments to TDC 1.031(1), TDC 31.074(2)(b), and TDC 31.077(2)(a) (Attachment A of the Staff Report for PTA 12-02) expand notice requirements to cover more providers, managers, and interest groups related to transportation facilities and services.
(2) Local governments shall adopt land use or subdivision ordinance regulations, consistent with applicable federal and state requirements, to protect transportation facilities for their identified functions.	

TPR Requirement	RTFP or Local Development Code Reference
(a) Access control measures.	Block lengths and access management are addressed by existing code in future street extension requirements (TDC Section 74.410) and Chapter 74 (Access Management on Arterial Streets). These code sections will be updated to reflect any changes to access management included in the updated TSP.
(b) Standards to protect the future operations of roadways and transit corridors	Mobility standards for roadways in the city are provided in the OHP for state roadways, in the RTP for regional roadways, and in the City TSP for local roadways. Traffic impact studies are required for development proposals according to the discretion of the City Engineer (TDC 74.440). Studies must include recommendations for improvements to ensure a level of service specified in the traffic impact study requirements. Plan amendment criteria (TDC 1.032) specifically set mobility standards for amendments in Town Centers and other Metro 2040 design areas: "Granting the amendment is consistent with Level of Service F for the p.m. peak hour and E for the one-half hour before and after the p.m. peak hour for the Town Center 2040 Design Type (TDC Map 9-4), and E/E for the rest of the 2040 Design Types in the City's planning area." Proposed amendments to TDC 1.032 (Attachment A of the Staff Report for PTA 12-02) add references to TIS requirements that can be used in the analysis supporting the findings for OAR 660-012-0060.

DRAFT

TPR Requirement	RTFP or Local Development Code Reference
(d) Coordinated review of future land use decisions affecting transportation facilities, corridors or sites	See response and proposed amendments related to OAR 660-012-0045(1)(c).
(e) Process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities	The City's authority to condition approval is codified both in TDC 31.073 (Action of the Community Development Director and City Engineer on Architectural Review Plans), TDC 31.077 (Quasi-Judicial Evidentiary Hearing Procedures), and TDC 36.160.2 (Subdivision Plan Approval). Pursuant to TDC 74.440.4, "[t]he applicant shall implement all or a portion of the improvements called for in the traffic study as determined by the City Engineer."
(f) Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of: land use applications that require public hearings, subdivision and partition applications, applications which affect private access to roads, applications within airport noise corridor and imaginary surfaces which affect airport operations.	See response and proposed amendments related to -0045(1)(c).
g) Regulations assuring amendments to land use designations, densities, design standards are consistent with the function, capacities, and levels of service of facilities designated in the TSP.	Plan amendment criteria (TDC 1.032) include compliance with the City Comprehensive Plan objectives and Statewide Planning Goals and Oregon Administrative Rules. Proposed amendments to TDC 1.032 (Attachment A of the Staff Report for PTA 12-02) acknowledge the findings that need to be made for OAR 660-012-0060.
(3) Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth in 660-012-0040(3)(a-d):	

DRAFT

TPR Requirement	RTFP or Local Development Code Reference
(a) Provide bicycle parking in multifamily developments of 4 units or more, new retail, office and institutional developments, transit transfer stations and park-and-ride lots	**Addressed by RTFP, Title 4: Regional Parking Management, 3.08.410.I.**
(b) Provide "safe and convenient" (per subsection 660-012-0045.3(d)) pedestrian and bicycle connections from new subdivisions/multifamily development to neighborhood activity centers; bikeways are required along arterials and major collectors; sidewalks are required along arterials, collectors, and most local streets in urban areas except controlled access roadways	**Addressed by RTFP, Title 1: Pedestrian System Design, 3.08.130, and Title 1: Bicycle System Design, 3.08.140**
(c) Off-site road improvements required as a condition of development approval must accommodate bicycle and pedestrian travel, including facilities on arterials and major collectors	See response about authority to condition approval in -0045(2)(e). Existing and proposed City street design standards (TSP, Figure 2) include pedestrian and bicycle facilities on arterials and collectors.
(e) Provide internal pedestrian circulation within new office parks and commercial developments	**Addressed by RTFP, Title 1: Street System Design, 3.08.110E**
(4) To support transit in urban areas containing a population greater than 25,000, where the area is already served by a public transit system or where a determination has been made that a public transit system is feasible, local governments shall adopt land use and subdivision regulations as provided in (a)-(g) below:	
(a) Transit routes and transit facilities shall be designed to support transit use through provision of bus stops, pullouts and shelters, optimum road geometrics, on-road parking restrictions and similar facilities, as appropriate;	**Addressed by RTFP, Title 1: Transit System Design, 3.08.120**
(b) New retail, office and institutional buildings at or near major transit	**Addressed by RTFP, Title 1: Transit System Design, 3.08.120**

TPR Requirement	RTFP or Local Development Code Reference
stops shall provide for convenient pedestrian access to transit through the measures listed in (A) and (B) below. (A) Walkways shall be provided connecting building entrances and streets adjoining the site; (B) Pedestrian connections to adjoining properties shall be provided except where such a connection is impracticable. Pedestrian connections shall connect the on site circulation system to existing or proposed streets, walkways, and driveways that abut the property. Where adjacent properties are undeveloped or have potential for redevelopment, streets, accessways and walkways on site shall be laid out or stubbed to allow for extension to the adjoining property; (C) In addition to (A) and (B) above, on sites at major transit stops provide the following: (i) Either locate buildings within 20 feet of the transit stop, a transit street or an intersecting street or provide a pedestrian plaza at the transit stop or a street intersection; (ii) A reasonably direct pedestrian connection between the transit stop and building entrances on the site; (iii) A transit passenger landing pad accessible to disabled persons; (iv) An easement or dedication for a passenger shelter if requested by the transit provider; and (v) Lighting at the transit stop.	
(c) Local governments may implement (4)(b)(A) and (B) above through the	**Addressed by RTFP Title 1: Pedestrian System Design,**

DRAFT

TPR Requirement	RTFP or Local Development Code Reference
designation of pedestrian districts and adoption of appropriate implementing measures regulating development within pedestrian districts. Pedestrian districts must comply with the requirement of (4)(b)(C) above;	**3.08.130B**
(d) Designated employee parking areas in new developments shall provide preferential parking for carpools and vanpools;	Subsection (1)(x) of TDC 73.370 (Off-Street Parking and Loading) specifies standards for the dimensions and signage of vanpool and carpool parking. Proposed amendments to Subsection (1)(x) of TDC 73.370 (Attachment A of the Staff Report for PTA 12-02) add provisions for the preferential location of vanpool and carpool parking spaces.
(e) Existing development shall be allowed to redevelop a portion of existing parking areas for transit-oriented uses, including bus stops and pullouts, bus shelters, park and ride stations, transit-oriented developments, and similar facilities, where appropriate;	TDC 73.370.1.w provides for transit-oriented redevelopment in parking areas.
(f) Road systems for new development shall be provided that can be adequately served by transit, including provision of pedestrian access to existing and identified future transit routes. This shall include, where appropriate, separate accessways to minimize travel distances;	**Addressed by RTFP Title 1: Street System Design, 3.08.110E, and Title 1: Transit System Design, 3.08.120, and Title 1: Pedestrian System Design, 3.08.130**
(g) Along existing or planned transit routes, designation of types and densities of land uses adequate to support transit.	The area around the fixed rail station in Tualatin (WES Commuter Rail) is zoned predominantly high density residential (High Density Residential and High Density Residential/High Rise) and commercial (Central Commercial and General Commercial). Otherwise, bus routes in the city serve a range of land use designations from high to low density residential, commercial, and industrial/employment. Low density residential areas are served when they are between higher

TPR Requirement	RTFP or Local Development Code Reference
	density designations in Tualatin and neighboring communities (e.g., along Boones Ferry between Downtown Tualatin and Wilsonville). This requirement is met in terms of concentrating density and mixed uses around the fixed rail station and having some degree of density and mixed uses along the bus lines and at bus stops.
(6) As part of the pedestrian and bicycle circulation plans, local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas.	**Addressed by RTFP Title 1: Pedestrian System Design, 3.08.130, and Title 1: Bicycle System Design, 3.08.140, and Title 2: Transportation Needs, 3.08.210, and Title 2: Transportation Solutions, 3.08.220**
(7) Local governments shall establish standards for local streets and accessways that minimize pavement width and total ROW consistent with the operational needs of the facility.	**Addressed by RTFP Title 1: Street System Design, 3.08.110B**
OAR 660-012-0060	
Amendments to functional plans, acknowledged comprehensive plans, and land use regulations that significantly affect an existing or planned transportation facility shall assure that allowed land uses are consistent with the identified function, capacity, and performance standards of the facility.	TDC 1.032 (Burden of Proof) requires that text and map amendments be consistent with applicable state planning goals and rules. Proposed amendments to TDC 1.032 (Attachment A of the Staff Report for PTA 12-02) acknowledge the findings that need to be made for OAR 660-012-0060.

RTP and RTFP Compliance

Regional Transportation Functional Plan Requirement	Local TSP reference?
Include, to the extent practicable, a network of major arterial streets at one-mile spacing and minor arterials or collectors at half-mile spacing, considering: • existing topography; • rail lines; freeways; pre-existing development, leases, easements or covenants; • requirements of Metro's Urban Growth Management Functional Plan Title 3 (Water Quality and Flood plains) and Title 13 (Nature in Neighborhoods), such as streams, rivers, flood plains, wetlands, riparian and upland fish and wildlife habitat areas. • arterial design concepts in chapter 2 of RTP • best practices and designs as set forth in regional state or local plans and best practices for protecting natural resources and natural areas **(Title 1, Street System Design Sec 3.08.110C)**	The Functional Classification Plan in Chapter 2 of the TSP includes a network of major arterial streets. The evaluation criteria and alternatives analysis for all projects (Appendix D) included environmental impact considerations and protection of natural resources and natural areas.
Include a conceptual map of new streets for all contiguous areas of vacant and re-developable lots and parcels of five or more acres that are zoned to allow residential or mixed-use development. The map shall identify street connections to adjacent areas and should demonstrate opportunities to extend and connect new streets to existing streets, provide direct public right-of-way routes and limit closed-end street designs consistent with Title 1, Sec 3.08.110E **(Title 1, Street System Design Sec 3.08.110D)**	The urban upgrades and street extension map shows new streets to areas of vacant and re-developable lots and parcels.
Applicable to both Development Code and TSP To the extent feasible, restrict driveway and street access in the vicinity of interchange ramp terminals, consistent with Oregon Highway Plan Access Management Standards, and accommodate local circulation on the local system. Public street connections, consistent with regional street design and spacing standards, shall be encouraged and shall supersede this access restriction. Multimodal street design features including pedestrian crossings and on-street parking shall be allowed where appropriate. **(Title 1,Street System Design Sec 3.08.110G)**	Included in the access management plan in Chapter 2
Include investments, policies, standards and criteria to provide pedestrian and bicycle connections to all existing transit stops and major transit stops designated in Figure 2.15 of the RTP. **(Title 1, Transit System Design Sec 3.08.120A)**	Policy language in the Bicycle, pedestrian, and multi-use path modal plans includes policy language to provide connections to transit stops

Regional Transportation Functional Plan Requirement	Local TSP reference?
Include a transit plan consistent with transit functional classifications shown in Figure 2.15 of the RTP that shows the locations of major transit stops, transit centers, high capacity transit stations, regional bike-transit facilities, inter-city bus and rail passenger terminals designated in the RTP, transit-priority treatments such as signals, park-and-ride facilities, and bicycle and pedestrian routes, consistent with sections 3.08.130 and 3.08.140, between essential destinations and transit stops. **(Title 1, Transit System Design Sec 3.08.120B(1))**	Chapter 2 includes a transit plan. The existing conditions summary in the transit plan and Appendix B Existing conditions includes a map that shows the location of major transit stops, transit centers, high capacity transit stations , inter-city bus and rail passenger terminals (WES) , and park and ride facilities
Include a pedestrian plan, for an interconnected network of pedestrian routes within and through the city or county. The plan shall include: • An inventory of existing facilities that identifies gaps and deficiencies in the pedestrian system; • An evaluation of needs for pedestrian access to transit and essential destinations for all mobility levels, including direct, comfortable and safe pedestrian routes; • A list of improvements to the pedestrian system that will help the city or county achieve the regional Non-SOV modal targets in Table 3.08-1 of the RTFP, and other targets established pursuant to section 3.08.230; • Provisions for sidewalks along arterials, collectors and most local streets, except that sidewalks are not required along controlled roadways, such as freeways; • Provision for safe crossings of streets and controlled pedestrian crossings on major arterials **(Title 1, Pedestrian System Design Sec 3.08.130A)**	Tualatin is an Industry center, employment Center, and town center. Non-SOV mode targets for industrial and employment areas are 40-45% average daily weekday trips for 2035 Town Center modal targets are 45-55%. Chapter 2 modal plans include policy language to connect pedestrian access to transit. Design standards in the roadway plan include provisions for sidewalks along arterials, collectors, and most local streets.

Regional Transportation Functional Plan Requirement	Local TSP reference?
Include a bicycle plan for an interconnected network of bicycle routes within and through the city or county. The plan shall include: • An inventory of existing facilities that identifies gaps and deficiencies in the bicycle system; • An evaluation of needs for bicycle access to transit and essential destinations, including direct, comfortable and safe bicycle routes and secure bicycle parking, considering *TriMet Bicycle Parking Guidelines*; • A list of improvements to the bicycle system that will help the city or county achieve the regional Non-SOV modal targets in Table 3.08-1 of the RTFP and other targets established pursuant to section 3.08.230; • Provision for bikeways along arterials, collectors and local streets, and bicycling parking in centers, at major transit stops shown in Figure 2.15 in the RTP, park-and-ride lots and associated with institutional uses; • Provision for safe crossing of streets and controlled bicycle crossings on major arterials **(Title 1, Bicycle System Design Sec 3.08.140)**	Included in the bicycle and pedestrian modal plan in Chapter 2. The roadway standards include provision for bikeways along arterials, collectors, and local streets.
Include a freight plan for an interconnected system of freight networks within and through the city or county. The plan shall include: • An inventory of existing facilities that identifies gaps and deficiencies in the freight system; • An evaluation of freight access to freight intermodal facilities, employment and industrial areas and commercial districts; • A list of improvements to the freight system that will help the city or county increase reliability of freight movement, reduce freight delay and achieve targets established pursuant to section 3.08.230. **(Title 1, Freight System Design Sec 3.08.150)**	The interconnected freight network information is included in Chapter 2 in the freight modal plan and the street modal plan and discusses access to employment and industrial areas and commercial districts.
Include a transportation system management and operations (TSMO) plan to improve the performance of existing transportation infrastructure within or through the city or county. A TSMO plan shall include: • An inventory and evaluation of existing local and regional TSMO infrastructure, strategies and programs that identifies gaps and opportunities to expand infrastructure, strategies and programs • A list of projects and strategies, consistent with the Regional TSMO Plan, based upon consideration of the following functional areas: o Multimodal traffic management investments o Traveler Information investments o Traffic incident management investments o Transportation demand management investments **(Title 1, Transportation System Management and Operations Sec 3.08.160)**	These strategies can be found in Chapter 2 in the TSMO and TDM sections

Regional Transportation Functional Plan Requirement	Local TSP reference?
Incorporate regional and state transportation needs identified in the 2035 RTP as well as local transportation needs. The determination of local transportation needs based upon: • System gaps and deficiencies identified in the inventories and analysis of transportation system pursuant to Title 1; • Identification of facilities that exceed the Deficiency Thresholds and Operating Standards in Table 3.08-2 or the alternative thresholds and standards established pursuant to section 3.08.230; • Consideration and documentation of the needs of youth, seniors, people with disabilities and environmental justice populations within the city of county, including minorities and low-income families. A local determination of transportation needs must be consistent with the following elements of the RTP: • The population and employment forecast and planning period of the RTP, except that a city or county may use an alternative forecast for the city or county, coordinated with Metro, to account for changes to comprehensive plan or land use regulations adopted after adoption of the RTP; • System maps and functional classifications for street design, motor vehicles, transit, bicycles, pedestrians and freight in Chapter 2 of the RTP; • Regional non-SOV modal targets in Table 3.08-1 and the Deficiency Thresholds and Operating Standards in Table 3.08-2. When determining its transportation needs, a city or county shall consider the regional needs identified in the mobility corridor strategies in Chapter 4 of the RTP. **(Title 2, Transportation Needs Sec 3.08.210)**	Standards are included in the street section.
Consider the following strategies in the order listed, to meet the transportation needs determined pursuant to section 3.08.210 and performance targets and standards pursuant to section 3.08.230. The city or county shall explain its choice of one or more of the strategies and why other strategies were not chosen: • TSMO, including localized TDM, safety, operational and access management improvements; • Transit, bicycle and pedestrian system improvements; • Traffic-calming designs and devices; • Land use strategies in OAR 660-012-0035(2) • Connectivity improvements to provide parallel arterials, collectors or local streets that include pedestrian and bicycle facilities, consistent with the connectivity standards in section 3.01.110 and design classifications in Table 2.6 of the RTP, • Motor vehicle capacity improvements, consistent with the RTP Arterial and Throughway Design and Network Concepts in Table 2.6 and Section 2.5.2 of the RTP, only upon a demonstration that other strategies in this subsection are not appropriate or cannot adequately address identified transportation needs A city or county shall coordinate its consideration of the above strategies with the owner of the transportation facility affected by the strategy. Facility design is subject to the approval of the facility owner. If analysis under subsection 3.08.210A (Local Needs determination) indicates a new regional or state need that has not been identified in the RTP, the city or county may propose one of the following actions: • Propose a project at the time of Metro review of the TSP to be incorporated into the RTP during the next RTP update; or • Propose an amendment to the RTP for needs and projects if the amendment is necessary prior to the next RTP update. **(Title 2, Sec 3.08.220 Transportation Solutions)**	All strategies were considered and included in the projects and policies in Chapter 2 of the TSP, except for Land use strategies, which are addressed in the TDC

Regional Transportation Functional Plan Requirement	Local TSP reference?
Demonstrate that solutions adopted pursuant to section 3.08.220 (Transportation Solutions) will achieve progress toward the targets and standards in Tables 3.08-1, and 3.08-2 and measures in subsection D (local performance measures), or toward alternative targets and standards adopted by the city or county. The city or county shall include the regional targets and standards or its alternatives in its TSP. A city or county may adopt alternative targets or standards in place of the regional targets and standards upon a demonstration that the alternative targets or standards: • Are no lower than the modal targets in Table 3.08-1 and no lower than the ratios in Table 3.08-2; • Will not result in a need for motor vehicle capacity improvements that go beyond the planned arterial and throughway network defined in Figure 2.12 of the RTP and that are not recommended in, or are inconsistent with, the RTP; and • Will not increase SOV travel to a degree inconsistent with the non-SOV modal targets in Table 3.08-1. If the city or county adopts mobility standards for state highways different from those in Table 3.08-2, it shall demonstrate that the standards have been approved by the Oregon Transportation Commission. Each city and county shall also include performance measures for safety, vehicle miles traveled per capita, freight reliability, congestion, and walking, bicycling and transit mode shares to evaluate and monitor performance of the TSP. To demonstrate progress toward achievement of performance targets in Tables 3.08-1 and 3.08-2 and to improve performance of state highways within its jurisdiction as much as feasible and avoid their further degradation, the city or county shall adopt the following: • Parking minimum and maximum ratios in Centers and Station Communities consistent with subsection 3.08.410A; • Designs for street, transit, bicycle, freight and pedestrian systems consistent with Title 1: and • TSMO projects and strategies consistent with section 3.08.160; and • Land use actions pursuant to OAR 660-012-0035(2). **(Title 2, Performance Targets and Standards Sec 3.08.230)**	Included in the street modal plan.
Specify the general locations and facility parameters, such as minimum and maximum ROW dimensions and the number and width of traffic lanes, of planned regional transportation facilities and improvements identified on general location depicted in the appropriate RTP map. Except as otherwise provided in the TSP, the general location is as follows: • For new facilities, a corridor within 200 feet of the location depicted on the appropriate RTP map; • For interchanges, the general location of the crossing roadways, without specifying the general location of connecting ramps; • For existing facilities planned for improvements, a corridor within 50 feet of the existing right-of-way and • For realignments of existing facilities, a corridor within 200 feet of the segment to be realigned as measured from the existing right-of-way depicted on the appropriate RTP map. A City or county may refine or revise the general location of a planned regional facility as it prepares or revises impacts of the facility or to comply with comprehensive plan or statewide planning goals. If, in developing or amending its TSP, a city or county determines the general location of a planned regional facility or improvement is inconsistent with its comprehensive plan or a statewide goal requirement, it shall: • Propose a revision to the general location of the planned facility or improvement to achieve consistency and, if the revised location lies outside the general location depicted in the appropriate RTP map, seek an amendment to the RTP; or • Propose a revision to its comprehensive plan to authorize the planned facility or improvement at the revised location. **(Title 3, Defining Projects in Transportation System Plan Sec 3.08.310)**	Included in Chapter 2, Roadway modal plan in the Functional Classification and street design standards sections

Regional Transportation Functional Plan Requirement	Local TSP reference?
Could be adopted in TSP or other adopted policy document) Adopt parking policies, management plans and regulations for Centers and Station Communities. Plans may be adopted in TSPs or other adopted policy documents and may focus on sub-areas of Centers. Plans shall include an inventory of parking supply and usage, an evaluation of bicycle parking needs with consideration of *TriMet Bicycle Parking Guidelines*. Policies shall be adopted in the TSP. Policies, plans and regulations must consider and may include the following range of strategies: • By-right exemptions from minimum parking requirements; • Parking districts; • Shared parking; • Structured parking; • Bicycle parking; • Timed parking; • Differentiation between employee parking and parking for customers, visitors and patients; • Real-time parking information; • Priced parking; • Parking enforcement. **(Title 4, Parking Management Sec 3.08.410I)**	Included parking policies, management plans and regulations for the center. We have an inventory and usage for the downtown core.
If a city or county proposes a transportation project that is not included in the RTP and will result in a significant increase in SOV capacity or exceeds the planned function or capacity of a facility designated in the RTP, it shall demonstrate consistency with the following in its project analysis: • The strategies set forth in subsection 3.08.220A(1-5) (TSMO, Transit/bike/ped system improvements, traffic calming, land use strategies, connectivity improvements) • Complete street designs consistent with regional street design policies • Green street designs consistent with federal regulations for stream protection. If the city or county decides not to build a project identified in the RTP, it shall identify alternative projects or strategies to address the identified transportation need and inform Metro so that Metro can amend the RTP. This section does not apply to city or county transportation projects that are financed locally and would be undertaken on local facilities. **(Title 5, Amendments of City and County Comprehensive and Transportation System Plans Sec 3.08.510C)**	None of the potential improvements are likely to significantly increase SOV capacity that isn't already included in the RTP. This section does not apply

Appendix G
Public Involvement Process

This Appendix describes public outreach and involvement conducted during development of the Transportation System Plan. Detailed summaries from project meetings are included in the following pages.

TSP Meetings and Outreach Summary

Task Force Meetings:
November 29, 2011
December 12, 2011
January 19, 2012
February 2, 2012
March 15, 2012
April 19, 2012
May 24, 2012
June 21, 2012
July 19, 2012
August 16, 2012
August 23, 2012
September 20, 2012
October 4, 2012
November 1, 2012

Online Public Forums:
Comment Map Open from July 15, 2011 through January 15, 2012
Online Forum and Map Open from July 2, 2012 to September 6, 2012

Other Public Meetings:
Year of Transportation Open House, February 16, 2012
Transportation Summit, September 20, 2012

Working Groups:
Industrial and Freight:
February 28, 2012
April 10, 2012
June 13, 2012

Downtown:
February 28, 2012
April 2, 2012
June 4, 2012

Bicycle and Pedestrian:
February 29, 2012
April 4, 2012
June 6, 2012

Major Corridors and Intersections:
March 1, 2012
April 16, 2012
June 14, 2012

Neighborhood Livability:
March 5, 2012
April 11, 2012
June 13, 2012

Transit:
February 9, 2012*
March 8, 2012
March 29, 2012
June 5, 2012
July 17, 2012*

*Linking Tualatin Focused Meeting

Agency, Council, and Community Briefings:
Agency – November 29, 2011 - Discuss future land use assumptions
Agency – December 22, 2011 - Discuss future land use assumptions
Agency – January 30, 2012 - Discuss comments on Existing Conditions Report
City Council - April 23, 2012 – Presentation on Screening Results
TPARK – May 8, 2012 – Presentation on Screening Results
TPC – May 1, 2012 – Presentation on Screening Results
Agency – May 21, 2012 - Discuss project evaluation results
City Council - June 25, 2012 – Presentation on Evaluation Results
TPARK - June 12, 2012 – Presentation on Evaluation Results
TPC - June 5, 2012 – Presentation on Evaluation Results
CIO Leaders – July 2, 2012 – Online Forum overview and training
City Council - August 13, 2012 – Presentation on Refinement Area #1
TPARK – August 9, 2012 – Presentation on Refinement Area #1
TPC – August 9, 2012 – Presentation on Refinement Area #1
City Council – September 10, 2012 – Presentation on Refinement Area #2
TPARK – September 6, 2012 – Presentation on Refinement Area #2
TPC – September 4, 2012 – Presentation on Refinement Area #2
City Council – November 26, 2012 – Presentation on SW 65th Avenue & SW Boones Ferry Road Refinement Areas
TPARK – November 13, 2012 – Presentation on SW 65th Avenue & SW Boones Ferry Road Refinement Areas
TPC – November 15, 2012 – Presentation on SW 65th Avenue & SW Boones Ferry Road Refinement Areas

Events Outreach:
Farmers Market 2011: July 28, August 10, and October 27
Concert on the Commons 2011: August 4 and September 9
Tualatin Chamber of Commerce Luncheon: August 25, 2011
Crawfish Festival: September 9, 2011
Tualatin Rotary Luncheon: September 28, 2011
Pumpkin Regatta: November 1, 2011
Tualatin Chamber of Commerce Luncheon: March 22, 2012
Farmers Market July 13, 2012:
Crawfish Festival: August 11, 2012

Media Coverage:
In My Opinion – The Impact of Option 1, Tualatin Life, August 2012
Why Your Kids Will Care How You Vote, Tualatin Life, August 2012
Get Involved Today – Future Transportation Choices will Shape the Future of Tualatin, Tualatin Life, August 2012
Community Input Shapes Our Future, Tualatin Life, July 2012
Tualatin unveils online forum for transportation ideas, Oregonian, July 2012
The Times They are a Changin', Tualatin Life Blog, May 2012
Help! Working Groups Are Working! Tualatin Life, February 2012
The Year of Transportation, Tualatin Life, September 2011 (pdf 540kb)
Tualatin's Transportation Project Pushes for Community Involvement, OregonLive.com, Sept 21, 2011
City of Tualatin has smart phone ap? KATU.com August 18, 2011
Moving Tualatin - video contest deadline extended, KATU.com, August 19, 2011
There's Still Time To Enter Video Contest, The Times, August 25, 2011 (pdf 431 kb)
Moving Tualatin, Tualatin Life, August 2011 (pdf 518 kb)
Chamber Forum, Tualatin Life Crawfish Festival Advertisement, August 2011
How Do You Get Home? The Times, July 28, 2011
City of Tualatin's transportation plan inspires video contest, OregonLive.com, July 26, 2011

2012 Online Forum Flier Distribution:
Concert on the Commons 2012: July 13, July 27, August 10, and August 17
Tualatin Farmer's Market: July 27, August 10, and August 17
City Offices
Tualatin Library
CIO Chairs and Leaders
Task Force Members
WES Station and Parking Lot
Tualatin Park and Ride
Most Businesses near downtown on the north and south sides of SW Tualatin-Sherwood Road, SW Nyberg Road, along SW Martinazzi and SW Boones Ferry Road

Spanish Language Outreach

Bridgeport Elementary School Parent-Teacher Association (Bilingual organization), October 17, 2011
Phone calls to Spanish Language Churches:

- Tualatin Spanish Seventh-day Adventist Church – left message, no return
- Esperanza Iglesia – attempt a meeting and presentation to the Elder Board and the congregation

Distribute Spanish Language Bookmarks (500):
Library
Businesses

Facebook Advertisement
July 2012

City of Tualatin

Tualatin Transportation System Plan
Bicycle and Pedestrian
Working Group Summary
February 29, 2012

Deficiencies:

- Lack of "loops" to connect neighborhoods/downtown area
- Greenway – missing link
- Voids/gaps – concern voiced about the width of sidewalks in various areas being inadequate (two groups mentioned this as a top concern)
- Bikeway system
- The crosswalk adjacent to the Martinazzi Avenue transit station is very hazardous.
- Maximize the new Tonquin Trail
- Improve I-5 overpass crossings on both Sagert and Nyberg Streets to better handle pedestrians and bicyclists (two groups mentioned this as a top concern)
- Improve the safety element at major intersections for pedestrians and bicyclists
- Safety concerns crossing north and south on Tualatin-Sherwood Road
- Lack of crossings for pedestrians and bicyclists over the Tualatin River

Solutions

- Complete Tualatin River Greenway/Nyberg Creek
- Improve Martinazzi in area of transit station
- Separate the shared path along 99W
- Trail bridges
- Intersection improvements
- Pedestrian/bicyclist activated lights at major crossings
- Tonquin Trail
- "Countdown" walk sign at major intersections
- Installation of more benches in areas frequently used by pedestrians and bicyclists
- Neighborhood ties to Tonquin Trail
- Conduct a study focusing on a "loop system" for eventual presentation to the City Council
- Education through kiosks and signage (particularly along routes that school children may take)
- Connectivity to access both sides of I-5
- Infrared signals for safety purposes
- Wider sidewalks based on geographic area
- Work on the "gaps"

Other Documents:

- Pedestrian Plan - http://www.ci.tualatin.or.us/departments/legal/docs/TDC/Maps/Figure11-4TualatinPedestrianPlan.pdf
- Bicycle Plan - http://www.ci.tualatin.or.us/departments/legal/docs/TDC/Maps/Figure11-5TualatinBicyclePlan.pdf
- Greenway Locations (includes locations for off-street pedestrian and bicycle facilities) - http://www.ci.tualatin.or.us/departments/legal/docs/TDC/Maps/Map72-1NRPOandGreenways.pdf

City of Tualatin

Tualatin Transportation System Plan
Bicycle and Pedestrian
Working Group Summary
April 4, 2012
Police Department Training Room

The purpose of this working group meeting was to study and discuss the potential solutions generated from the previous working group meeting, and to discuss the feasibility of potential projects to help decide if they should be considered in the evaluation phase of the TSP process.

The Working group separated into groups of no more than six people to discuss the project ideas on the maps. Each meeting attendee was given three cards (green = yes, yellow = maybe, and red = no). Groups first went through each project idea and showed the card that they thought was appropriate for the project to be carried forward into evaluation for the TSP. Once the projects were tallied, groups then discussed the projects and whether they should be forwarded into the TSP for further evaluation. The tally is reported below, along with notes from the conversation. Projects that received all green votes from members were not discussed further, and the recommendation from the group is to evaluate the project in the TSP.

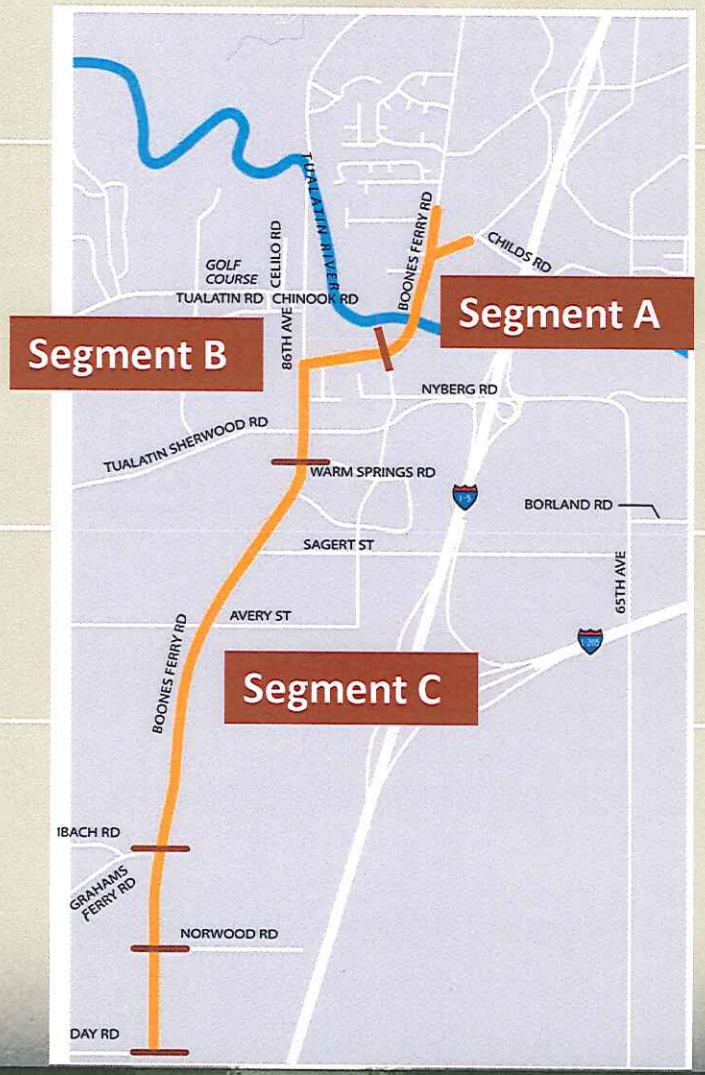
	Potential Safety-Focused Ideas	Green	Yellow	Red
A1	Add pedestrian-focused crossing improvements at key crossings of Tualatin-Sherwood Rd & Nyberg St	**11**		
A2	Separate walking/bike area with plantings or barriers on 65th Ave between Borland Rd and Nyberg Lane Is there room to separate facilities? On bridge, no. Where does that ROW come from? Short term – bike lanes on 65th would be good. Short term – Connect the sidewalk that is there (east side). The 5 yellows turned to 6 Green after discussion (But not as currently written – 6 yellows)	4	**7**	
A3	Improve visibility and safety near schools at crosswalks Is this needed? We have crosswalks, guards, and signs already. Maybe further from actual schools (wish list)	5	**6**	
A4	Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd Do we need lights? Is it needed?	3	**8**	
A5	Improve lighting at Jurgens Rd and Hazelbrook Rd Would neighbors complain about lights? Who would it help? Is there much traffic? (School) Keep.	**8**	3	
A6	General - Add wayfinding signs for Safe Routes to School (not on the map) They know where the schools are? Is it needed? Definitely no BIG signs. Focus on smaller signs that are not intrusive. "Low Profile" in neighborhood. Not limited to just safe routes to	2	**8**	1

school. Wayfinding standard would be good too. Fitness related as well. The "4" Maybe and "1" NO turned to all Green after discussion

	Facility-Focused Ideas	Green	Yellow	Red
B1	Connect Tonquin trail with neighborhoods It will be expensive (have to cross railroad tracks). Need at least 1 or 2 connections, reduce distance to access Tonquin Trail. A lot of connections are not needed.	**9**	2	
B2	Add sidewalks & bicycle lanes on Norwood Rd Concerns with speed. The current crossing is good and wide over I-5.	5	**6**	
B3	Improve Tualatin-Sherwood Rd to make it more bicycle and pedestrian friendly	**8**	3	
B4	Add bicycle facilities (65th Ave near the hospital, 95th Ave and Martinazzi Ave)	**10**	1	
B5	Focused bicycle facility improvements in heart of downtown, including Martinazzi Ave, Boones Ferry Rd, and Tualatin-Sherwood Rd This project is too vague. Connect bike lanes on all streets through intersections. Explore alternative routes with less traffic. Maybe not on Tualatin-Sherwood Rd but Warm Springs Rd or a separated facility off of higher traffic roads (off street too). This is a bigger issue then downtown - overall bike connectivity citywide is a bigger issue. Delineate bike and pedestrian areas in downtown core. Add more bike parking.	**7**	4	
B6	Better accommodate pedestrians on the bridges	**10**		
B7	Build a raised intersection at Seneca and Nyberg (crossing Boones Ferry Rd) Lots of traffic, relatively high speeds - 35 mph. Are there trucks? (no) No – too much traffic. Would not do much. Yes, a problem, but not the right solution. Possibly remove / relocate City Council building so that intersection aligns, leading to other improvements (wider sidewalks, etc.). Bike lanes on	1	**8**	1

	Martinazzi are needed as well. Bus stops are in bad locations, shouldn't be stopping here. This project stays red as written as raised intersection doesn't fix problem(s).			
B8	Fill sidewalk gaps (Herman Rd, Grahams Ferry Rd, Boones Ferry Rd, and the connection between Boones Ferry Rd and Norwood Rd)	**8**	2	
B9	Add bicycle and pedestrian facilities on 105th Ave, Blake St, 108th Ave	**8**	2	
	No room for anything there – very expensive. Is there another route? Maybe signs with alternative route? Something needs to be done.			
B10	Add a bike box on Boones Ferry Rd near the Sweek House	**5**	4	1
	Good first place to implement bike boxes in Tualatin. Like the idea. Northbound? Maybe not enough bikes to warrant that improvement. Other routes could serve bikes and connections. Improvement of bike lanes rather than bike boxes. Need other off street improvements. The 2 Green, 1 Yellow, 1 Red turned to 5 Green and 1 Yellow after discussion.			
B11	Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd	**9**	1	
B12	Add a pedestrian overcrossing between the Community park and Tualatin Commons	2	1	**8**
	ADA requirements – elevators expensive. How many people would use it? The road is only 1 lane each way, and is not too hard to cross now.			
B13	Make bicycle and pedestrian facility improvements at railroad crossings	**10**	2	
	Maybe a sign would be better? Rubber pad as other option.			
B14	Pedestrian crossing improvements (Tualatin View Apartments, Boones Ferry Rd; Martinazzi Ave and Warm Springs St)	**9**	1	
B15	Add bicycle lanes on Boones Ferry Rd to Day Rd	**5**	**5**	
	Dangerous. At your own risk. Washington County is already planning on adding bike lanes. In favor or separated facility, not bike lane in-road. Off street is			

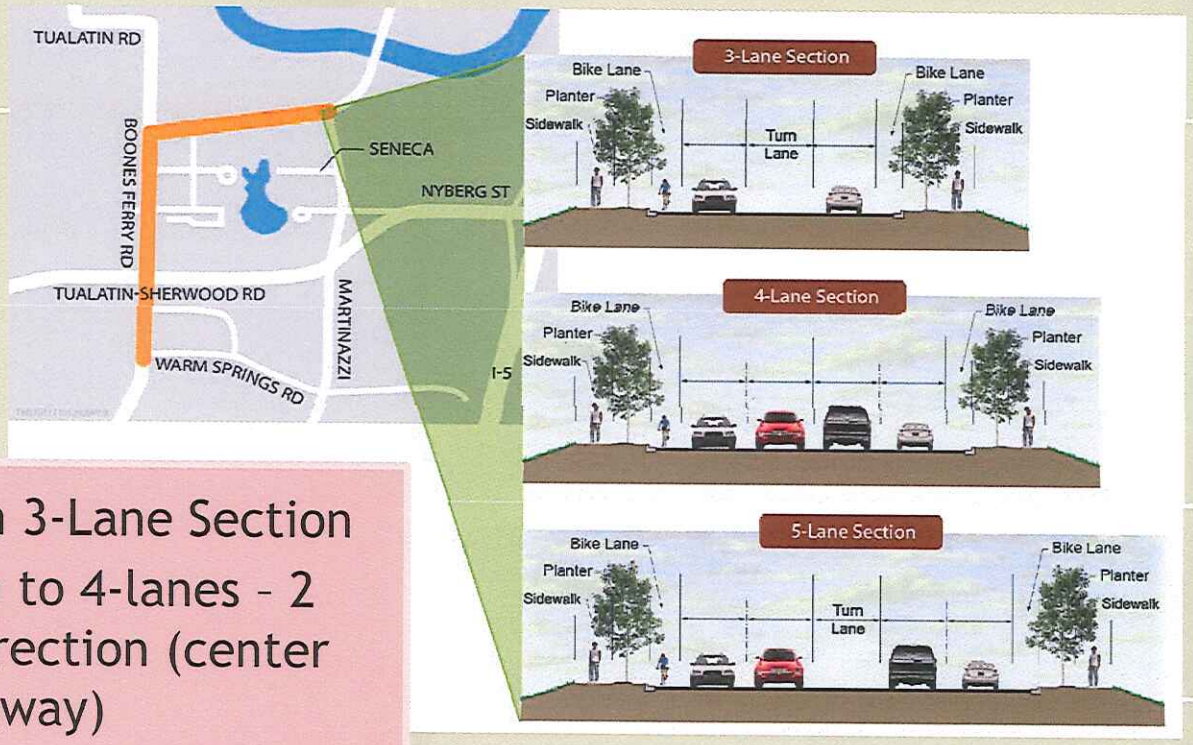
Three Segments of Boones Ferry Road



Segment A: North of Martinazzi

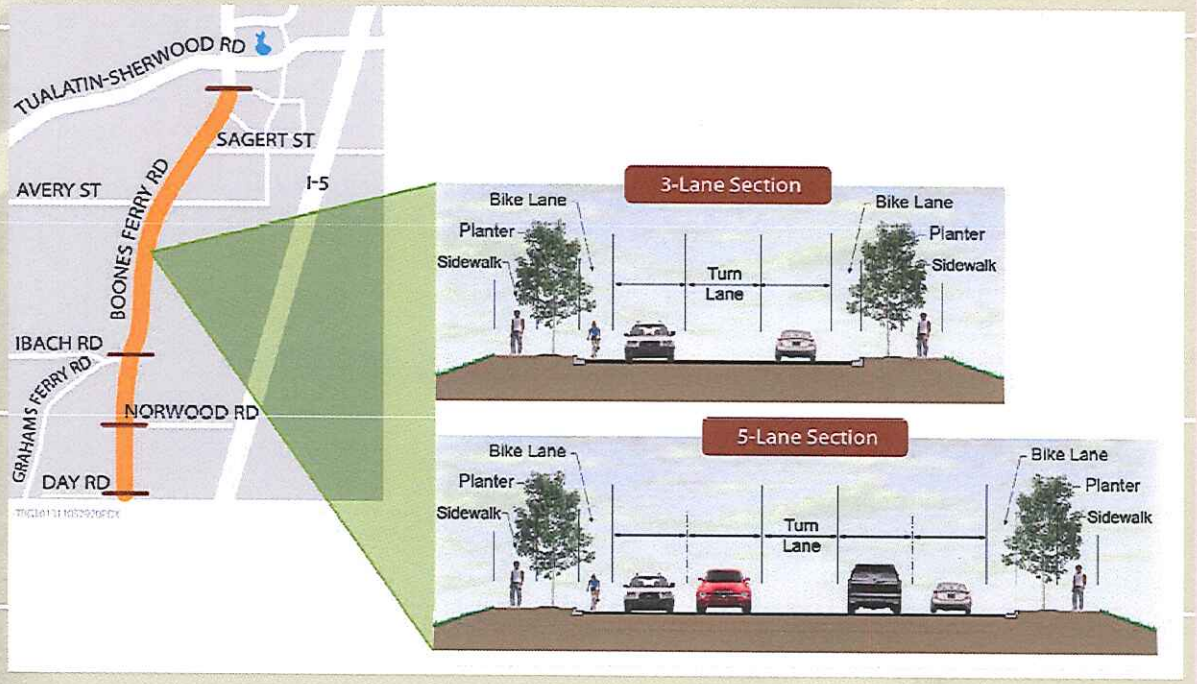
- Widen to five lanes from intersection with Lower Boones Ferry to bridge
- Replace current bridge, widen to four lanes with bike lanes and sidewalks
- Transition to three lanes south of bridge with transition at Martinazzi (left turn lane)

Segment B: Through Downtown



- Option 1: Retain 3-Lane Section
- Option 2: Widen to 4-lanes – 2 lanes in each direction (center turn lane goes away)
- Option 3: Widen to 5-lanes – 2 lanes in each direction with center turn lane

Segment C: South of Warm Springs



- Option 1: 3-lane section with widening at key intersections, coordinated signal timing
- Option 2: 5-lane section (2 travel lanes in each direction with center turn lane)

Boones Ferry Road Traffic: All Options

PM Peak Hour Operations

Boones Ferry Road &	2011 Existing	2035 No-Build	Widen South of Tualatin-Sherwood Rd to Norw ood	Widen North of Martinazzi to Lower Boones
A Lower Boones Ferry	0.76 (C)	1.11 (E)	1.11 (E)	0.89 (C)
B Martinazzi Ave	0.89 (D)	1.26 (F)	1.26 (F)	1.33 (F)
C Tualatin Road	0.62 (B)	0.86 (C)	0.86 (C)	0.92 (C)
D Tualatin-Sherwood Rd	0.93 (D)	1.31 (F)	1.30 (F)	1.31 (F)
E Sagert St	0.75 (C)	1.11 (E)	0.84 (C)	1.11 (E)
F Avery St	0.87 (C)	1.15 (F)	0.96 (D)	1.15 (F)
G Ibach St	0.70 (B)	0.98 (D)	0.88 (C)	0.98 (D)

V/C ratio (Level-of-Service)

Other Connectivity Options

Option	South of Tualatin-Sherwood Rd	TSR to Martinazzi Rd	North of Martinazzi
65th Extension	- 70 vehicles ↓	-180 vehicles ↓	-440 vehicles ↓
North/South Connection	+ 520 vehicles ↑	-270 vehicles ↓	-570 vehicles ↓
Hybrid (both 65th and North/South)	+220 vehicles ↑	-500 vehicles ↓	-890 vehicles ↓

What are the Benefits for Tualatin?

Area		Segment A	Segment B	Segment C
Design	3-lane	• No impacts	• No impacts	• No impacts
	4-lane	• N/A	• Would require ROW • Access impacts	• N/A
	5-lane	• Minor impacts • Little ROW needed • Railroad coordination needed	• Would require additional ROW • Would require reconstructed accesses	• Could improve curves and grade for sight distance improvements • Some structures close to ROW line
Environmental/ Policy	3-lane	• None	• None	• None
	4-lane	• N/A	• Business impacts • Difficult turning movements	• N/A
	5-lane	• Some landscaping impacts adjacent to road	• Impacts businesses in this segment	• Impacts setbacks and landscaping (no houses) • Near Woodrose Nature Park

Discussion

TTF recommendation: Move forward with

Segment A: Five lanes

Segment B: Three lanes

Segment C: Three lanes

To the summit

Refinement Area #7:
Downtown Connectivity

Tualatin-Sherwood Road/Boones Ferry Road Intersection

Notes:

- Signal timing is already optimized at this intersection, but other phasing/timing/ coordination alternatives may be tested
- Changing the signal timing to 120 seconds could improve the V/C ratio from 1.30 (F) to 1.22 (F)
- Intersection is well over capacity, even a test of 140 second signal cycle with right turns on every approach yields a V/C of 1.06 (E)

PM Peak Hour Operations

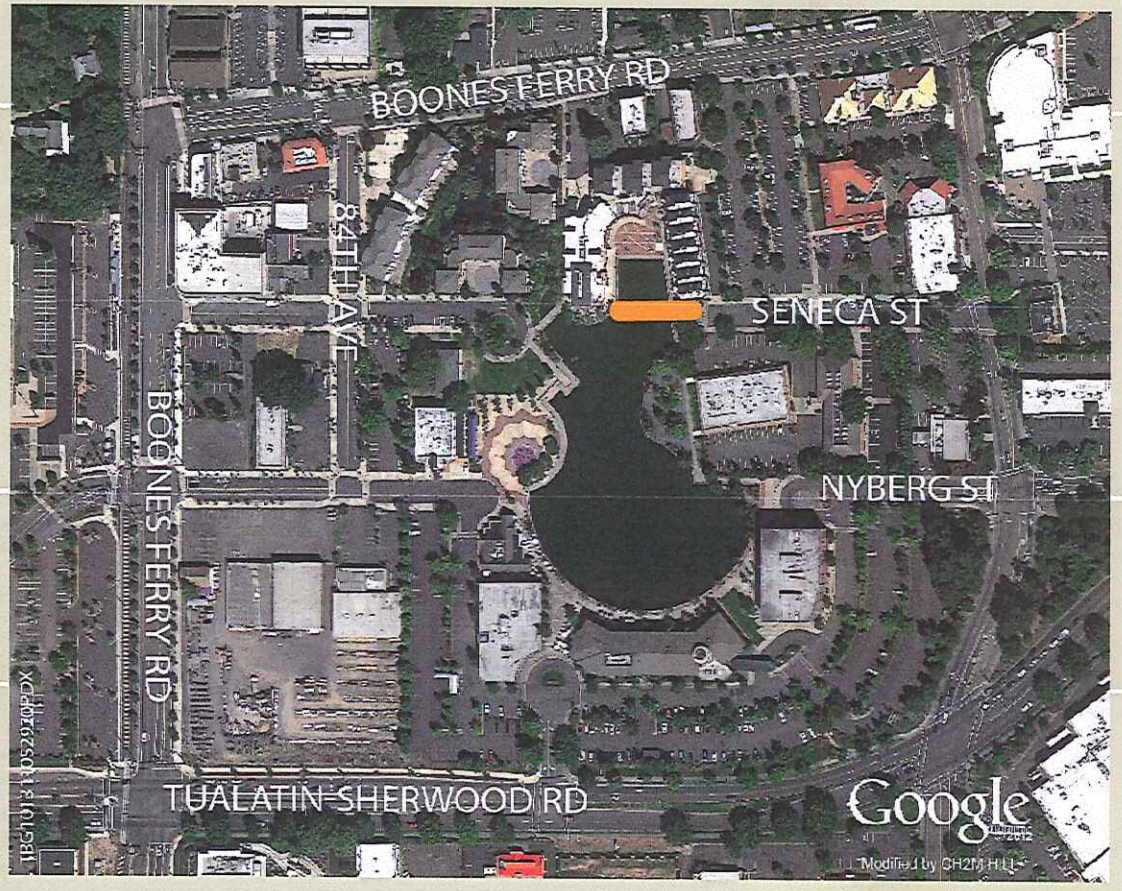
	Tualatin-Sherwood Road/Boones Ferry Road
Existing Conditions	0.93 (D)
2035 No-Build	1.31 (F)
Added Eastbound Right Turn Pocket	1.18 (E)
Added Westbound Right Turn Pocket	1.31 (F)
Added Southbound Right Turn Pocket	1.18 (E)

V/C ratio (Level-of-Service)

Other Connectivity Options

Option	West of Boones Ferry Rd	East of Boones Ferry Road	North of TSR	South of TSR
65th Extension	+ 50 vehicles ↑	+180 vehicles ↑	-60 vehicles ↓	- 70 vehicles ↓
North/South Connection	+ 170 vehicles ↑	-50 vehicles ↑	+420 vehicles ↑	+ 520 vehicles ↑
Hybrid (both 65th and North/South)	+130 vehicles ↑	+80 vehicles ↑	+280 vehicles ↑	+220 vehicles ↑
TSM Option	Negligible	Negligible	Negligible	Negligible

Connectivity in the Downtown Core



- Auto bridge over the lake was screened out
- Auto tunnel under the lake was screened out
- At least we can improve connectivity for bicyclists and pedestrians

Discussion

TTF recommendation: No, with changes to Lake, Yes, with recommendations to Boones Ferry and Tualatin Sherwood Road intersection

City of Tualatin

Putting it all Together

Tualatin TSP

Presentation to
Tualatin Transportation Task Force
September 20, 2012

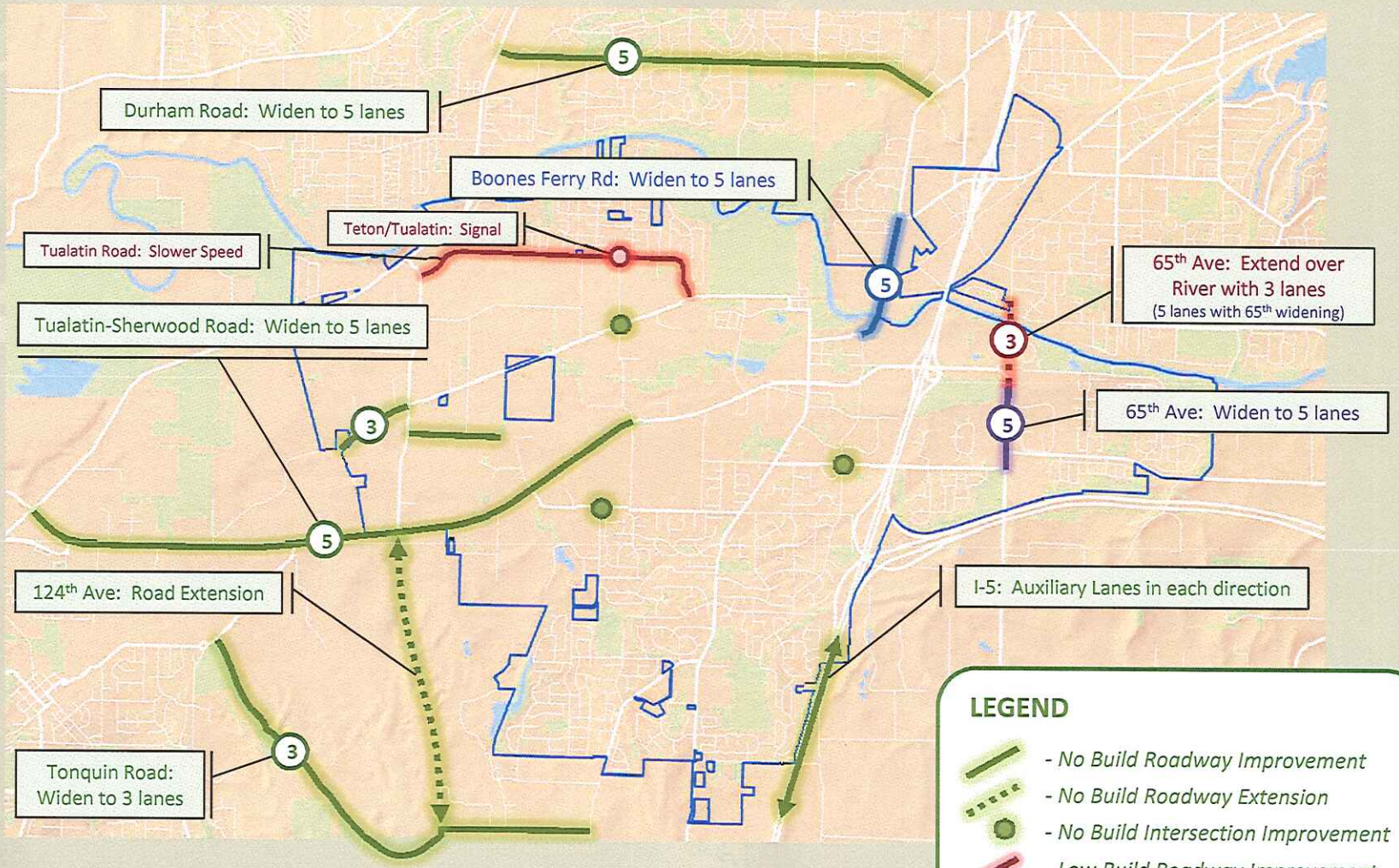
TualatinTSP_TBG061511054135PDX 422992.PS.C1.HWn6/15/2011 kk

Scenarios

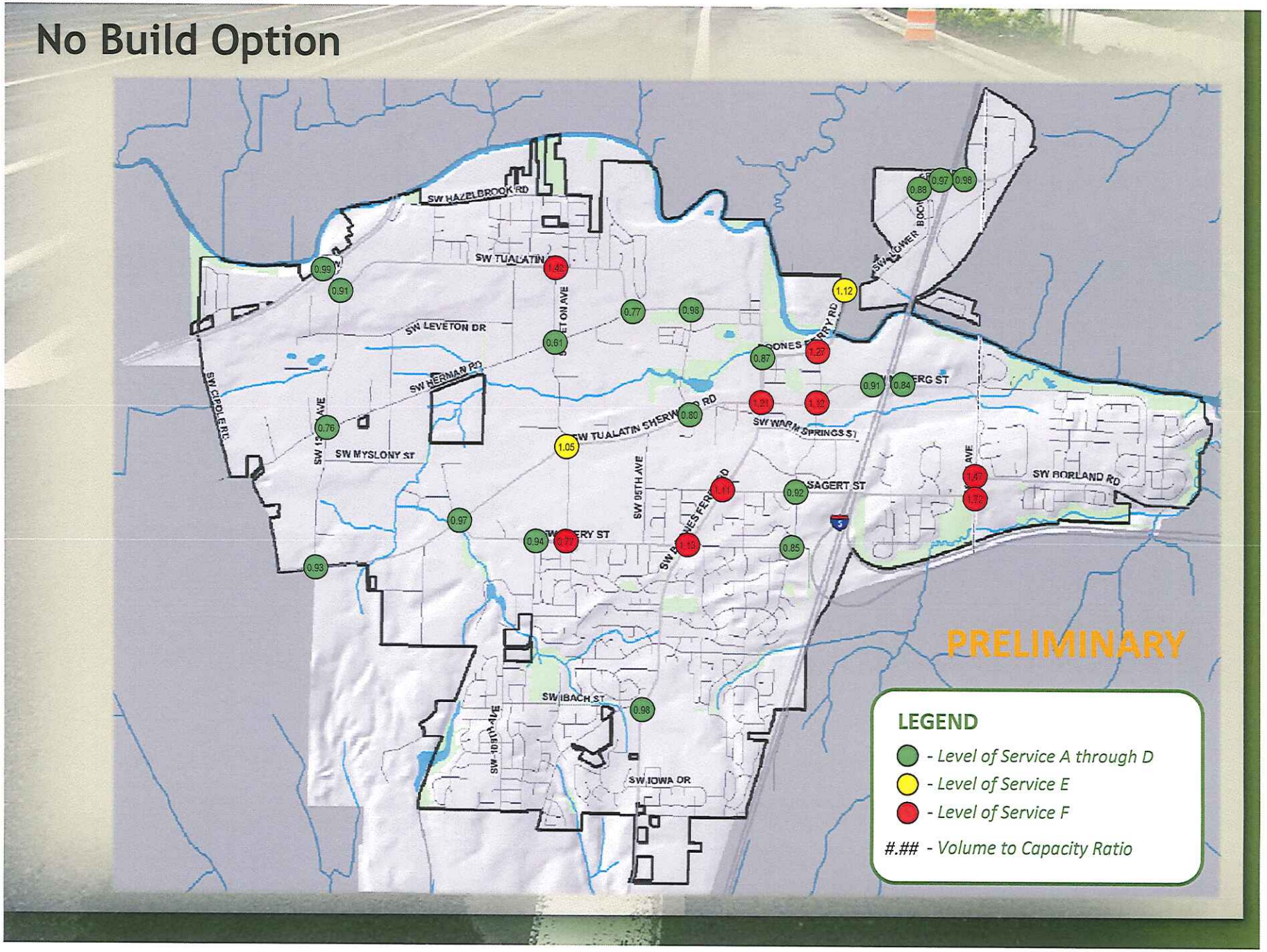
Scenarios Rely on TTF Guidance

1. Includes compilation of guidance from 7 refinement areas
2. Looked at various options for 65th Avenue
   a. No extension
   b. 2-lane bridge extension
   c. 5-lane widening of 65th with 4-lane bridge extension
3. Looked at widening Boones Ferry Road north of Martinazzi

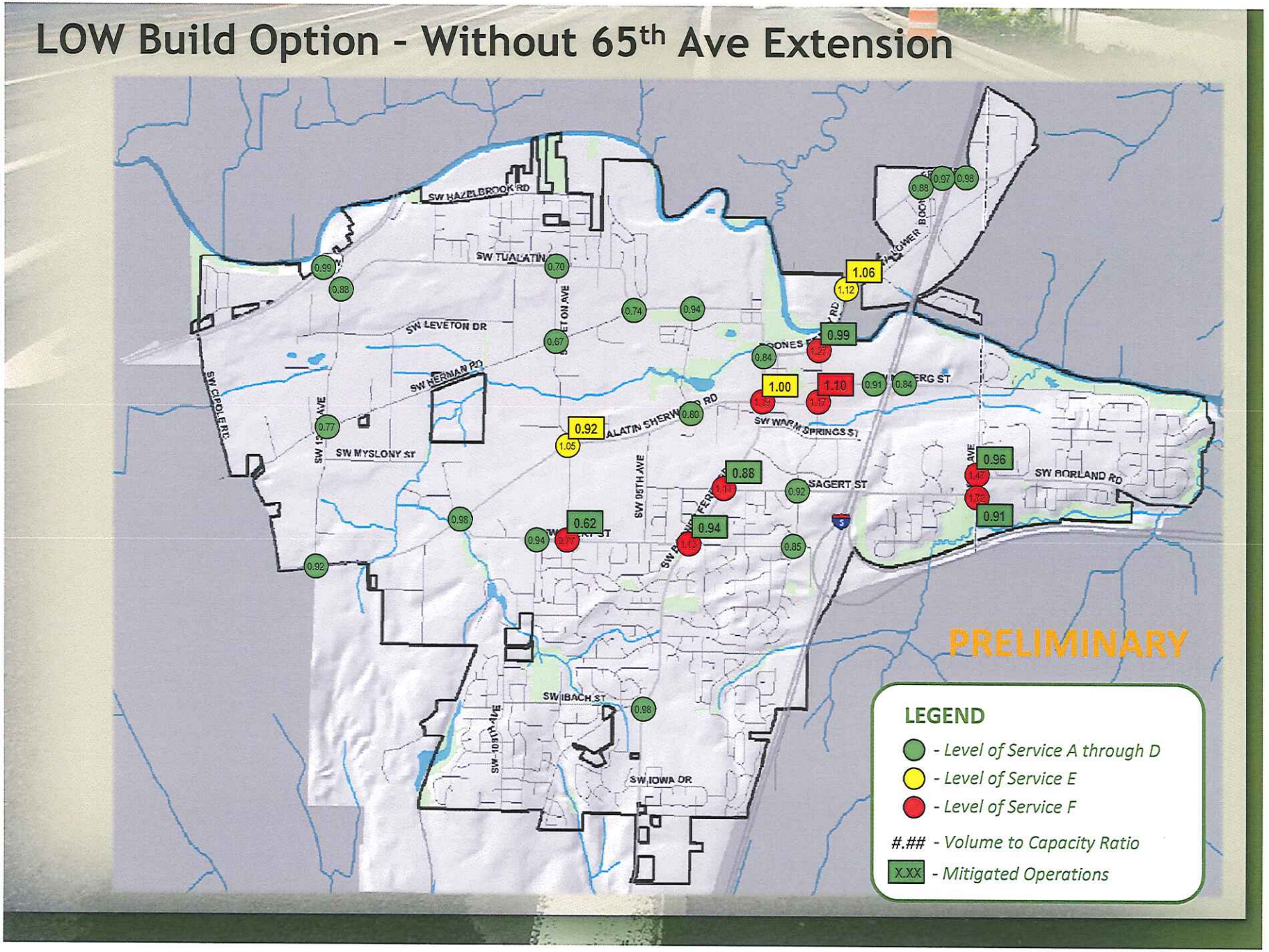
Assumed Future 2035 Scenarios and Roadway Projects



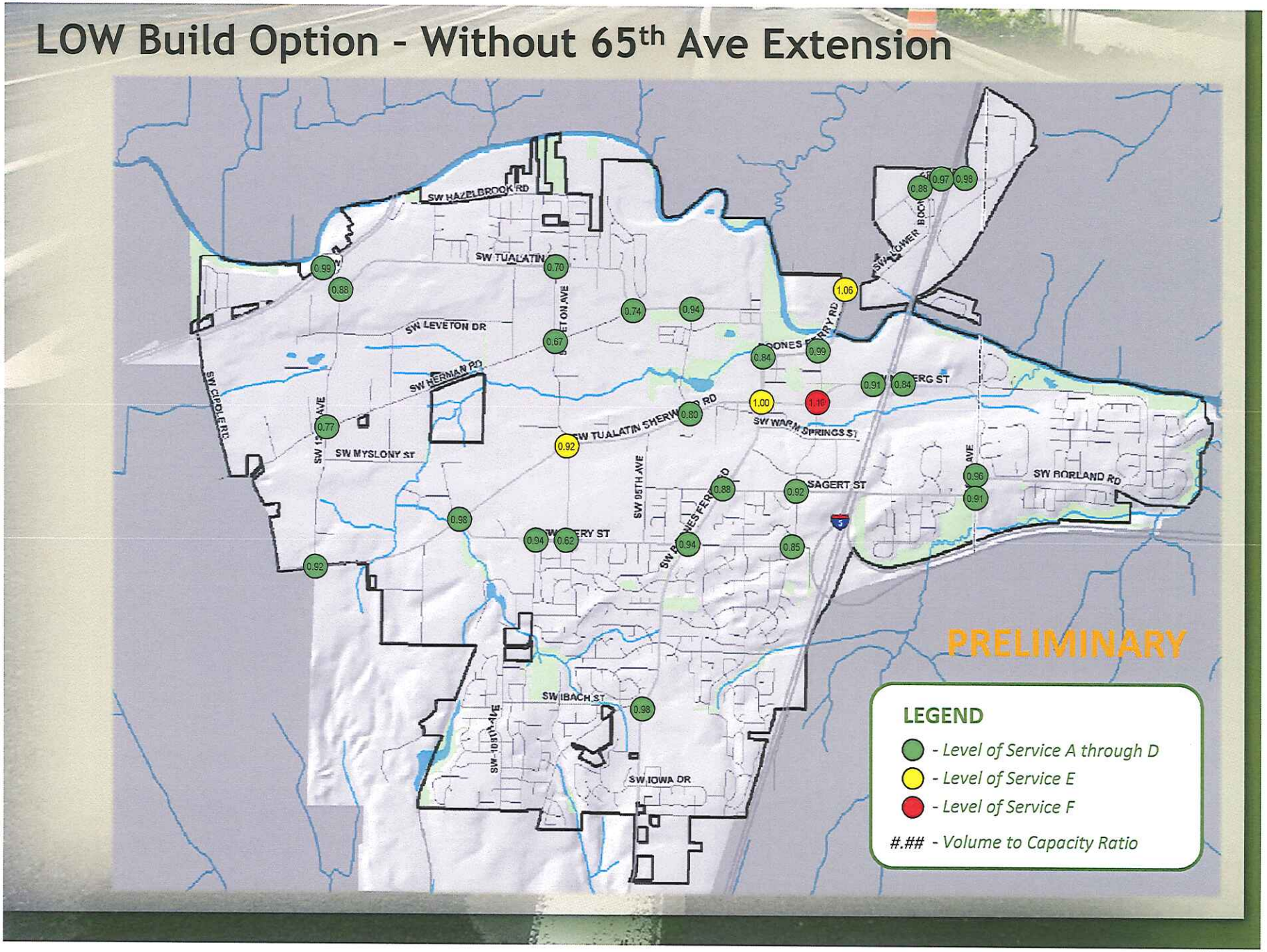
No Build Option



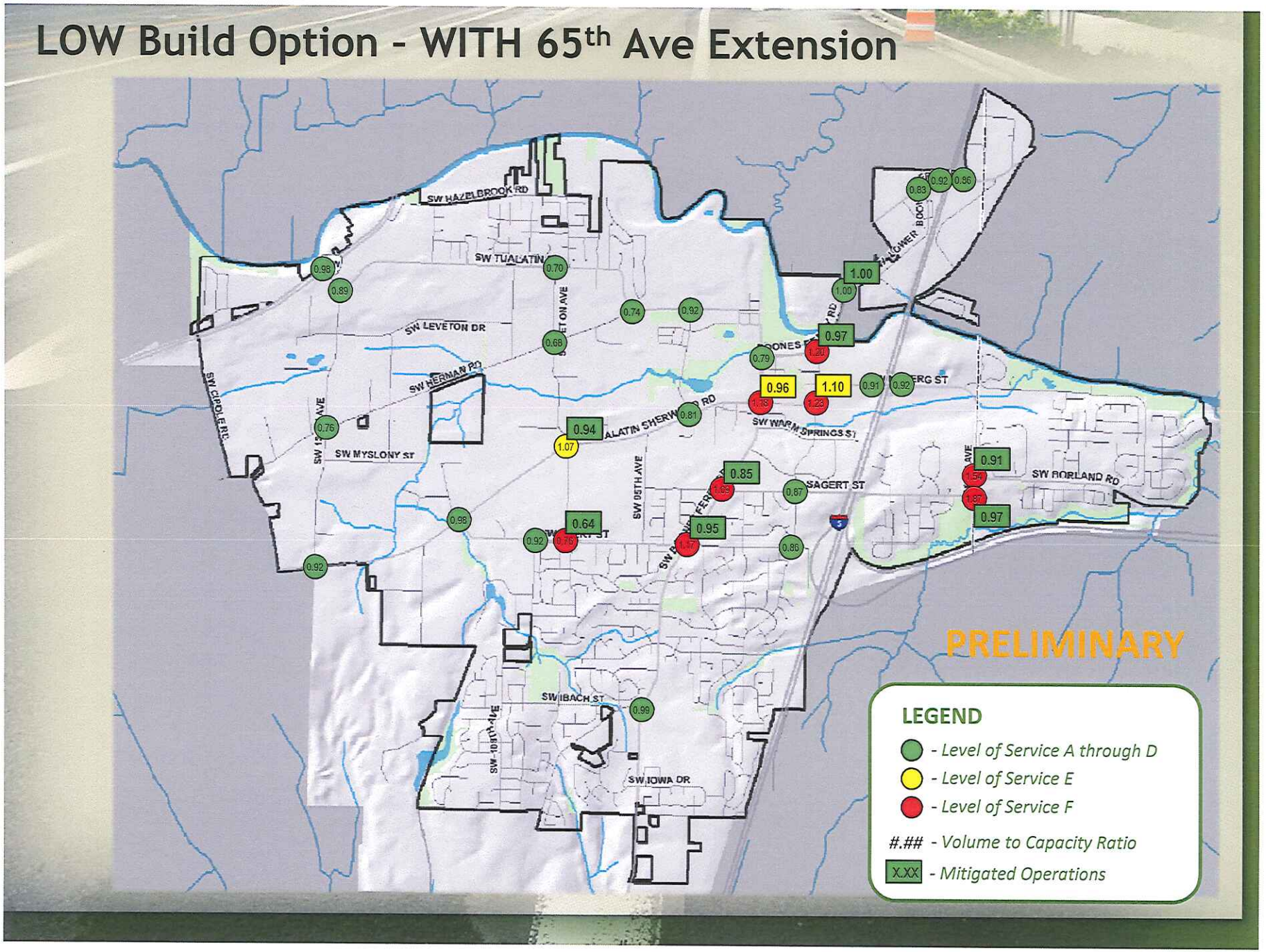
LOW Build Option - Without 65th Ave Extension



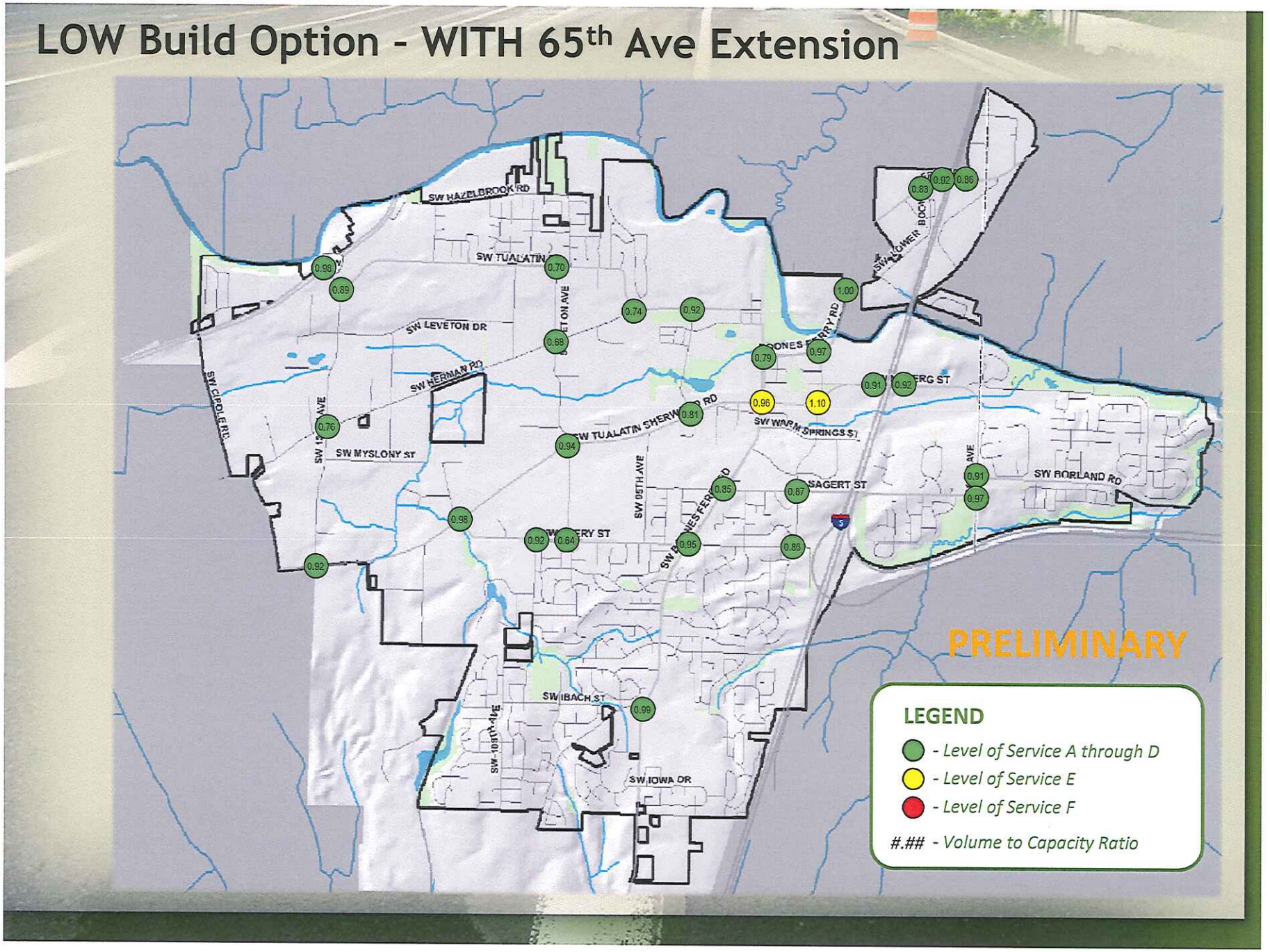
LOW Build Option - Without 65th Ave Extension



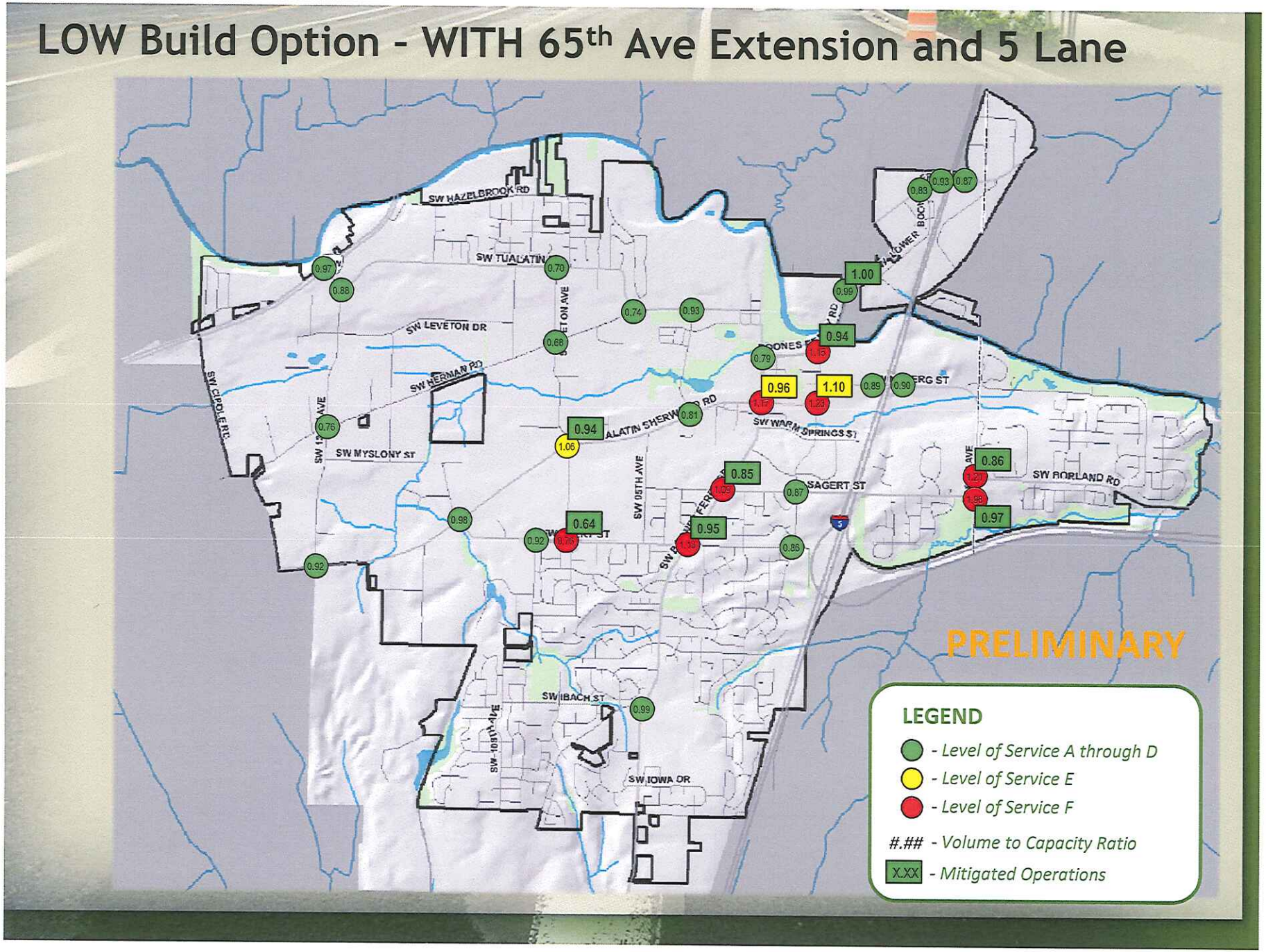
LOW Build Option - WITH 65th Ave Extension



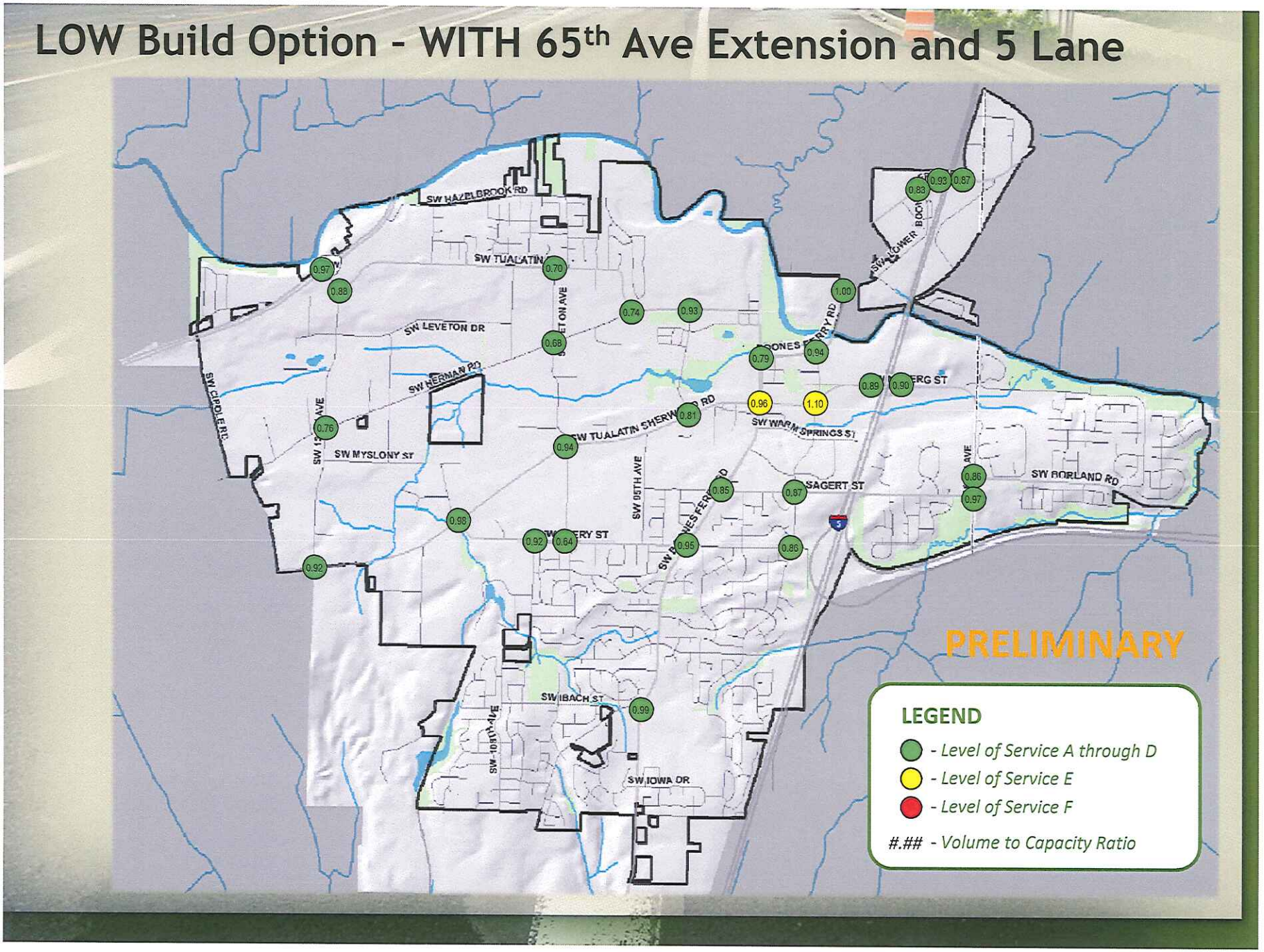
LOW Build Option - WITH 65th Ave Extension



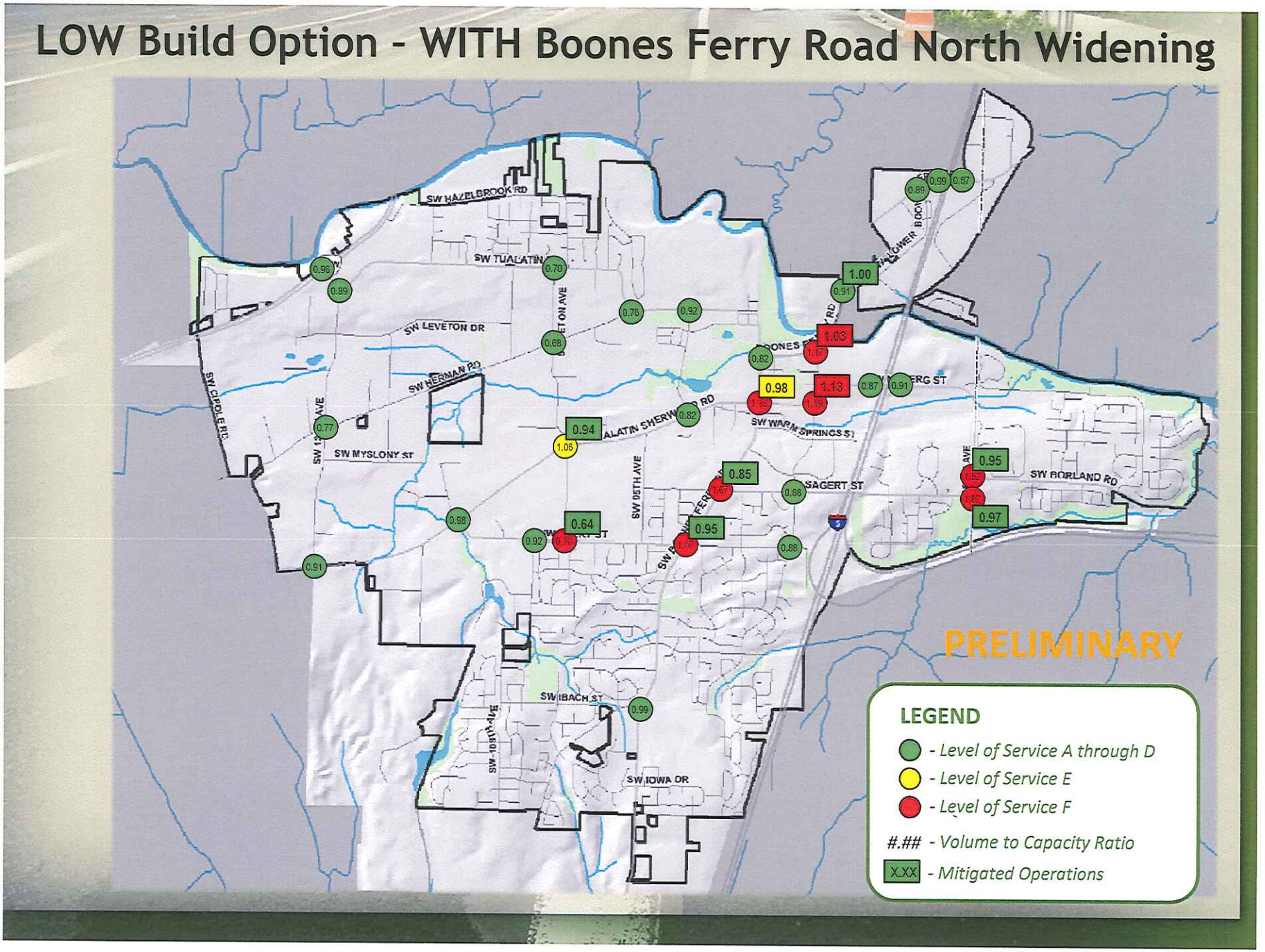
LOW Build Option - WITH 65th Ave Extension and 5 Lane



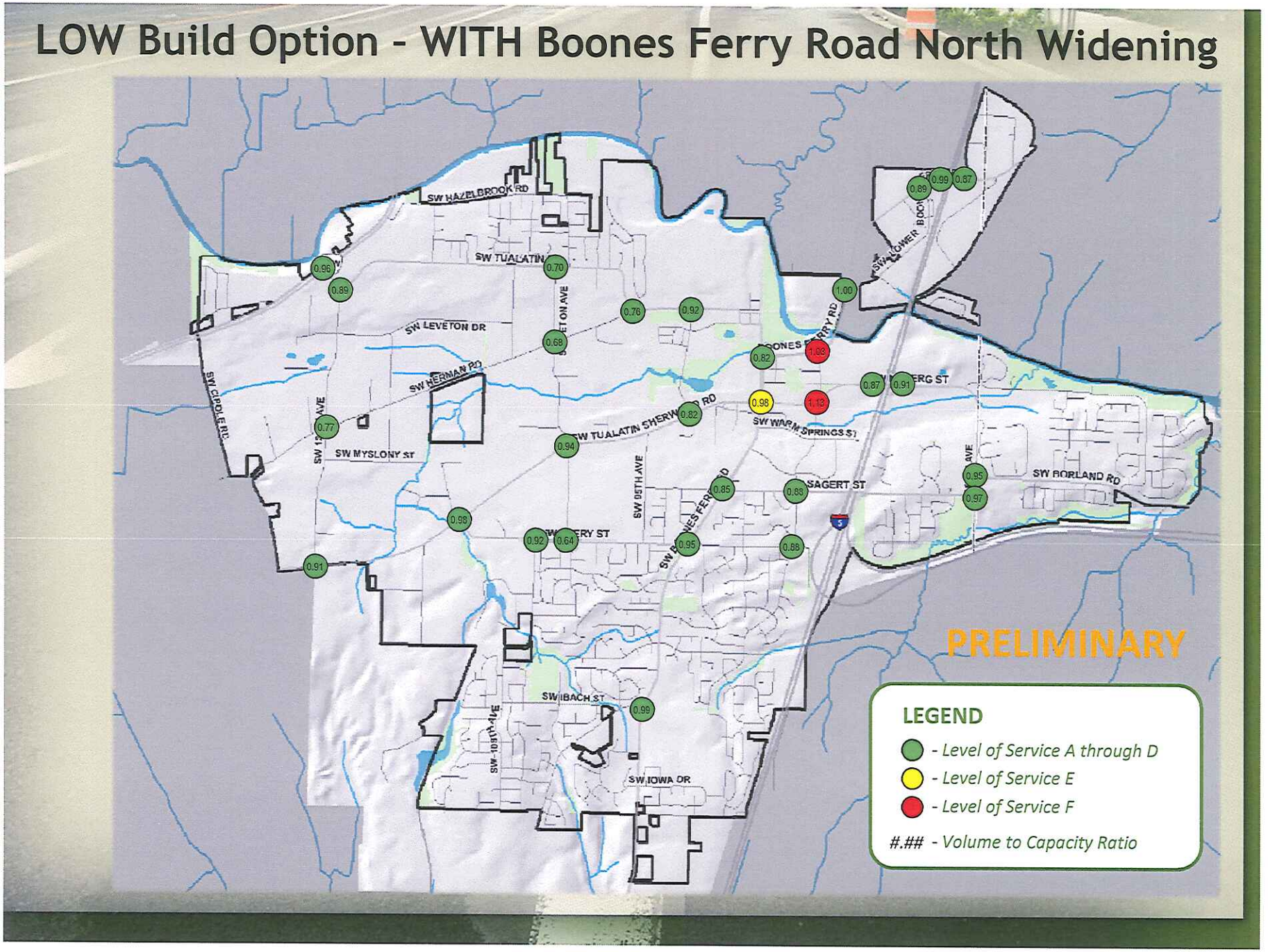
LOW Build Option - WITH 65th Ave Extension and 5 Lane



LOW Build Option - WITH Boones Ferry Road North Widening



LOW Build Option - WITH Boones Ferry Road North Widening



Technical Memorandum

City-Wide Traffic Analysis Results for Roadway Capacity Scenarios

TUALATIN TRANSPORTATION SYSTEM PLAN

PREPARED FOR:	Tualatin Transportation System Plan Project Management Team
PREPARED BY:	Theresa Carr, CH2M HILL Alan Snook, DKS & Associates Mat Dolata, DKS & Associates
COPIES:	Terra Lingley, CH2M HILL Eryn Deeming Kehe, JLA
DATE:	October 17, 2012

This memorandum highlights traffic analysis findings for six roadway infrastructure scenarios prepared for Tualatin's Transportation System Plan (TSP). The purpose is to provide information about the benefits and tradeoffs of various capacity projects being considered in the TSP, with a focus on a possible extension of 65th Avenue to the north and the possible widening of Boones Ferry Road north of Martinazzi. Both of these projects center on a crossing of the Tualatin River: the 65th Avenue extension would be a new crossing, and the Boones Ferry Road widening would be a widening of an existing crossing. This memorandum provides information to support decision makers and the community with finalizing TSP recommendations (fall of 2012). The analysis centers on mobility/access, one of the TSP's seven evaluation categories. The other evaluation categories are: safety, vibrant community, equity, economy, health and the environment, and ability to be implemented.

Information is organized into four sections: (1) project scenarios, which includes descriptions of the six scenarios analyzed; (2) results, which highlights the intersection operations, traffic volumes, and travel time changes associated with each scenario; (3) conclusions and recommendations; and (4) next steps.

Project Scenarios

What follows are descriptions of the six scenarios evaluated in this memo, and a description of the three components of the traffic analysis: (1) intersection level of service, (2) traffic volume shifts, and (3) travel times. Each of these three components reveals something different about overall system performance: from what it feels like to live near a major roadway capacity project, to how much time drivers spend waiting to proceed through an intersection, to what effect a project can have on the total amount of time it takes a driver to cross town.

Six scenarios were analyzed:

1. ***Existing conditions.*** An existing conditions analysis takes into account what drivers experience *today*. It is based on traffic counts collected in October 2011 throughout the City, site visits to

verify intersection geometry and land uses, and observed and recorded travel times (also from fall 2011). Existing conditions lay a solid foundation on which to compare all future scenarios.

2. ***Future "no build."*** This scenario takes into account the projected growth in population and employment in Tualatin and elsewhere over the next 20+ years (Year 2035), assuming the transportation network will remain the same. The only transportation projects are included in this scenario are those with funding and a subset of projects on Metro's fiscally-constrained Regional Transportation Plan (RTP), such as the extension of 124th Avenue south of Tualatin-Sherwood Road. This scenario allows us to consider what congestion concerns might arise in the future.

3. ***Future "low build."***[1] The future "low build" scenario begins with the assumption that there will be "no build" and then adds in those projects that the Tualatin Task Force (TTF) agreed to unanimously during the evaluation and refinement area analysis meetings (May through August 2012). A list of projects included in the "low build" scenario is included below. This scenario does not include any changes to 65th Avenue or Boones Ferry Road north of Martinazzi Avenue.

4. ***Future "low build" with 65th Avenue extension.*** This scenario begins with the "low build" option and then adds an extension of 65th Avenue to the north, from Nyberg Road to the vicinity of Childs Road north of the Tualatin River. This option was analyzed with the assumption that the existing three-lane cross section of 65th Avenue between Nyberg Road and Sagert Street would be retained and the northerly extension would transition to a two-lane cross section over the river, continuing as a two-or three-lane roadway towards Lakeview Boulevard.

5. ***Future "low build" with Boones Ferry Road widening.*** This scenario begins with the "low build" option and then adds a widening of Boones Ferry Road to five lanes north of Martinazzi Avenue. The existing cross section of three lanes would be retained through Tualatin's downtown core.

6. ***Future "low build" with 65th extension and Boones Ferry Road widening.*** This scenario begins with the "low build" option and then adds a widening of Boones Ferry Road to five lanes north of Martinazzi Avenue and an extension of 65th Avenue to the north, from Nyberg Road to the vicinity of Childs Road north of the Tualatin River. This scenario is a combination of Scenarios 4 and 5.

The traffic analysis for each of these scenarios relies on both the traffic counts collected during the fall of 2011 and Metro's regional travel demand model. For each of the scenarios analyzed, major infrastructure improvements were:

(1) Coded into the Metro regional travel demand model;
(2) Post-processed to be calibrated to traffic counts taken for the TSP; and
(3) Analyzed in the Synchro operational analysis software at an intersection-specific scale.

[1] The "low-build" scenario assumes the following projects:

- Tualatin-Sherwood Road as a five lane facility (throughout Tualatin, including widening of Sherwood segment as per Regional Transportation Plan)
- Boones Ferry Road as a three lane facility for entire length
- Herman Road as a two lane facility from Teton Ave to Tualatin Road
- Tualatin Road as a "30 mph" roadway
- Signal at Teton Avenue/Tualatin Road
- Teton Avenue as a three lane road from Herman Road to Avery Street

Intersection Level of Service

An analysis of intersection-level traffic operations helps to understand the driver experience of waiting at specific intersections along the network. The wait can be long, frustrating, and—in some cases—unsafe when traffic volumes are high, when there is a mix of different types of users (e.g., railroad trains, freight trucks, bicycles), or when there are multiple approaches and traffic movements. To mitigate this, traffic engineers work to keep intersection performance within certain congestion thresholds or mobility standards. Mobility standards can vary depending on where the intersection is located, who owns (and therefore controls) it, and its main purpose.

Depending on the location, roadways and intersections are owned and operated by one of three jurisdictions: (1) City of Tualatin, (2) Washington County, or (3) the Oregon Department of Transportation (ODOT). These jurisdictions measure traffic operations in different ways – either by level of service (LOS) or by volume-to-capacity (v/c). These terms are defined below:

- Level of service (LOS): A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in cars waiting through more than one signal cycle to get through an intersection.
- Volume-to-capacity (v/c) ratio: This measure is a range and represents how full an intersection is with vehicles. The ratio is similar to a percentage, for example, if a glass of water were 75 percent full, it would have a v/c ratio of 0.75. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If an intersection reports v/c higher than 1.0, it indicates that volumes are higher than capacity.

The City of Tualatin uses a LOS standard; depending on intersection type, the acceptable standard is either LOS D or LOS E. Washington County and ODOT use a v/c standard, which compares traffic volumes to intersection capacity. Both agencies define the acceptable mobility standard at or under a 0.99 v/c.

The next section of this memorandum compares intersection-level performance with congestion thresholds at these intersections:

1. Along Tualatin-Sherwood Road
    a. Tualatin-Sherwood Road/124th Avenue
    b. Tualatin-Sherwood Road/Boones Ferry Road
    c. Tualatin-Sherwood Road/Martinazzi Avenue
2. Along Boones Ferry Road
    a. Boones Ferry Road/Tualatin-Sherwood Road
    b. Boones Ferry Road/Tualatin Road
    c. Boones Ferry Road/Martinazzi Avenue
    d. Boones Ferry Road/Lower Boones Ferry Road
3. Along 65th Avenue
    a. 65th Avenue/Sagert Street
    b. 65th Avenue/Borland Road
    c. 65th Avenue/Nyberg Road

Shifts in Traffic Volumes from One Roadway to Another

Coding infrastructure improvements into Metro's travel demand model—Step 1 of the analysis process outlined at the top of this page—will provide key outputs that will be helpful in understanding the major trends of specific infrastructure projects. One of those trends is traffic volume shifts. Volume shifts provide an understanding of the scale of activity both at new connections and at the existing connections that are "relieved" by a new one. For example, when a new roadway is added to the network, volume shift diagrams help illustrate the number of trips that involve the new roadway, and—of those trips—how many are new trips versus those that have been diverted from elsewhere in the system. This analysis is only relevant to Scenarios 4-6, as these are the scenarios which introduce one or both of the river crossing projects that could affect traffic routing. Further, volume shifts were only recorded for these key roadways:

- Tualatin Road
- Herman Road
- 99W
- I-5
- Boones Ferry Road
- Tualatin-Sherwood Road
- Martinazzi Avenue
- Sagert Street
- Borland Road
- 65th Avenue
- Nyberg Road

Travel Time

Travel time is one of the most intuitive measures of traffic performance. Drivers know the amount of time it takes to get from one place to another, and the extent to which congestion can change travel times. What follows is a comparison of travel times, for each scenario, between these key north-south and east-west destination pairs:

- Boones Ferry Road
  - Tualatin High School to Bridgeport Village
  - Tualatin High School to Nyberg Interchange
- Tualatin Road
  - 115th/Tualatin to Bridgeport Village
  - 115th/Tualatin to Nyberg Interchange
- Tualatin-Sherwood Road (TSR)
  - TSR/Cipole Road to Bridgeport Village
  - TSR/Cipole Road to Nyberg Interchange
- Borland Road and 65th Avenue
  - Bridgeport Elementary School to Nyberg Interchange
  - Sagert/65th to Bridgeport Village

Results

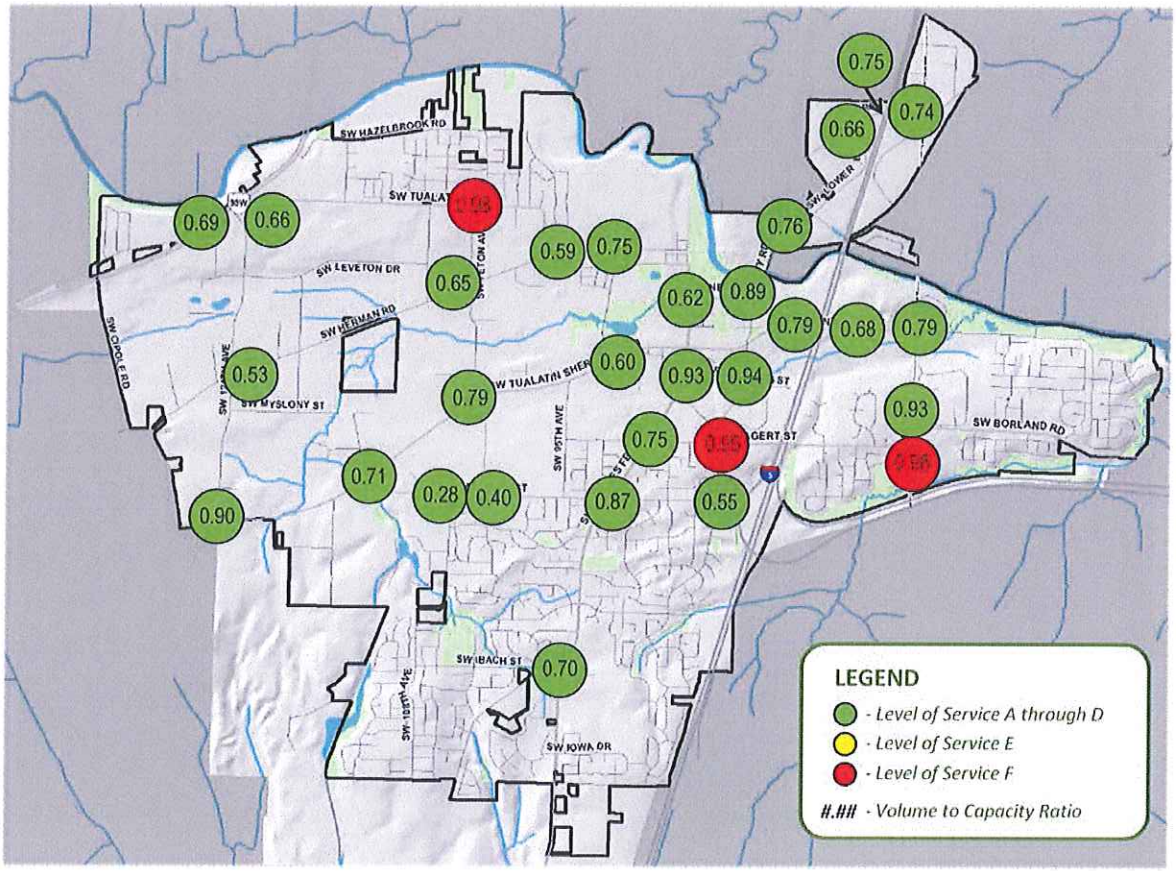
This section includes a description of findings from intersection operations, traffic volume shifts, and travel times for each of the scenarios outlined in the previous section. Appendix A provides the traffic operations results by scenario with and without intersection-level optimizations.

Scenario 1: Existing Conditions

Traffic Operations

Figure 1 shows traffic conditions for all 30 study intersections in Tualatin as of October 2011. It is based on counts collected on weekdays during the morning (7:00 a.m.to 9:00 a.m.) and afternoon (4:00 p.m. to 6:00 p.m.) traffic rush hours. In addition, 24-hour counts were conducted at 11 locations on key roadways in Tualatin to provide an understanding of the fluctuations in traffic throughout the day and night. Figure 1 illustrates the current operations within the City of Tualatin. Green circles indicate the intersection meets City accepted standards and red circles indicate that standards are not met. Numbers within the circles indicate the intersection v/c ratio. Three intersections currently do not meet City accepted standards: (1) Tualatin Road/Teton Road, which performs at an LOS F with a v/c ratio of 0.98, (2) 65th Avenue/Sagert Street, which performs at an LOS F with a v/c ratio of 0.98; and (3) Martinazzi Avenue/Sagert Street, which performs at an LOS F with a v/c ratio of 0.95.

Figure 1. Intersection Operations, Existing Conditions



Travel Times

In addition to intersection and daily volume profiles, the project team collected corridor data related to travel times and speeds during the p.m. peak period. These travel times are recorded in Table 1 below. As can be seen, it takes between 9 and 10 minutes to drive north-south through Tualatin on Boones Ferry Road, and between 11 and 13 minutes to drive east-west through the City on Tualatin-Sherwood Road. These current travel times are compared to various future scenarios in the pages that follow.

TABLE 1
Existing (2011) P.M. Peak Period (4:00 p.m. to 6:00 p.m.) Travel Time Data

Corridor	From	To	Average Travel Time
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	10 min, 20 sec
	Bridgeport Village	Tualatin High School	9 min, 10 sec
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	7 min, 25 sec
	Nyberg Interchange	Tualatin High School	7 min, 5 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	8 min, 35 sec
	Bridgeport Village	115th Avenue	8 min, 30 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	8 minutes
	Nyberg Interchange	115th Avenue	8 min, 40 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	11 min, 40 sec
	Bridgeport Village	Cipole Road	13 minutes
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	8 min, 40 sec
	Nyberg Interchange	Cipole Road	10 min, 10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 10 sec
	Nyberg Interchange	Bridgeport Elementary	2 min, 20 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	9 min, 10 sec
	Bridgeport Village	Bridgeport Elementary	8 min, 25 sec

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

Scenario 2: Future "No Build" (2035)

Traffic Operations

By 2035, there will be much more congestion throughout the network in Tualatin, both along Tualatin-Sherwood Road (intersection with Teton Road, Boones Ferry Road, and Martinazzi Avenue), along Boones Ferry Road (intersections with Lower Boones Ferry Road, Martinazzi Avenue, Tualatin-Sherwood Road, Sagert Road, and Avery Street), along Teton Avenue (intersections with Tualatin Road, Tualatin-Sherwood Road, and Avery Street), and along 65th Avenue (intersections with Borland Road and Sagert Street). Operations are illustrated in Figure 2 below.

Travel Times

Travel times are summarized in Table 2 for the future (Year 2035) "no build" scenario. Travel times in the north-south direction would increase over existing conditions substantially, from between 9 and 10 minutes to between 12 and 15 minutes. Travel time increases would be more dramatic in the east-west direction: from between 11 and 13 minutes to approximately 17 minutes. Table 2 shows the travel time differences between the future no build and existing conditions. In most instances travel times increase by at least one minute. Some locations travel times increase by over 4 minutes – for example between Tualatin High School and Bridgeport Village, between 115th Avenue and Bridgeport Village, and between Bridgeport Village and Cipole Road. One destination pairing (Bridgeport Village to Bridgeport Elementary) saw a travel time increase of 6 minutes.

Figure 2. Intersection Operations, Future (2035) "No Build" Conditions

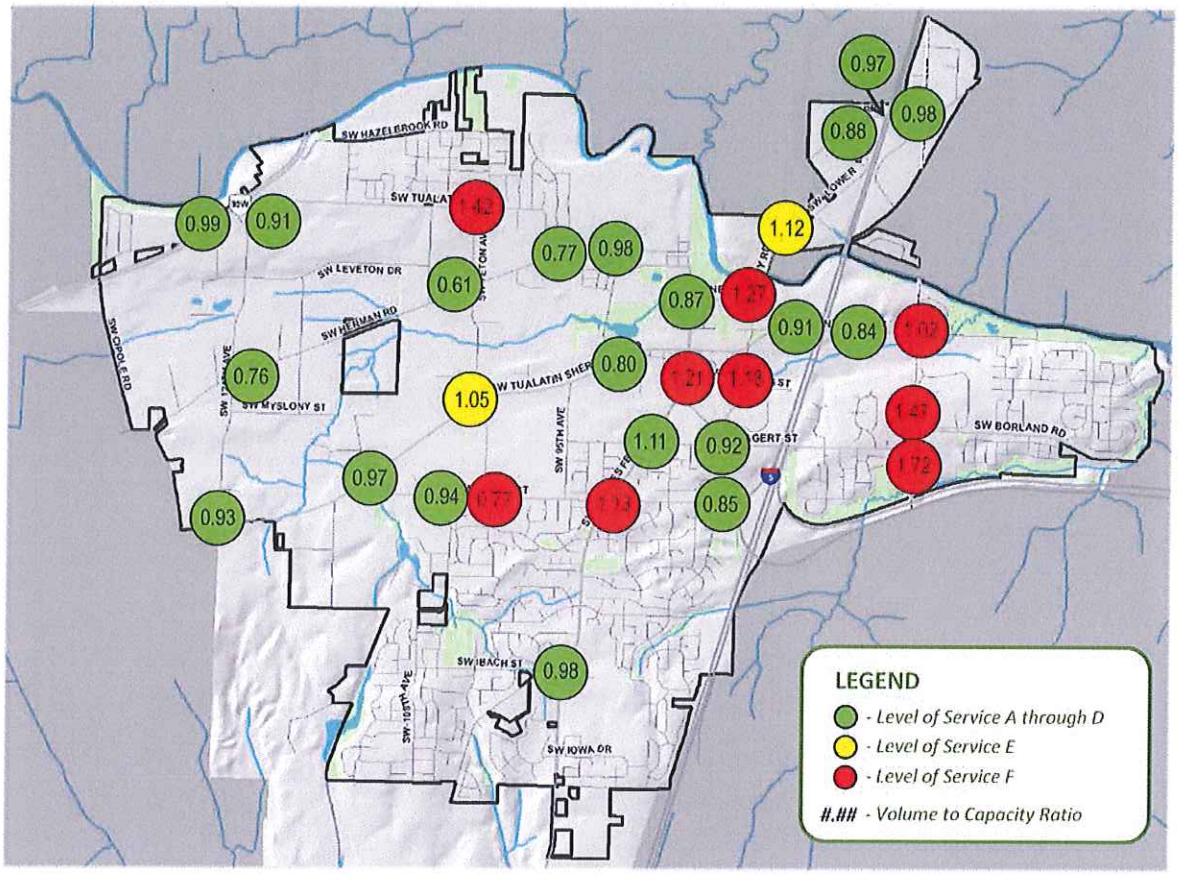


TABLE 2
Future (2035) "No Build" P.M. Peak Period (4:00 p.m. to 6:00 p.m.) Travel Time Data

Corridor	From	To	Average Travel Time	Difference from Existing Conditions
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	+4 min, 45 sec
	Bridgeport Village	Tualatin High School	12 min, 10 sec	+3 min
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	9 min, 40 sec	+2 min, 15 sec
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	+1 min, 5 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	13 minutes	+4 min, 25 sec
	Bridgeport Village	115th Avenue	11 min, 40 sec	+3 min, 10 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	10 min, 35 sec	+2 min, 35 sec
	Nyberg Interchange	115th Avenue	10 min, 25 sec	+1 min, 45 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	+5 min, 20 sec
	Bridgeport Village	Cipole Road	17 min, 20 sec	+ 4min, 20 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	11 minutes 35 sec	+2min, 55 sec
	Nyberg Interchange	Cipole Road	11 min, 50 sec	+1 min, 45 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	+15 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	+1 min, 10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	12 min, 55 sec	+3 min, 45 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	+6 min

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

Scenario 3: Future "Low Build"

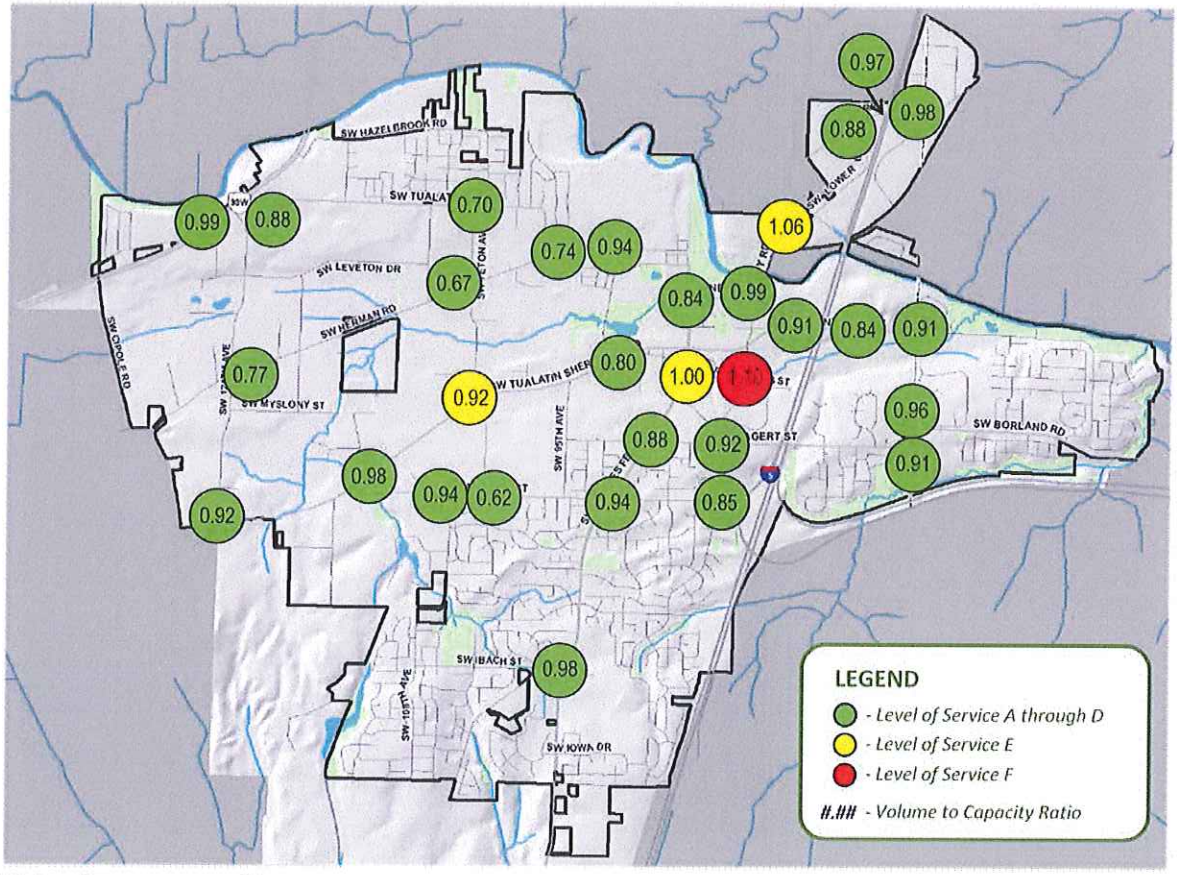
Traffic Operations

As described above, the future "low build" scenario serves as a starting point that represents all of the roadway infrastructure projects agreed to by the Task Force, Planning Commission, Tualatin Parks Advisory Committee, and City Council through the project evaluation and refinement area evaluation phases of the TSP. These include widening Tualatin-Sherwood Road between Cipole and Teton Roads, widening Teton Road to three lanes, and other intersection-specific treatments.

Raw outputs from the traffic model Synchro (as shown in Appendix A) indicate that up to ten study intersections have a v/c higher than 1.0 and/or LOS of F. However, intersections can be optimized to improve performance through one or more of these treatments:

- Signal timing adjustments
- Adding a turn lane in one or two directions (such as an eastbound left-turn lane)
- Restriping an approach lane to allow turn movements from two lanes instead of one
- Restricting a driveway approach to right-in, right-out (only used if traffic volumes entering facility are very low)

Figure 3. Intersection Operations, Future (2035) "Low Build"



With adjustments, traffic operations can improve. As shown in Figure 3, three intersections would operate with v/c at or higher than 1.0; two of these (Boones Ferry Road/Lower Boones Ferry Road and Boones Ferry Road/Tualatin-Sherwood Road) would operate at an LOS E and one (Boones Ferry Road

and Martinazzi Avenue) operates at an LOS F. One additional intersection (Tualatin-Sherwood Road and Teton Avenue) would operate at an LOS E, but meets Washington County standards with a v/c of 0.92.

Travel Times

Travel times are summarized in Table 3 for the future (Year 2035) "low build" scenario.

TABLE 3
Future (2035) "Low Build" P.M. Peak Period (4:00 a.m. to 6:00 p.m.) Travel Time Data

Corridor	From	To	Average Travel Time	Difference from Future No Build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	No difference
	Bridgeport Village	Tualatin High School	12 min, 10 sec	No difference
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	13 min, 30 sec	+30 sec
	Bridgeport Village	115th Avenue	12 minutes	+20 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 50 sec	+25 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	No difference
	Bridgeport Village	Cipole Road	17 min, 25 sec	+5 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	12 min, 50 sec	-5 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	No difference

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

Travel times in the north-south direction would not change from the "no build" condition, and would increase slightly over the "no build" condition in the east-west direction.

Scenario 4: Future "Low Build" with 65th Avenue Extension

Traffic Operations

Scenario 4 is the future "low build" (Scenario 3) with the extension of 65th Avenue to the north over the Tualatin River. Under this scenario, the cross section of 65th Avenue would remain three lanes between Nyberg Road and Sagert Street and then transition to two lanes south of Sagert Street. The northerly extension would involve three lanes transitioning to a two-lane bridge over the Tualatin River, connecting with 65th Avenue in Rivergrove in the vicinity of Childs Road.

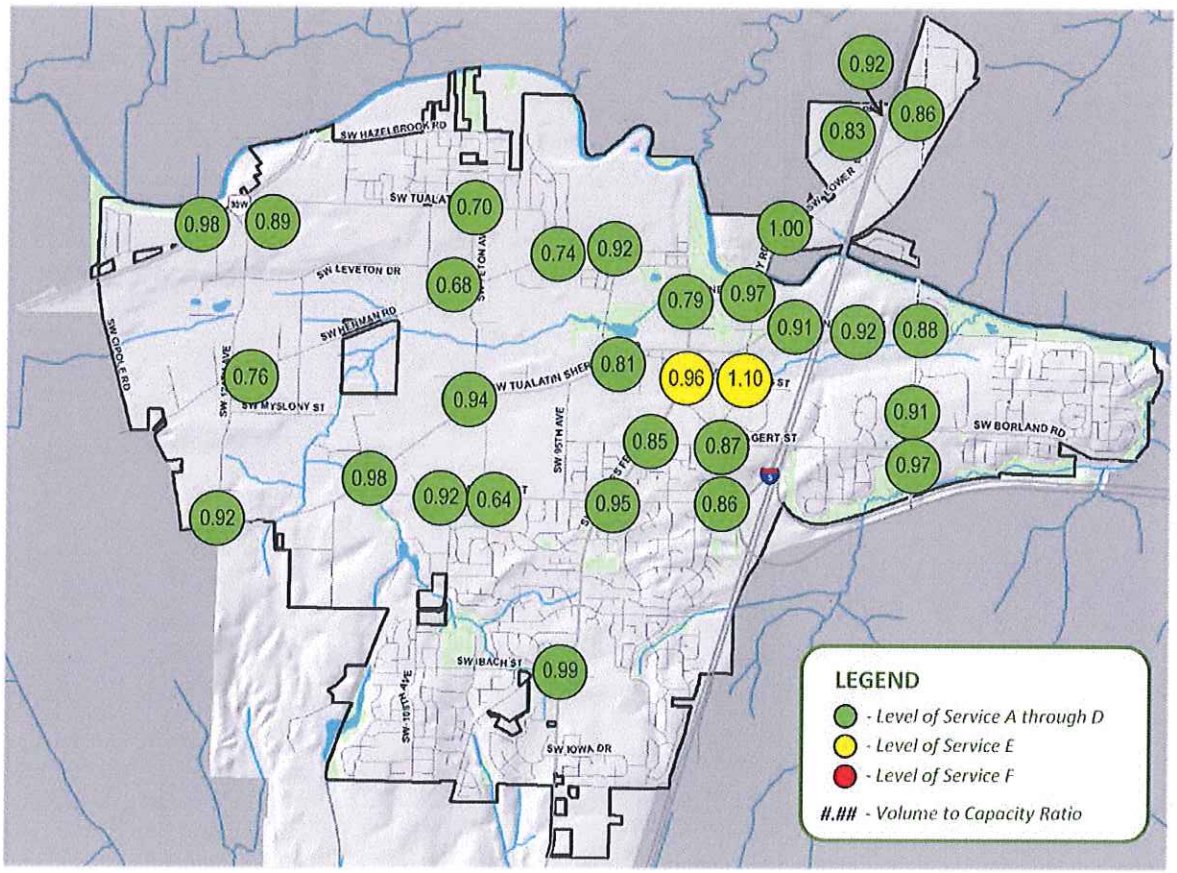
Raw outputs from the traffic model Synchro, as shown in Appendix A, indicate that up to 10 study intersections would have a v/c higher than 1.0 and/or LOS of F. However, when optimized to improve performance, traffic operations would improve. Figure 4 illustrates the traffic operations at all study intersections. Those intersections which show an improvement over the "low build" scenario alone are highlighted in Table 4 below.

TABLE 4
Future (2035) Operational Analysis Comparison between Scenario 3 and Scenario 4

	Scenario 3 ("Low Build")		Scenario 4 ("Low Build" with 65th Extension)	
	LOS	V/C	LOS	V/C
I-5 NB Ramps and SW Lower Boones Ferry Road	D	0.98	C	0.86
I-5 SB Ramps and SW Lower Boones Ferry Road	D	0.97	D	0.92
SW 72nd Avenue and Lower Boones Ferry Road and Bridgeport Road	D	0.88	D	0.83
SW Boones Ferry Road and SW Lower Boones Ferry Road	E	1.12	D	1.00
SW Tualatin Road and SW Boones Ferry Road	C	0.87	C	0.79
SW Boones Ferry Road and SW Tualatin-Sherwood Road	F	1.21	E	0.96

Scenario 4 shows only one intersection (Boones Ferry Road/Martinazzi Avenue) operating with v/c higher than 1.0, and one intersection (Boones Ferry Road/Lower Boones Ferry Road) operates at a v/c of a 1.0. No intersections would operate with an LOS F. Two intersections (Boones Ferry Road/Martinazzi Avenue and Boones Ferry Road/Tualatin-Sherwood Road) would operate at an LOS E. In this scenario, Boones Ferry Road/Tualatin-Sherwood Road would meet Washington County standards with a v/c of 0.96.

Figure 4. Intersection Operations, Future (2035) "Low Build" with 65th Avenue Extension



Traffic Volume Shifts

In this scenario, traffic volumes would shift to 65th Avenue and drivers would use the new crossing between Tualatin and Lake Oswego/Rivergrove. Moderate increases in traffic volumes would occur along 65th Avenue between Nyberg Street and Sagert Street and between Childs Road and Lakeview Boulevard. Minor increases in traffic would occur south of Sagert Street to Norwood Road, along Childs Road, along Sagert Street, and along Nyberg Road east of 65th Avenue. Traffic volumes would decrease along I-5 between the Lower Boones Ferry Road and Nyberg Road interchanges, which indicates that some drivers would take I-5 for short, local trips in this location. Minor to moderate traffic decreases would also occur on Boones Ferry Road between Lower Boones Ferry Road and Sagert Street and along Stafford Road.

Travel Times

Travel times are summarized in Table 5 below for the future (Year 2035) "low build" scenario with an extension of 65th Avenue over the Tualatin River.

TABLE 5
Future (2035) "Low Build" with 65th Avenue Extension P.M. Peak Period (4:00 p.m. to 6:00 p.m.) Travel Time Data

Corridor	From	To	Average Travel Time	Difference from Future "No Build"
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin High School	11 min, 20 sec	-50 sec
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	10 min	+20sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 20 sec	-40 sec
	Bridgeport Village	115th Avenue	11 min, 25 sec	-15 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	11 min, 10 sec	+35 sec
	Nyberg Interchange	115th Avenue	11 min	+35 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	16 min	-1 min
	Bridgeport Village	Cipole Road	16 min 25 sec	-55 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	12 min	+25 sec
	Nyberg Interchange	Cipole Road	12 min, 25 sec	+40 sec
SW Borland Road/65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
SW Borland Road/65th Ave	Bridgeport Elementary	Bridgeport Village	10 min, 40 sec	-2 min, 15 sec
	Bridgeport Village	Bridgeport Elementary	12 min, 10 sec	-2 min, 15 sec

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)

NOTE: All travel times have been rounded to the nearest 5 seconds

Travel times would decrease under this scenario by approximately 1 minute among various destination pairs. This difference is most notable for travel times extending through Tualatin either north-south or east-west. This is due to the fact that the main east-west pairing would actually extend northward along Boones Ferry Road and would benefit from the lower traffic volumes on Boones Ferry Road. In addition, however, travel times between Bridgeport Elementary School near Borland Road and 65th Avenue and Bridgeport Village would decrease by more than 2 minutes in both directions (northbound and southbound).

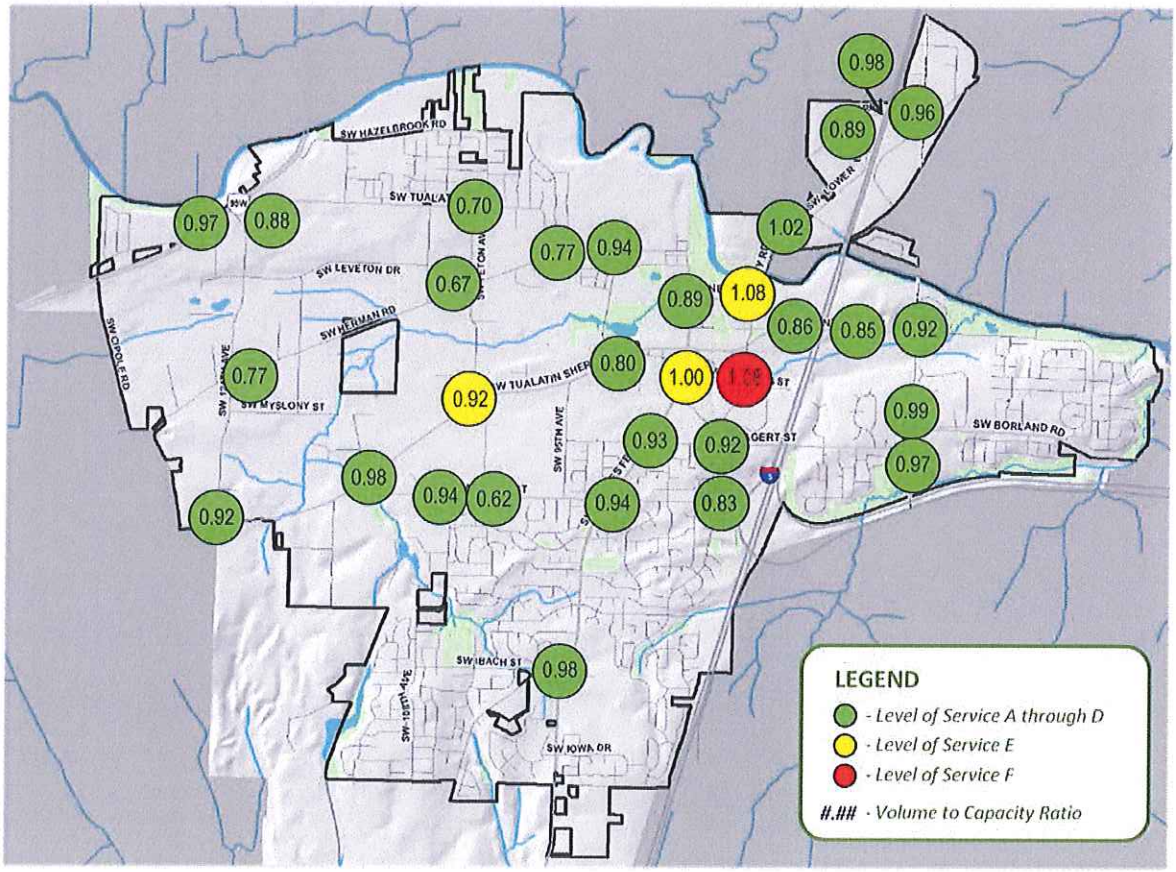
Scenario 5: Future "Low Build" with Boones Ferry Road Widening

Traffic Operations

Scenario 5 is the future "low build" (Scenario 3) with the widening of Boones Ferry Road to five lanes north of Martinazzi Avenue. Under this scenario, the cross section of 65th Avenue would remain three lanes between Nyberg Road and Sagert Street and not be extended north over the Tualatin River. Boones Ferry Road would be widened to a five lane section between Martinazzi at the south and Lower Boones Ferry Road at the north, replacing the existing two lane structure over the Tualatin River with a four lane structure.

Raw outputs from the traffic model Synchro (as shown in Appendix A) indicate that up to 12 study intersections would have a v/c higher than 1.0 and/or LOS of F. However, when optimized to improve performance, traffic operations would improve so that 4 intersections operate at a v/c at or above 1.0. As shown in Figure 5, these are: Boones Ferry Road/Tualatin-Sherwood Road, Martinazzi Avenue/Tualatin-Sherwood Road, Martinazzi Avenue/Boones Ferry Road, and Boones Ferry Road/Lower Boones Ferry Road. In this scenario, Boones Ferry Road/Lower Boones Ferry Road improves slightly but not sufficiently by itself to meet ODOT standards. In addition, conditions worsen at the intersection of Martinazzi/Boones Ferry Road as this intersection represents where the cross section tapers back to its original three lane section through the heart of downtown Tualatin. Additional volumes cause congestion at this intersection.

Figure 5. Intersection Operations, Future "Low Build" with Boones Ferry Road Widening



Another observation is that traffic diverts in this scenario from Tualatin-Sherwood Road to Sagert Street, as it becomes quicker to stay on Boones Ferry Road. This worsens conditions slightly along Sagert Street, as seen at both the Boones Ferry Road and 65th Avenue intersections. However, conditions improve slightly along Tualatin-Sherwood Road between Boones Ferry Road and 65th Avenue.

Traffic Volume Shifts

Widening this segment of Boones Ferry Road diverts trips from I-5 to Boones Ferry Road between the Lower Boones Ferry Road and Tualatin-Sherwood Road interchanges. Shifts are moderate on Boones Ferry Road between Tualatin Road and Lower Boones Ferry Road, and minor north and south of these intersections.

Travel Times

Travel times for Scenario 5 are highlighted in Table 6 below.

TABLE 6
Future (2035) "Low Build" with Boones Ferry Road Widening P.M. Peak Period (4:00 P.M. to 6:00 P.M.) Travel Time Data

Corridor	From	To	Average Travel Times	Difference from Future No Build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin HS	11 min, 30 sec	-40 sec
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin HS	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 30 sec	-30 sec
	Bridgeport Village	115th Avenue	11 min, 20 sec	-20 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 40 sec	+15 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	15 min, 50 sec	-1 min, 10 sec
	Bridgeport Village	Cipole Road	16 min, 40 sec	-40 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Avenue	Bridgeport Elementary	Nyberg Interchange	3 min, 25 sec	+5 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
SW Borland Road / 65th Avenue	Bridgeport Elementary	Bridgeport Village	12 min, 10 sec	-45 sec
	Bridgeport Village	Bridgeport Elementary	13 min, 40 sec	-45 sec

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

The travel time savings associated with this scenario are similar to what is seen under Scenario 4 ("low build" with 65th Avenue extension), with the notable exception of travel times between Bridgeport Elementary School in the vicinity of 65th Avenue / Borland Road and Bridgeport Village. Scenario 4 sees a travel time savings of over 2 minutes due to the extension of 65th Avenue whereas Scenario 5 sees a 45 second travel time increase. Other destination pairings, such as Tualatin High School/ Bridgeport Village, and Cipole Road/Bridgeport Village, see over a 1 minute travel time savings due to the widening of Boones Ferry Road.

Scenario 6: Future "Low Build" with 65th Avenue Extension and Boones Ferry Road Widening

Traffic Operations

Scenario 6 illustrates traffic operations when both Boones Ferry Road is widened north of Martinazzi Avenue and when 65th Avenue is extended northward over the Tualatin River. Raw outputs from the Synchro model show that up to nine intersections operate at a v/c of 1.0 or an LOS of F. However, by implementing such mitigations as signal timing modifications, restriping, and turn pockets at intersections, operations can be improved so that only two intersections (Martinazzi/Tualatin-Sherwood Road and Martinazzi/Boones Ferry Road) would continue to operate within failing conditions. In addition, operations would be much improved at several intersections under this scenario, as shown in the table below.

Although the operations improvements at the intersection of Boones Ferry Road and Tualatin-Sherwood Road would be slight, they would bring the intersection within the 0.99 v/c threshold and are thus reported here. Under this scenario, there would be substantial improvements at the intersection of Boones Ferry Road and Lower Boones Ferry Road and at the intersection of I-5 and Lower Boones Ferry Road, with better mobility from a combination of additional capacity along Boones Ferry Road and an alternate route east of I-5.

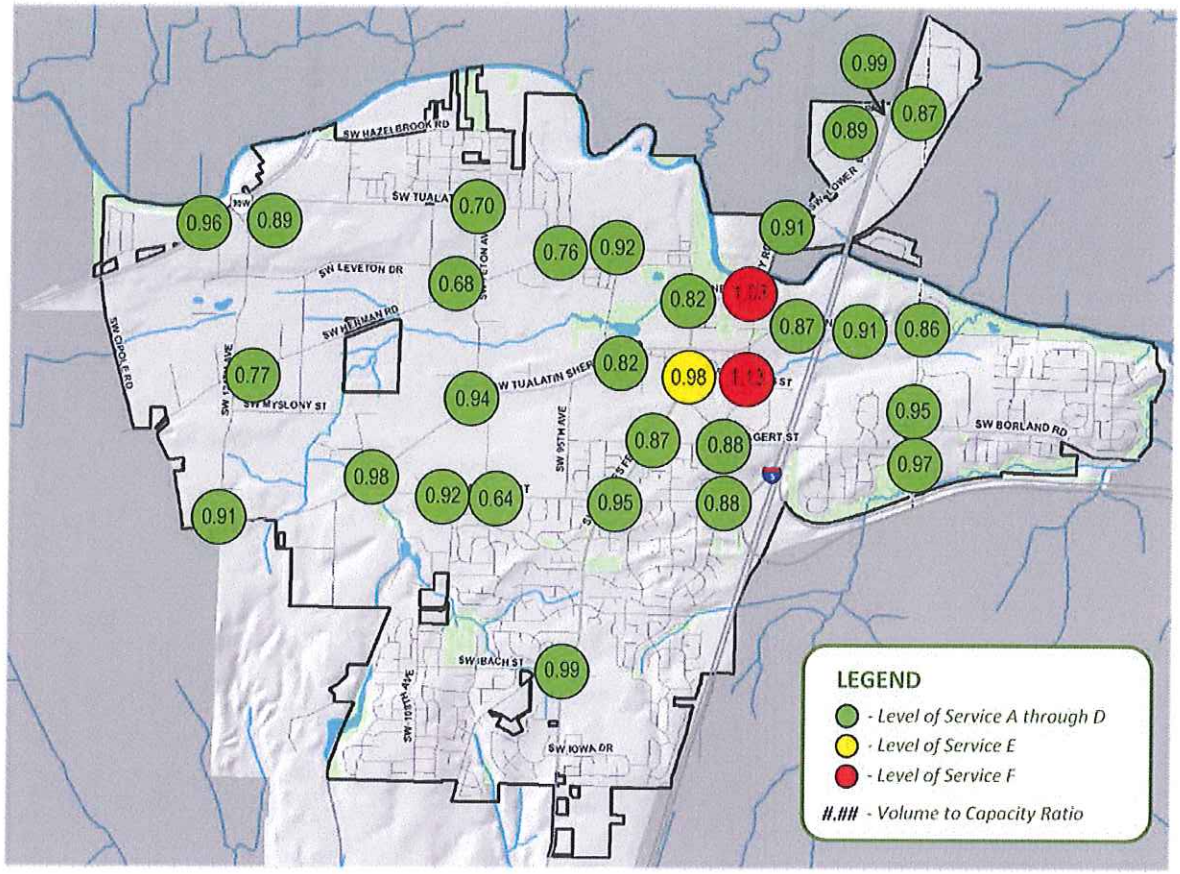
TABLE 7
Future (2035) Operational Analysis Comparison between Scenario 3 and Scenario 6

	Scenario 3 ("Low Build")		Scenario 6 ("Low Build" with 65th Extension and Boones Ferry Road Widening)	
	LOS	V/C	LOS	V/C
Boones Ferry/Tualatin-Sherwood Road	E	1.0	E	0.98
I-5 SB Ramps and Nyberg Road	D	0.91	C	0.87
Boones Ferry Road / Lower Boones Ferry Road	E	1.06	C	0.91
I-5 NB Ramps and Lower Boones Ferry Road	D	0.98	C	0.87
Martinazzi/Sagert	D	0.92	D	0.88
65th/Nyberg	C	0.91	C	0.86

Traffic Volume Shifts

Traffic volumes shift to 65th Avenue under this scenario, though with fewer shifts than under Scenario 4. Moderate increases in traffic volumes would occur along 65th Avenue between Nyberg Street and Sagert Street and between Childs Road and Lakeview Boulevard. Minor increases would continue south of Sagert Street to Norwood Road, along Childs Road, along Sagert Street, and along Nyberg Road east of 65th Avenue. Traffic volumes would decrease along I-5 between the Lower Boones Ferry Road and Nyberg Road interchanges, which indicates that some drivers would take I-5 for short, local trips in this location. Unlike Scenario 4, minor increases would occur on Boones Ferry Road between Lower Boones Ferry Road and Sagert Street, due to the extra capacity along that corridor.

Figure 6. Intersection Operations, Future (2035) "Low Build" with 65th Avenue Extension and Boones Ferry Road Widening



Travel Times

Travel times are summarized in Table 8 below for the future (Year 2035) "low build" scenario with an extension of 65th Avenue over the Tualatin River and a widening of Boones Ferry Road north of Martinazzi.

TABLE 8
Future (2035) "Low Build" with 65th Avenue Extension and Boones Ferry Road Widening P.M. Peak Period (4:00 P.M. to 6:00 P.M.) Travel Time Data

Corridor	From	To	Average Travel Times	Difference from Future No Build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	12 min, 35 sec	-2 min, 30 sec
	Bridgeport Village	Tualatin High School	10 min, 35 sec	-1 min, 35 sec
SW Boones Ferry Road	Tualatin High School	Nyberg Interchange	9 min, 50 sec	+10 sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	11 min, 30 sec	-1 min, 30 sec
	Bridgeport Village	115th Avenue	10 min, 55 sec	-45 sec
SW Tualatin Road	115th Avenue	Nyberg Interchange	11 minutes	+25 sec
	Nyberg Interchange	115th Avenue	10 min, 55 sec	+30 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	14 min, 55 sec	-2 min, 5 sec
	Bridgeport Village	Cipole Road	15 min, 40 sec	-1 min, 40 sec
SW Tualatin-Sherwood Road	Cipole Road	Nyberg Interchange	11 min, 50 sec	+15 sec
	Nyberg Interchange	Cipole Road	12 min, 20 sec	+30 sec
SW Borland Road / 65th	Bridgeport Elementary	Nyberg Interchange	3 min, 30 sec	+10 sec

TABLE 8
Future (2035) "Low Build" with 65th Avenue Extension and Boones Ferry Road Widening P.M. Peak Period (4:00 P.M. to 6:00 P.M.) Travel Time Data

Corridor	From	To	Average Travel Times	Difference from Future No Build
Avenue	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
SW Borland Road / 65th	Bridgeport Elementary	Bridgeport Village	10 min, 25 sec	-2 min, 30 sec
Avenue	Bridgeport Village	Bridgeport Elementary	11 min, 50 sec	-2 min, 35 sec

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)
NOTE: All travel times are rounded to the nearest 5 seconds

Travel time decreases under this scenario would be dramatic for some destination pairings. Between Tualatin High School and Bridgeport Village and between Bridgeport Elementary School and Bridgeport Village, for example, there are travel time savings of greater than 2 minutes. For traffic to and from the west (Tualatin Road, Cipole Road, 115th Avenue), there would be a travel time savings greater than a minute.

Conclusions

Looking at the six scenarios as a whole, we see that Tualatin is somewhat congested now, and becomes very congested in the future. The main roadways of Tualatin-Sherwood Road, Boones Ferry Road, 65th Avenue, Teton Avenue, and SW Avery Street bear the burden of this congestion, as observed in both intersection operations and travel times. In some locations, it is expected to take 6 minutes longer to travel across town than it does today.

The "low build" scenario does a fair job of mitigating intersection level problems. Adding signals, restriping lanes, and adding turn pockets by themselves can move cars more quickly through any given intersection but travel times show that conditions on the roadway sections between intersections remain congested. "Low build" travel times are no different than those seen under future no build.

Scenario 4, which combines the "low build" projects with the 65th Avenue extension, improves both intersection conditions and travel times. Travel time savings are seen for cross-town trips in both the north/south and east/west direction, but are most dramatic in the vicinity of 65th Avenue (between Bridgeport Elementary School and Bridgeport Village), where travel time reductions are in excess of two minutes.

Scenario 5, which combines the "low build" with widening Boones Ferry Road north of Martinazzi, displays similar travel time benefits to Scenario 4 except for this last pairing, which is purely a benefit of the 65th Avenue extension. Scenario 5 maintains much of the intersection level operations as under the "low build" and improves conditions at the Boones Ferry Road/Lower Boones Ferry Road intersection through additional capacity. Conditions at the Boones Ferry Road/Martinazzi Avenue intersection are worsened because this is the location that the roadway transitions back to its existing three lane section.

Scenario 6 intersection operations show that more traffic flows along Boones Ferry Road, but that capacity projects at Boones Ferry Road / Lower Boones Ferry Road accommodate some of this traffic. Operations from Scenario 6 are improved along sections of Tualatin-Sherwood Road, Boones Ferry Road, and along 65th Avenue. Of concern for Scenario 6 are the two Martinazzi intersections (Boones Ferry Road and Tualatin-Sherwood Road) which experience worsened traffic congestion in the afternoon rush hour. When intersection conditions are considered in combination with travel time savings, Scenario 6 benefits Tualatin more than any other scenario. Travel time savings in the north/south and east/west

directions are in excess of 2 minutes (Tualatin High School/Bridgeport Village, Cipole Road/Bridgeport Village, Bridgeport Elementary School/Bridgeport Village).

Next Steps

The Tualatin TSP is available in draft form as all project, program, and policy recommendations have been identified apart from the two river crossings described in this memorandum. At its next meeting, the Transportation Task Force will use the traffic analysis results to make a recommendation on which, if any, river crossing projects should be included in the TSP. This recommendation will then be taken into consideration by the Tualatin Planning Commission, Tualatin Parks Advisory Committee, and City Council as they begin deliberations on the TSP package as a whole.

This page left blank intentionally.

Appendix A: Traffic Operations and Travel Times Data

This page left blank intentionally.

APPENDIX A
PM Peak Hour Intersection Traffic Operations by Scenario (Without Intersection Mitigations)

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 No-Build LOS	2035 No-Build V/C	2035 Low-Build w/out 65th LOS	2035 Low-Build w/out 65th V/C	2035 Low-Build w/out 65th & w/BFR widened LOS	2035 Low-Build w/o 65th & w/BFR widened V/C	2035 Low-Build w/2-lane 65th LOS	2035 Low-Build w/2-lane 65th V/C	2035 Low-Build with 2-lane 65th & w/BFR widened LOS	2035 Low-Build with 2-lane 65th & w/BFR widened V/C
Signalized														
SW 124th Ave & Hwy 99W	ODOT	0.99	C	0.69	D	0.99	D	0.99	D	0.97	D	0.98	D	0.96
SW 124th Ave & SW Tualatin Rd	Tualatin	D	B	0.66	C	0.91	C	0.88	C	0.88	C	0.89	C	0.89
SW 124th Ave & SW Herman Rd	Tualatin	D	C	0.53	C	0.76	C	0.77	C	0.77	C	0.76	C	0.77
SW 124th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.90	C	0.93	C	0.92	C	0.92	C	0.92	C	0.91
SW Avery St & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	B	0.71	D	0.97	D	0.98	D	0.98	D	0.98	D	0.98
SW Teton Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.79	E	1.05	E	1.05	E	1.05	E	1.07	E	1.06
SW 90th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.60	C	0.80	C	0.80	C	0.80	D	0.81	D	0.82
SW Boones Ferry Rd & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.93	F	1.21	F	1.19	F	1.17	F	1.18	F	1.18
SW Martinazzi Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.94	F	1.18	F	1.17	F	1.15	F	1.23	F	1.19
I-5 SB Ramps & SW Nyberg Rd	ODOT	0.99	D	0.79	D	0.91	D	0.91	D	0.86	C	0.91	C	0.87
I-5 NB Ramps & SW Nyberg Rd	ODOT	0.99	B	0.68	C	0.84	C	0.84	C	0.85	C	0.92	C	0.91
SW 65th Ave & SW Borland Rd	Wash. Co.	0.99	D	0.93	F	1.47	F	1.47	F	1.47	F	1.54	F	1.52
SW Teton Ave & SW Herman Rd	Tualatin	D	C	0.65	B	0.61	C	0.67	C	0.67	C	0.68	C	0.68
SW Tualatin Rd & SW Herman Rd	Tualatin	D	B	0.59	B	0.77	B	0.74	B	0.77	B	0.74	B	0.76
SW 90th Ave & SW Tualatin Rd	Tualatin	D	B	0.75	D	0.98	C	0.94	C	0.94	C	0.92	C	0.92
SW Tualatin Rd & SW Boones Ferry Rd	Wash. Co	0.99	B	0.62	C	0.87	C	0.84	C	0.89	C	0.79	C	0.82
SW Martinazzi Ave & SW Boones Ferry Rd	Wash. Co	0.99	D	0.89	F	1.27	F	1.27	F	1.24	F	1.20	F	1.18
SW Boones Ferry Rd & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.76	E	1.12	E	1.12	D	1.05	D	1.00	C	0.91
SW 72nd Ave & Lower Boones Ferry Rd & Bridgeport Rd	Wash. Co	0.99	C	0.66	D	0.88	D	0.88	D	0.89	D	0.83	D	0.89
I-5 SB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.75	D	0.97	D	0.97	D	1.03	D	0.92	D	0.99
I-5 NB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	B	0.74	D	0.98	D	0.98	D	1.00	C	0.86	C	0.87
SW Boones Ferry Rd & SW Avery St	Wash. Co.	0.99	C	0.87	F	1.13	F	1.13	F	1.20	F	1.17	F	1.17
SW Boones Ferry Rd & SW Sagert St	Wash. Co.	0.99	C	0.75	E	1.11	E	1.11	E	1.13	E	1.09	E	1.07
SW Boones Ferry Rd & SW Ibach St	Wash. Co.	0.99	B	0.70	D	0.98	D	0.98	D	0.98	D	0.99	D	0.99
SW 105th Ave & SW Avery St[2]	Tualatin	E	C	0.28	C	0.94	C	0.94	C	0.94	C	0.92	C	0.92
SW Martinazzi Ave & SW Sagert St[3]	Tualatin	E	F	0.95	D	0.92	D	0.92	D	0.93	D	0.87	D	0.88
SW 65th Ave & SW Nyberg Rd	Wash. Co	0.99	B	0.79	D	1.02	D	1.02	D	1.02	F	1.50	F	1.41

[2] Existing Conditions operations evaluated with minor street stop control.
[3] Existing Conditions operations evaluated with minor street stop control. HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the three lanes (one dedicated to each movement) are combined into two: through-right and through-left lanes. Because of this approximation, actual performance may be slightly better than reported above.

APPENDIX A
PM Peak Hour Intersection Traffic Operations by Scenario (Without Intersection Mitigations)

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 No-Build LOS	2035 No-Build V/C	2035 Low-Build w/out 65th LOS	2035 Low-Build w/out 65th V/C	2035 Low-Build w/out 65th & w/BFR widened LOS	2035 Low-Build w/o 65th & w/BFR widened V/C	2035 Low-Build w/2-lane 65th LOS	2035 Low-Build w/2-lane 65th V/C	2035 Low-Build with 2-lane 65th & w/BFR widened LOS	2035 Low-Build with 2-lane 65th & w/BFR widened V/C
All-way Stop-control														
SW Martinazzi Ave & SW Avery St*	Tualatin	E	B	0.55	D	0.85	D	0.85	D	0.83	D	0.86	D	0.88
SW Teton Ave & SW Avery St*	Tualatin	E	C	0.40	F	0.77	F	0.77	F	0.77	F	0.76	F	0.76
SW 65th Ave & SW Sagert St*[4]	Wash. Co.	0.99	F	0.98	F	1.72	F	1.72	F	1.72	F	1.87	F	1.87
*Minor Street Stop-control**														
SW Teton Ave & SW Tualatin Rd	Tualatin	E	F	0.98	F	1.42	B**	0.70**	B**	0.70**	B**	0.70**	B**	0.70**

SOURCE: Consultant Team

*LOS and V/C reported for highest delay movement.

**Evaluated as a traffic signal. Assumes construction of traffic signal.

BOLD and highlighted dark grey text indicates meet minimum performance standard is not met

[4] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the dedicated southbound left turn lane and through lane are combined, due to the relatively small volume on the left turn movement. Because of this approximation, actual performance may be slightly better than reported above.

APPENDIX A
PM Peak Hour Intersection Traffic Operations by Scenario (With Mitigations)

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 No-Build LOS	2035 No-Build V/C	2035 Low-Build LOS	2035 Low-Build V/C	2035 Low-Build w/BFR widened LOS	2035 Low-Build w/BFR widened V/C	2035 Low-Build (w/2-lane 65th) LOS	2035 Low-Build (w/2-lane 65th) V/C	2035 Low-Build 2-lane 65th & w/BFR widened LOS	2035 Low-Build 2 lane 65th & w/BFR widened V/C	Mitigation (identified for Low-Build Scenario w/65th Avenue, unless noted otherwise)
Signalized															
SW 124th Ave & Hwy 99W	ODOT	0.99	C	0.69	D	0.99	D	0.99	D	0.97	D	0.98	D	0.96	
SW 124th Ave & SW Tualatin Rd	Tualatin	D	B	0.66	C	0.91	C	0.88	C	0.88	C	0.89	C	0.89	
SW 124th Ave & SW Herman Rd	Tualatin	D	C	0.53	C	0.76	C	0.77	C	0.77	C	0.76	C	0.77	
SW 124th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.90	C	0.93	C	0.92	C	0.92	C	0.92	C	0.91	
SW Avery St & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	B	0.71	D	0.97	D	0.98	D	0.98	D	0.98	D	0.98	
SW Teton Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.79	E	0.92	E	0.92	E	0.92	D	0.94	D	0.94	Signal Adjustments (Timing and Phasing)
SW 90th Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	C	0.60	C	0.80	C	0.80	C	0.80	D	0.81	D	0.82	
SW Boones Ferry Rd & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.93	E	1.02	E	1.00	E	1.00	E	0.96	E	0.98	EBR, WBR, SBL pockets & Signal Adjustments
SW Martinazzi Ave & SW Tualatin-Sherwood Rd	Wash. Co.	0.99	D	0.94	E	1.11	F	1.10	F	1.08	E	1.10	F	1.13	EBT, NBR pocket, WBR prohibited & Signal Adjustments
I-5 SB Ramps & SW Nyberg Rd	ODOT	0.99	D	0.79	D	0.91	D	0.91	D	0.86	C	0.91	C	0.87	
I-5 NB Ramps & SW Nyberg Rd	ODOT	0.99	B	0.68	C	0.84	C	0.84	C	0.85	C	0.92	C	0.91	
SW 65th Ave & SW Borland Rd	Wash. Co.	0.99	D	0.93	D	0.96	D	0.96	D	0.99	C	0.91	D	0.95	NBR, WBL pocket & Signal Adjustments. Alternative access for EB approach (closed)
SW Teton Ave & SW Herman Rd	Tualatin	D	C	0.65	B	0.61	C	0.67	C	0.67	C	0.68	C	0.68	
SW Tualatin Rd & SW Herman Rd	Tualatin	D	B	0.59	B	0.77	B	0.74	B	0.77	B	0.74	B	0.76	
SW 90th Ave & SW Tualatin Rd	Tualatin	D	B	0.75	D	0.98	C	0.94	C	0.94	C	0.92	C	0.92	
SW Tualatin Rd & SW Boones Ferry Rd	Wash. Co	0.99	B	0.62	C	0.87	C	0.84	C	0.89	C	0.79	C	0.82	
SW Martinazzi Ave & SW Boones Ferry Rd	Wash. Co	0.99	D	0.89	D	0.99	D	0.99	E	1.08	D	0.97	F	1.03	Widen BFR east to create 2 EB entry lanes. Alternative access for SB approach (closed.) Restripe lanes & Signal adjustments.
SW Boones Ferry Rd & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.76	E	1.06	E	1.06	D	1.02	D	1.00	C	0.91	RIRO on EB approach including prohibiting NBL.
SW 72nd Ave & Lower Boones Ferry Rd & Bridgeport Rd	Wash. Co	0.99	C	0.66	D	0.88	D	0.88	D	0.89	D	0.83	D	0.89	
I-5 SB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	C	0.75	D	0.97	D	0.97	D	0.98	D	0.92	D	0.99	
I-5 NB Ramps & SW Lower Boones Ferry Rd	ODOT	0.99	B	0.74	D	0.98	D	0.98	D	0.96	C	0.86	C	0.87	
SW Boones Ferry Rd & SW Avery St	Wash. Co.	0.99	C	0.87	D	0.94	D	0.94	D	0.94	D	0.95	D	0.95	EBR, SBR pockets & Signal Adjustments (Timing and Phasing)
SW Boones Ferry Rd & SW Sagert St	Wash. Co.	0.99	C	0.75	D	0.88	D	0.88	D	0.93	D	0.85	D	0.87	NBR pocket & Signal Adjustments (Timing and Phasing)
SW Boones Ferry Rd & SW Ibach St	Wash. Co.	0.99	B	0.70	D	0.98	D	0.98	D	0.98	D	0.99	D	0.99	
SW 105th Ave & SW Avery St[5]	Tualatin	E	C	0.28	C	0.94	C	0.94	C	0.94	C	0.92	C	0.92	
SW Martinazzi Ave & SW Sagert St[6]	Tualatin	E	F	0.95	D	0.92	D	0.92	D	0.92	D	0.87	D	0.88	

[5] Existing Conditions operations evaluated with minor street stop control.

APPENDIX A
PM Peak Hour Intersection Traffic Operations by Scenario (With Mitigations)

Intersection	Jurisdiction	Minimum Standard	2011 LOS	2011 V/C	2035 No-Build LOS	2035 No-Build V/C	2035 Low-Build LOS	2035 Low-Build V/C	2035 Low-Build w/BFR widened LOS	2035 Low-Build w/BFR widened V/C	2035 Low-Build (w/2-lane 65th) LOS	2035 Low-Build (w/2-lane 65th) V/C	2035 Low-Build 2-lane 65th & w/BFR widened LOS	2035 Low-Build 2 lane 65th & w/BFR widened V/C	**Mitigation** (identified for Low-Build Scenario w/65th Avenue, unless noted otherwise)
SW 65th Ave & SW Nyberg Rd	Wash. Co	0.99	B	0.79	C	0.91	C	0.91	C	0.92	C	0.88	C	0.86	Signal timing adjustments.
All-way Stop-control															
SW Martinazzi Ave & SW Avery St*	Tualatin	E	B	0.55	D	0.85	D	0.85	D	0.83	D	0.86	D	0.88	
SW Teton Ave & SW Avery St*	Tualatin	E	C	0.40	F	0.77	B**	0.62**	B**	0.62**	B**	0.64**	B**	0.64**	Traffic Signal
SW 65th Ave & SW Sagert St*[7]	Wash. Co.	0.99	F	0.98	D**	0.91**	D**	0.91**	D**	0.97**	D**	0.97**	D**	0.97**	**Traffic Signal & Restripe (NBL, EBL). Alternate access for WB approach (closed)**
*Minor Street Stop-control**															
SW Teton Ave & SW Tualatin Rd	Tualatin	E	F	0.98	F	1.42	B**	0.70**	B**	0.70**	B**	0.70**	B**	0.70**	Traffic Signal (assumed in Low-Build)

SOURCE: Consultant Team

*LOS and V/C reported for highest delay movement.

**Evaluated as a traffic signal. Assumes construction of traffic signal.

BOLD and highlighted darker grey text indicates meet minimum performance standard is not met

[6] Existing Conditions operations evaluated with minor street stop control. HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the three lanes (one dedicated to each movement) are combined into two: through-right and through-left lanes. Because of this approximation, actual performance may be slightly better than reported above.

[7] HCM Methodology does not account for a three-lane approach for an all way stop (as exists for the southbound approach.) To estimate LOS and V/C for the intersection the dedicated southbound left turn lane and through lane are combined, due to the relatively small volume on the left turn movement. Because of this approximation, actual performance may be slightly better than reported above.

2035 PM Peak Travel Time Comparison by Scenario (minutes)

Corridor	From	To	Existing (2011)	No-Build (2035)	Low-Build	Low-Build w/ Boones Ferry Rd. Widening	Low-Build w/ 65th Extension	Low-Build w/65th Extension & Boones Ferry Rd. Widening
SW Boones Ferry Road	Tualatin HS	Bridgeport Village	10.3	15.1	15.1	13.7	13.7	12.6
	Bridgeport Village	Tualatin HS	9.2	12.2	12.2	11.5	11.3	10.6
SW Boones Ferry Road	Tualatin HS	Nyberg Interchange	7.4	9.7	9.7	9.7	10.0	9.8
	Nyberg Interchange	Tualatin HS	7.1	8.2	8.2	8.2	8.4	8.4
SW Tualatin Road	115th Ave	Bridgeport Village	8.6	13.0	13.5	12.5	12.3	11.5
	Bridgeport Village	115th Ave	8.5	11.7	12.0	11.3	11.4	10.9
SW Tualatin Road	115th Ave	Nyberg Interchange	8.0	10.6	10.9	10.9	11.2	11.0
	Nyberg Interchange	115th Ave	8.7	10.4	10.8	10.7	11.0	10.9
SW Tualatin-Sherwood Road	Cipole Rd	Bridgeport Village	11.7	17.0	17.0	15.8	16.0	14.9
	Bridgeport Village	Cipole Rd	13.0	17.3	17.4	16.7	16.4	15.7
SW Tualatin-Sherwood Road	Cipole Rd	Nyberg Interchange	8.7	11.6	11.6	11.6	12.0	11.8
	Nyberg Interchange	Cipole Rd	10.1	11.8	12.0	12.0	12.4	12.3
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3.1	3.3	3.3	3.4	3.3	3.5
	Nyberg Interchange	Bridgeport Elementary	2.3	3.5	3.5	3.5	3.5	3.5
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	9.2	12.9	12.8	12.2	10.7	10.4
	Bridgeport Village	Bridgeport Elementary	8.4	14.4	14.4	13.7	12.2	11.8

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)

2035 PM Peak Travel Time Comparison by Scenario (Percent Change Relative to No-Build Scenario)

Corridor	From	To	Low-Build	Low-Build w/ Boones Ferry Rd. Widening	Low-Build w/ 65th Extension	Low-Build w/ 65th Extension & w/ Boones Ferry Rd. Widening
SW Boones Ferry Road	Tualatin HS	Bridgeport Village	0%	-10%	-9%	-16%
	Bridgeport Village	Tualatin HS	0%	-5%	-8%	-13%
SW Boones Ferry Road	Tualatin HS	Nyberg Interchange	0%	0%	3%	1%
	Nyberg Interchange	Tualatin HS	0%	0%	3%	2%
SW Tualatin Road	115th Ave	Bridgeport Village	3%	-4%	-5%	-12%
	Bridgeport Village	115th Ave	2%	-3%	-3%	-7%
SW Tualatin Road	115th Ave	Nyberg Interchange	3%	3%	6%	4%
	Nyberg Interchange	115th Ave	4%	3%	6%	5%
SW Tualatin-Sherwood Road	Cipole Rd	Bridgeport Village	0%	-7%	-6%	-13%
	Bridgeport Village	Cipole Rd	1%	-4%	-5%	-9%
SW Tualatin-Sherwood Road	Cipole Rd	Nyberg Interchange	0%	0%	4%	2%
	Nyberg Interchange	Cipole Rd	2%	1%	4%	4%
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	0%	1%	0%	4%
	Nyberg Interchange	Bridgeport Elementary	0%	0%	1%	0%
SW Borland Road / 65th Ave	Bridgeport Elementary	Bridgeport Village	0%	-5%	-16%	-19%
	Bridgeport Village	Bridgeport Elementary	0%	-5%	-15%	-18%

SOURCE: All Traffic Data, November 2011 (Existing), Metro Travel Demand Forecast Model (2035)

City of Tualatin

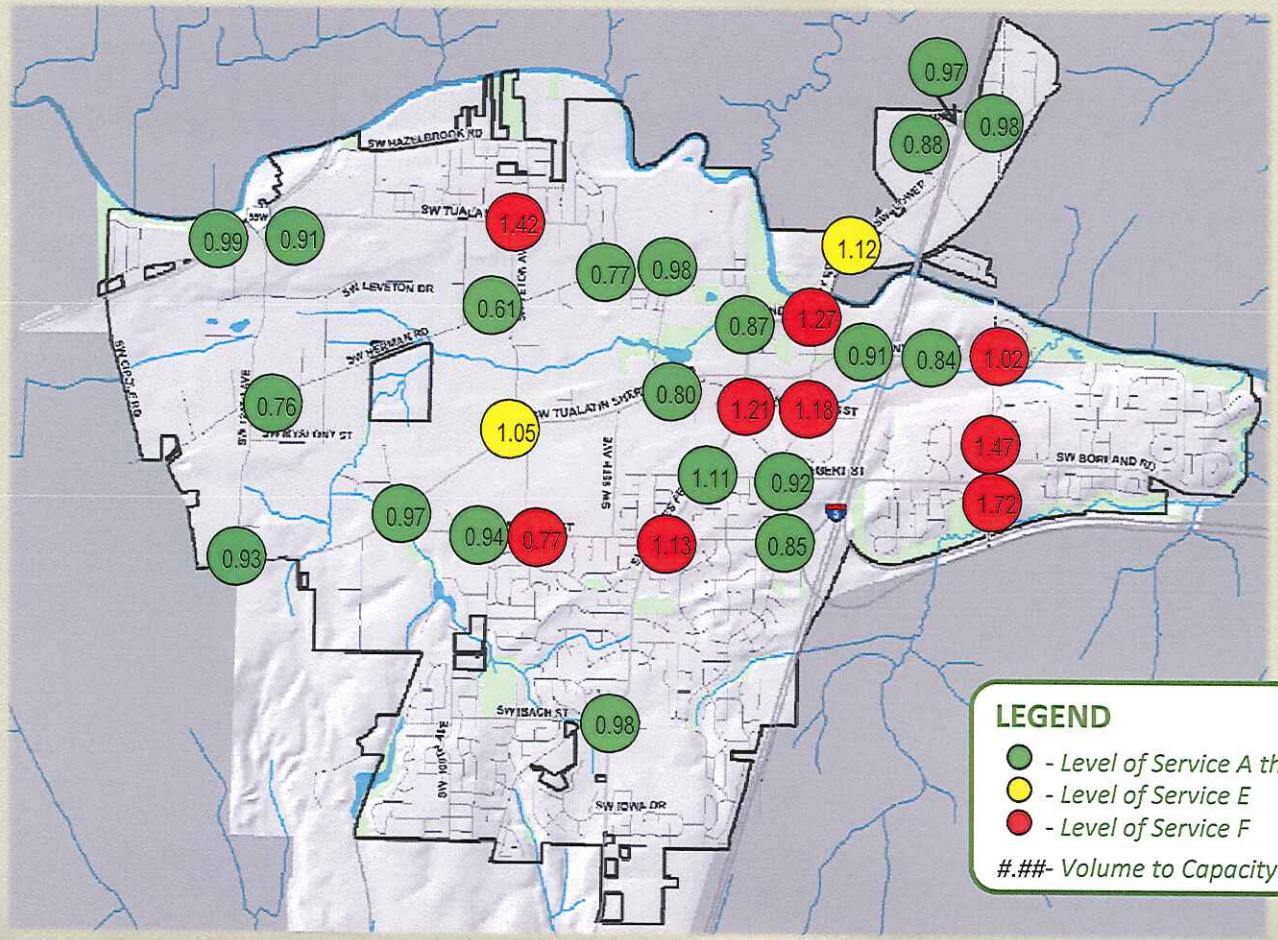
Overview of Traffic Analysis

Tualatin TSP

Presentation to
Tualatin Task Force
November 1, 2012

TualatinTSP_TBG061511105413SPDX 422992.PS.C1.HWng6/15/2011 kk

No-build Operations

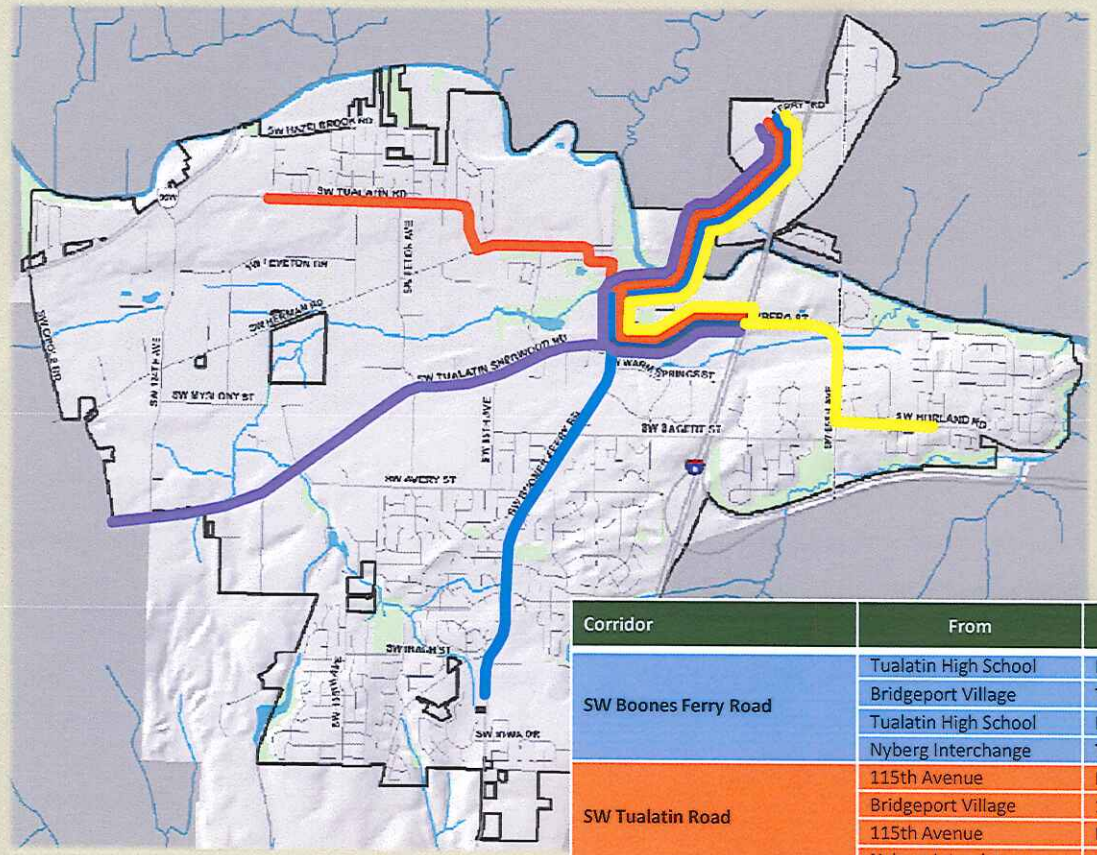


LEGEND

- *Level of Service A through D*
- *Level of Service E*
- *Level of Service F*

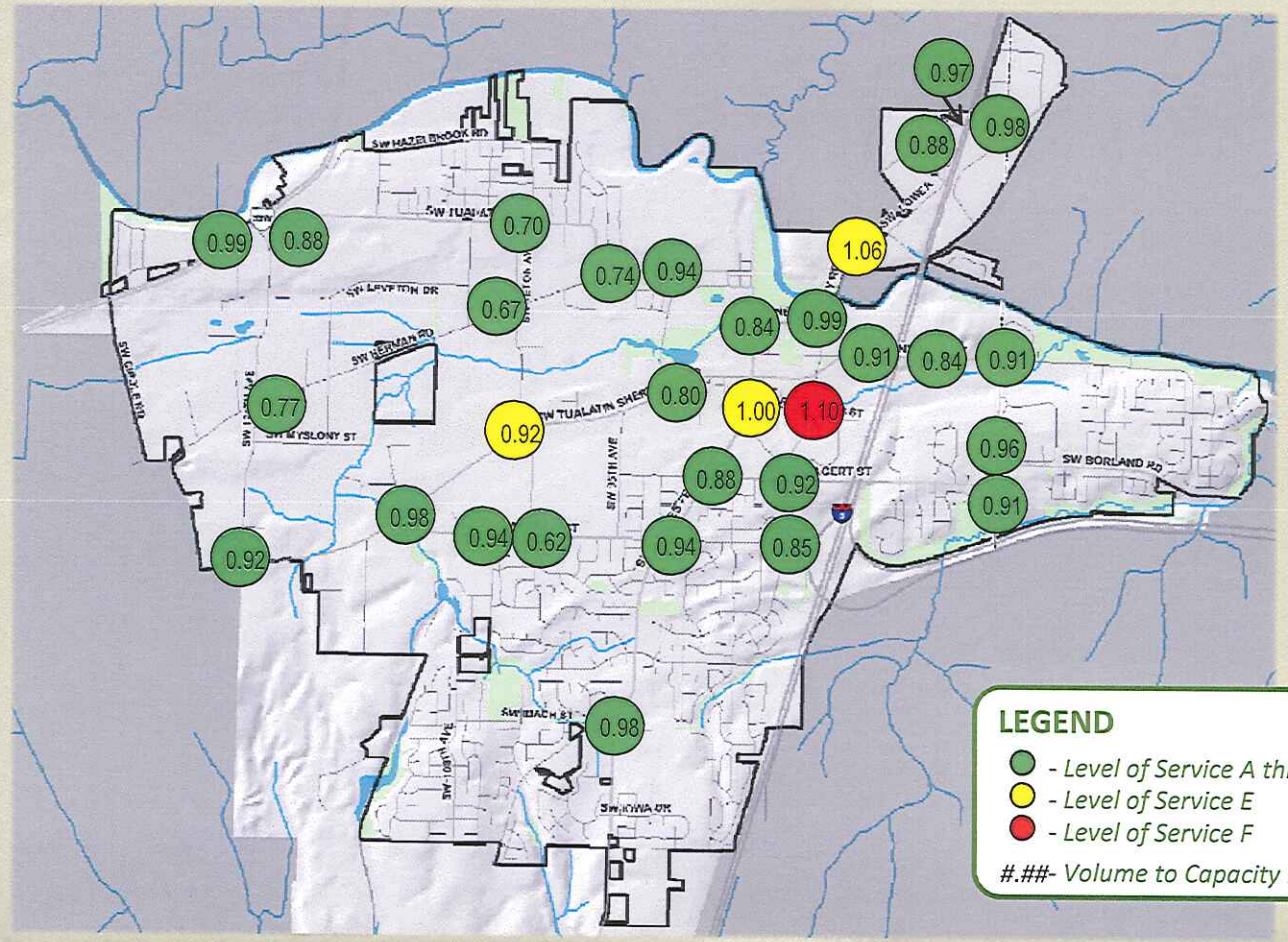
#.##- Volume to Capacity Ratio

No-build Travel Times

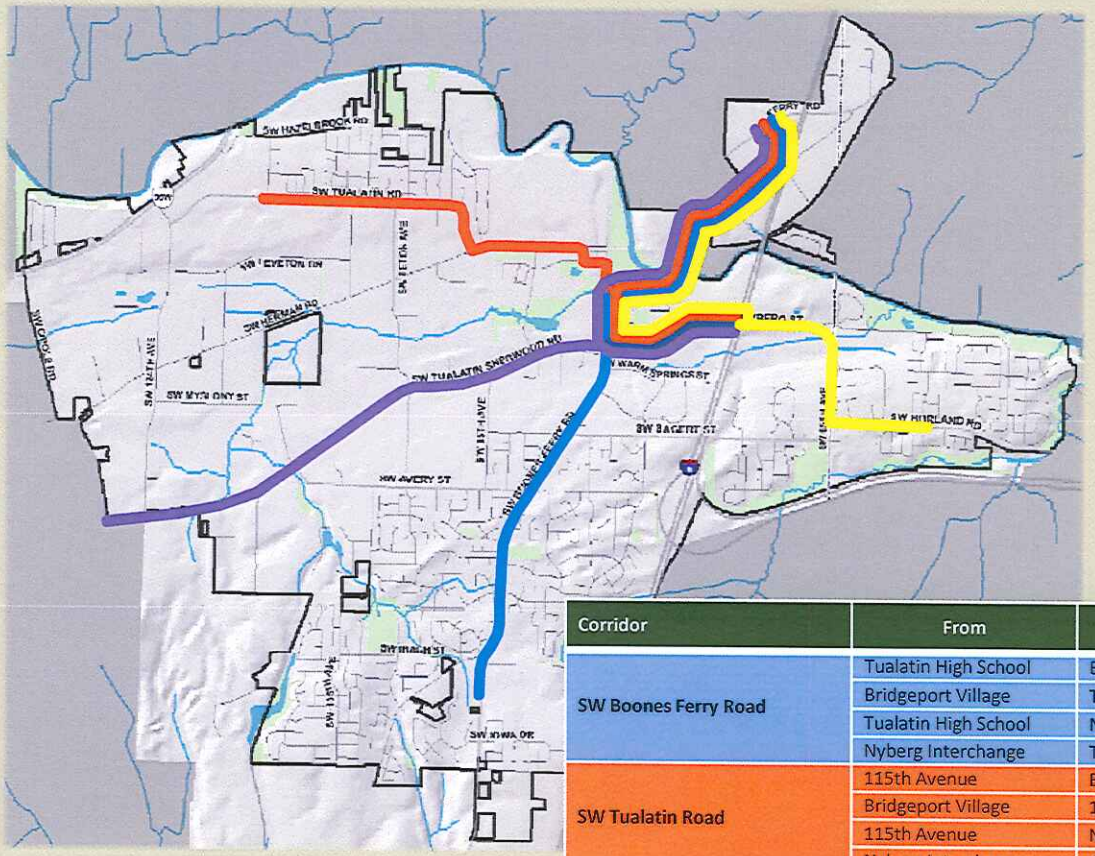


Corridor	From	To	Average Travel Time	Difference from Existing Conditions
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	+4 min, 45 sec
	Bridgeport Village	Tualatin High School	12 min, 10 sec	+3 min
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	+2 min, 15 sec
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	+1 min, 5 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	13 minutes	+4 min, 25 sec
	Bridgeport Village	115th Avenue	11 min, 40 sec	+3 min, 10 sec
	115th Avenue	Nyberg Interchange	10 min, 35 sec	+2 min, 35 sec
	Nyberg Interchange	115th Avenue	10 min, 25 sec	+1 min, 45 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	+5 min, 20 sec
	Bridgeport Village	Cipole Road	17 min, 20 sec	+ 4min, 20 sec
	Cipole Road	Nyberg Interchange	11 minutes 35 sec	+2min, 55 sec
	Nyberg Interchange	Cipole Road	11 min, 50 sec	+1 min, 45 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	+15 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	+1 min, 10 sec
	Bridgeport Elementary	Bridgeport Village	12 min, 55 sec	+3 min, 45 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	+6 min

Low Build Operations

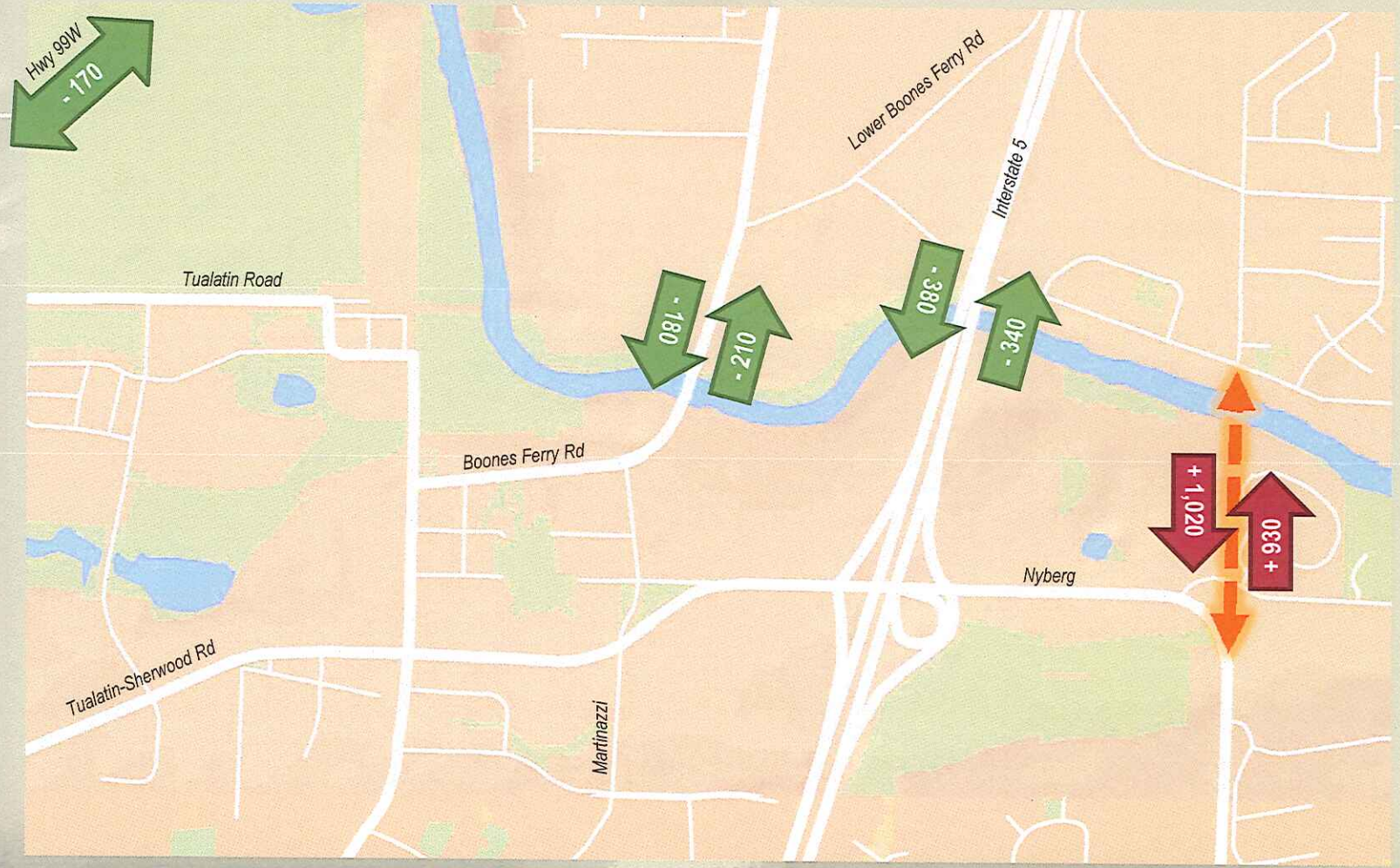


Low Build Travel Times

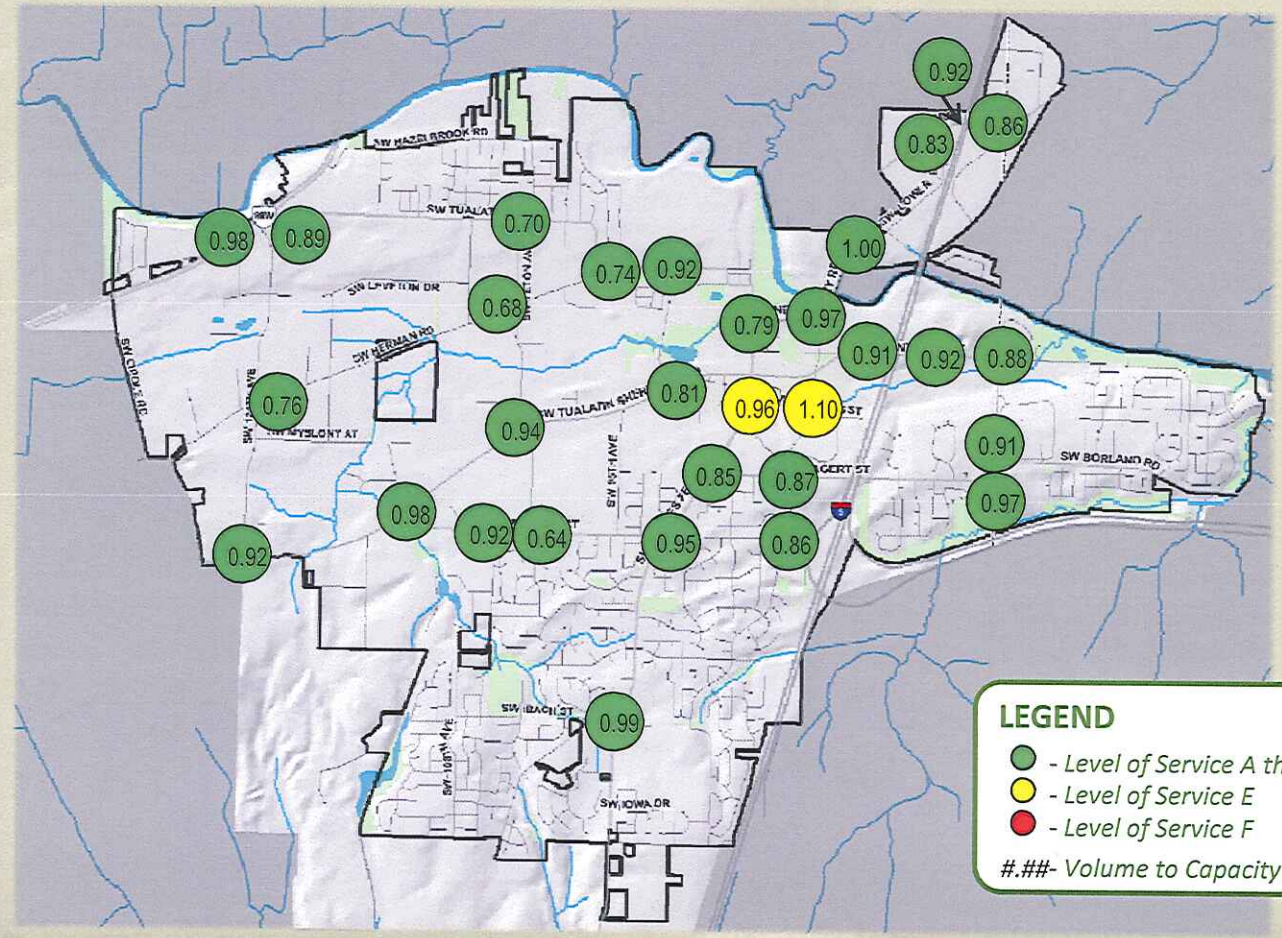


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	No difference
	Bridgeport Village	Tualatin High School	12 min, 10 sec	No difference
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	13 min, 30 sec	+30 sec
	Bridgeport Village	115th Avenue	12 minutes	+20 sec
	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 50 sec	+25 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	No difference
	Bridgeport Village	Cipole Road	17 min, 25 sec	+5 sec
	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	12 min, 50 sec	-5 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	No difference

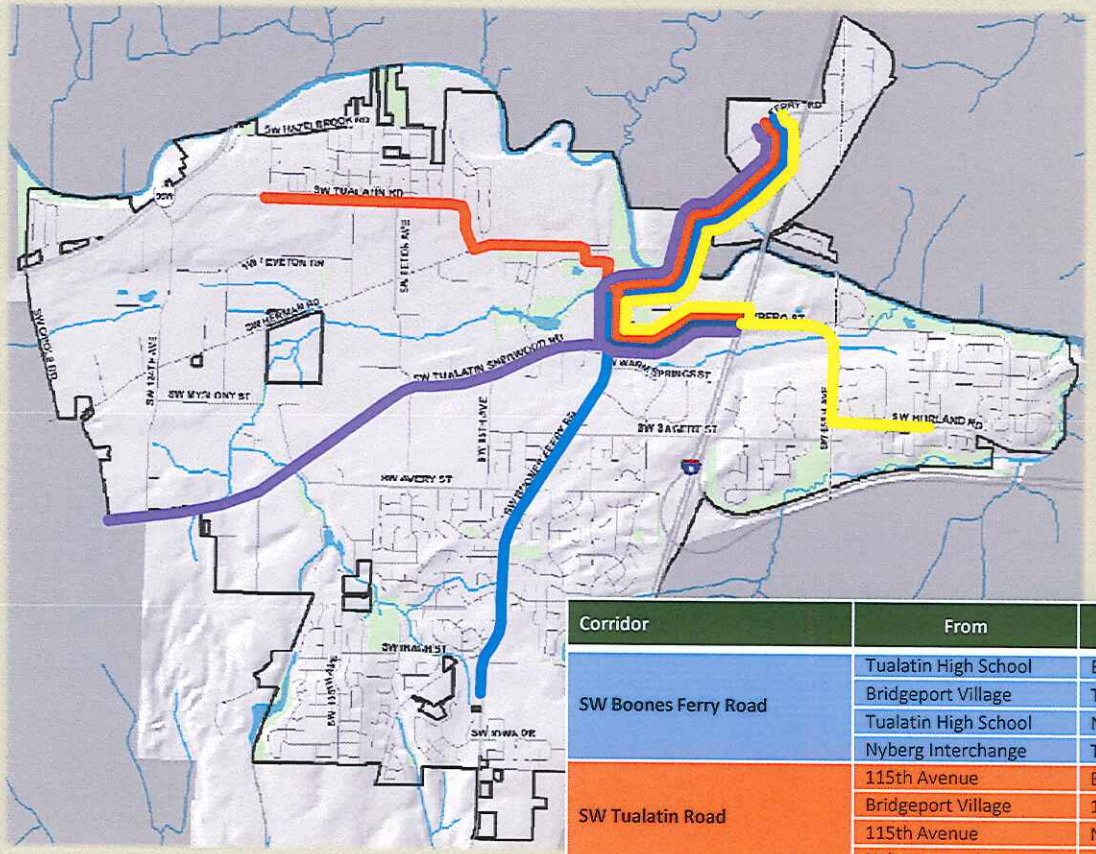
Low Build + 65th Ave Extension Volume Shifts



Low Build + 65th Ave Extension Operations

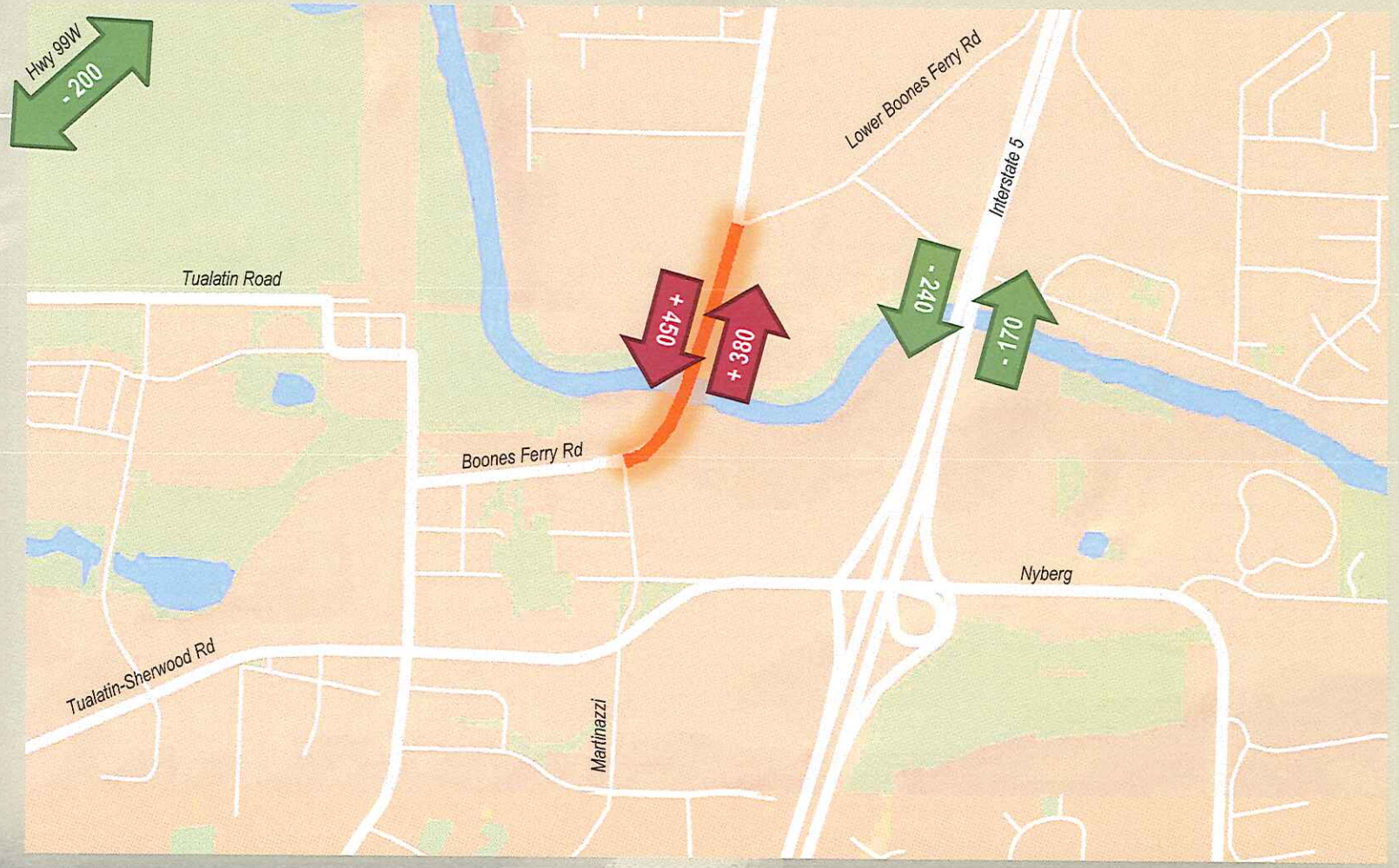


Low Build + 65th Ave Extension Travel Times

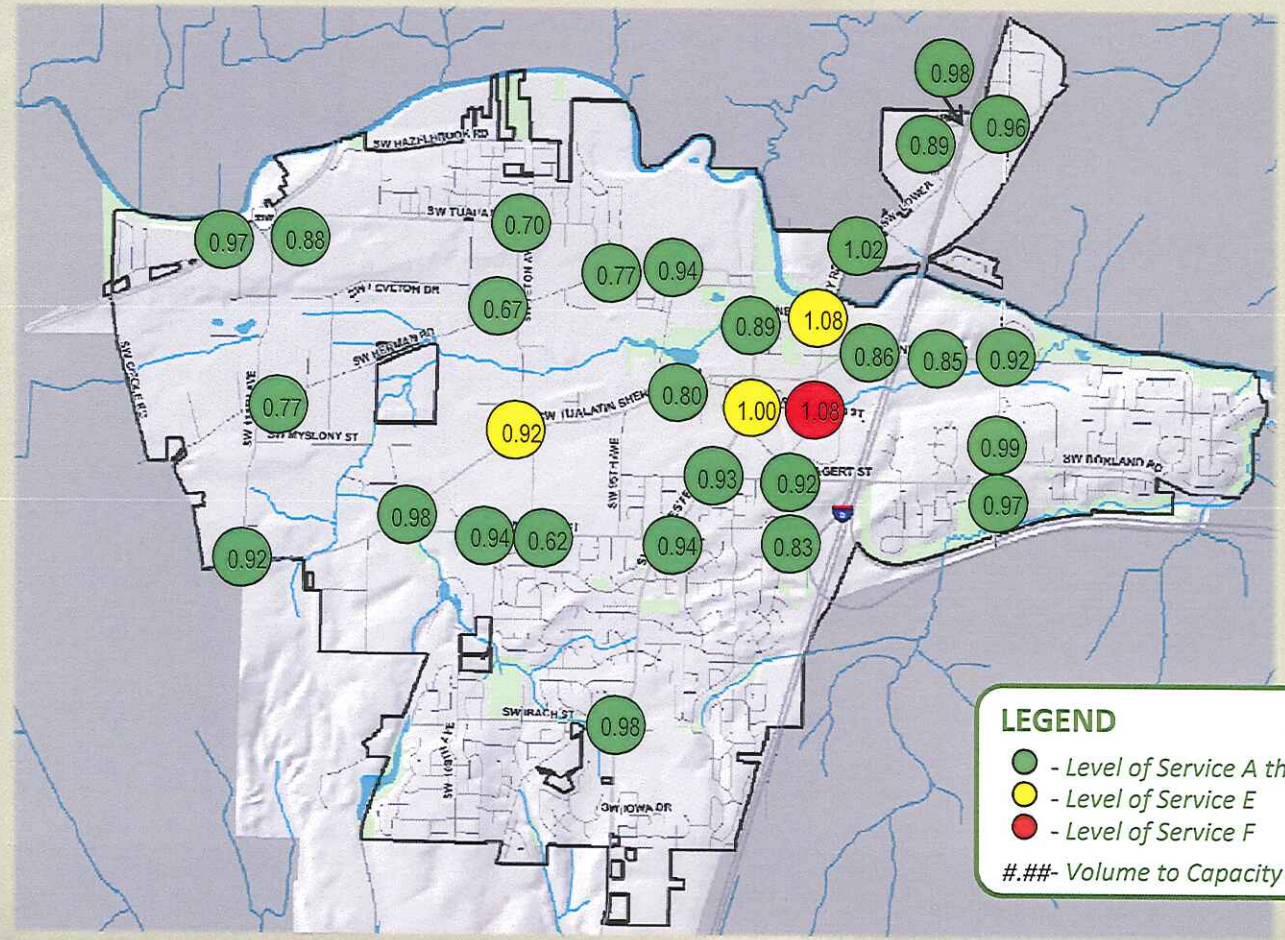


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin High School	11 min, 20 sec	-50 sec
	Tualatin High School	Nyberg Interchange	10 min	+20sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 20 sec	-40 sec
	Bridgeport Village	115th Avenue	11 min, 25 sec	-15 sec
	115th Avenue	Nyberg Interchange	11 min, 10 sec	+35 sec
	Nyberg Interchange	115th Avenue	11 min	+35 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	16 min	-1 min
	Bridgeport Village	Cipole Road	16 min 25 sec	-55 sec
	Cipole Road	Nyberg Interchange	12 min	+25 sec
	Nyberg Interchange	Cipole Road	12 min, 25 sec	+40 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	10 min, 40 sec	-2 min, 15 sec
	Bridgeport Village	Bridgeport Elementary	12 min, 10 sec	-2 min, 15 sec

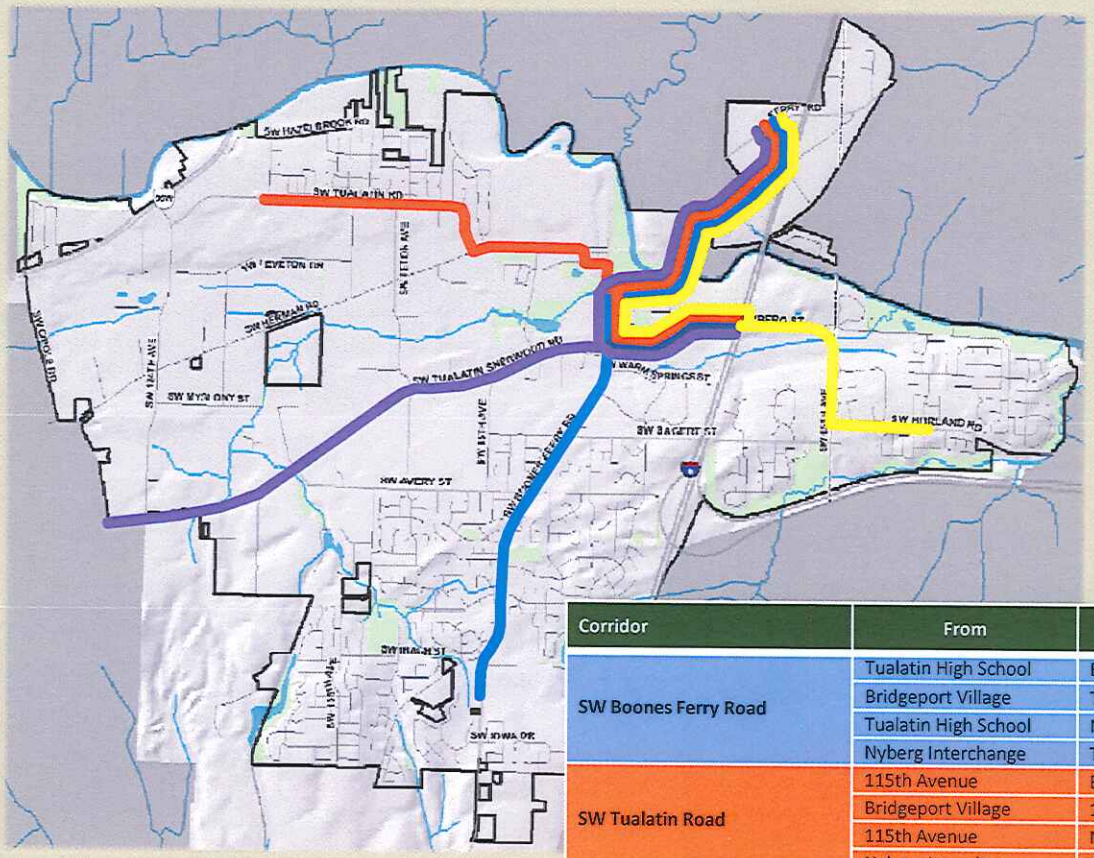
Low Build + Boones Ferry Road Widening Volume Shifts



Low Build + Boones Ferry Road Widening Operations

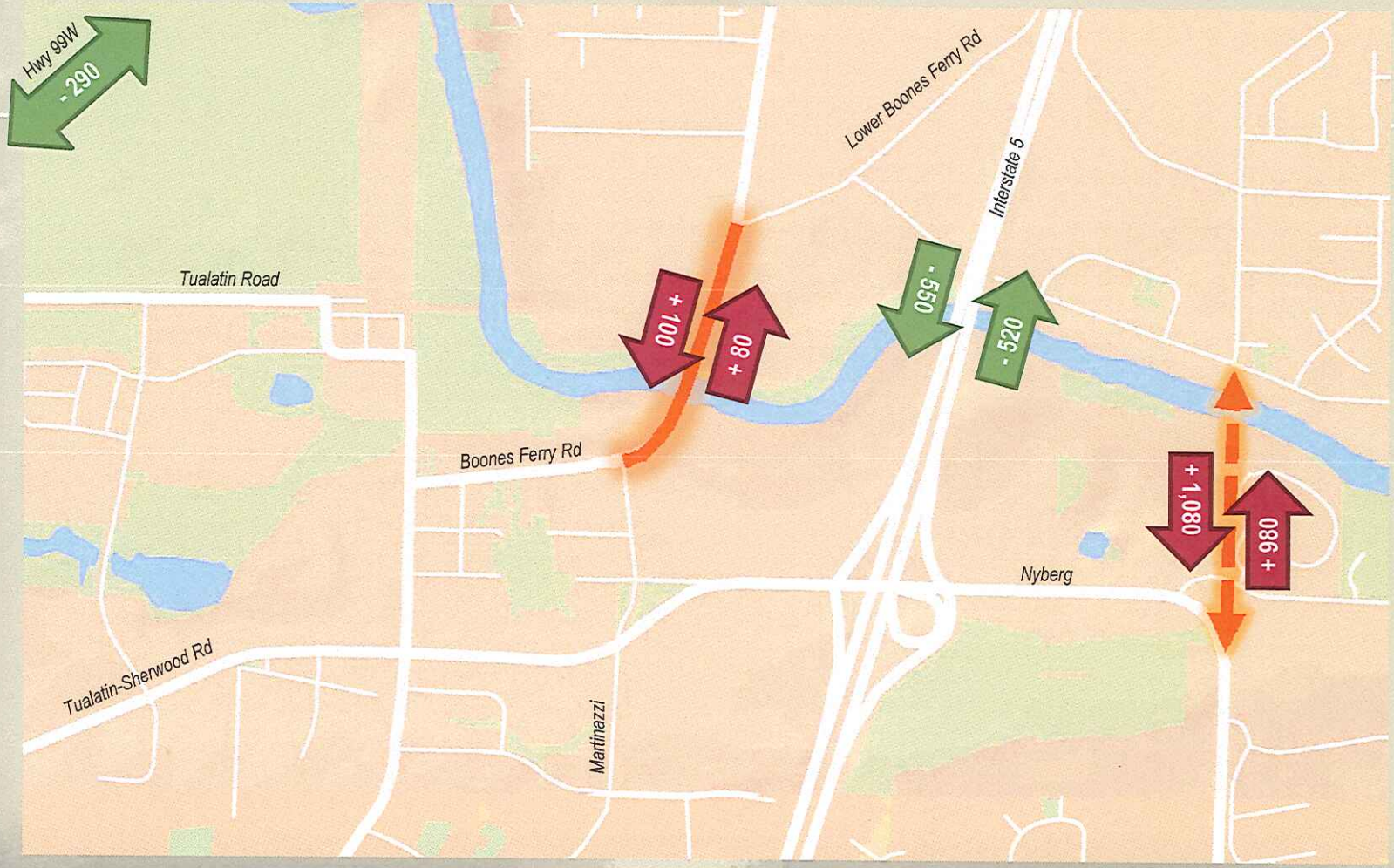


Low Build + Boones Ferry Road Widening Travel Times

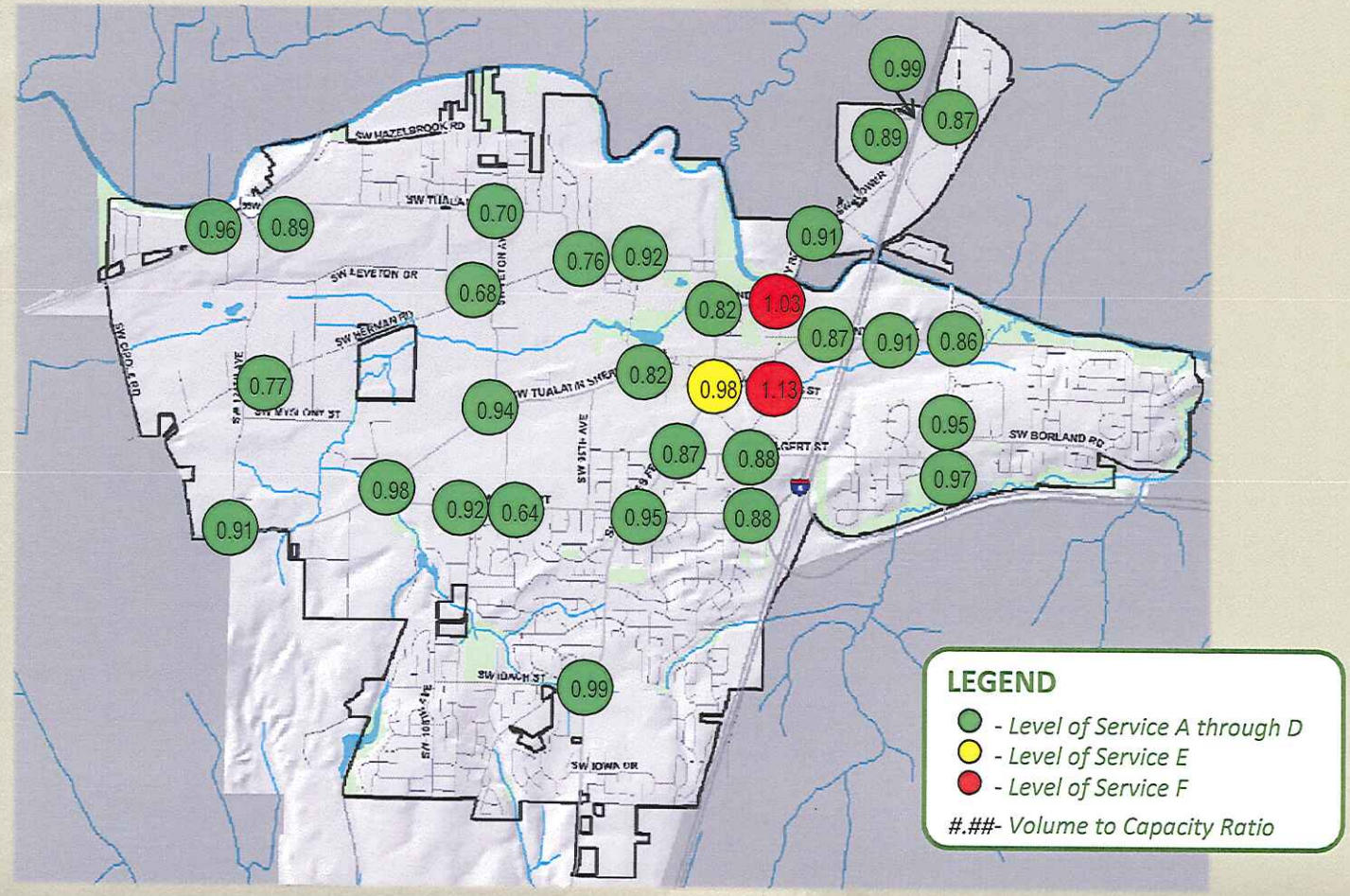


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin High School	11 min, 30 sec	-40 sec
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 30 sec	-30 sec
	Bridgeport Village	115th Avenue	11 min, 20 sec	-20 sec
	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 40 sec	+15 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	15 min, 50 sec	-1 min, 10 sec
	Bridgeport Village	Cipole Road	16 min, 40 sec	-40 sec
	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 25 sec	+5 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	12 min, 10 sec	-45 sec
	Bridgeport Village	Bridgeport Elementary	13 min, 40 sec	-45 sec

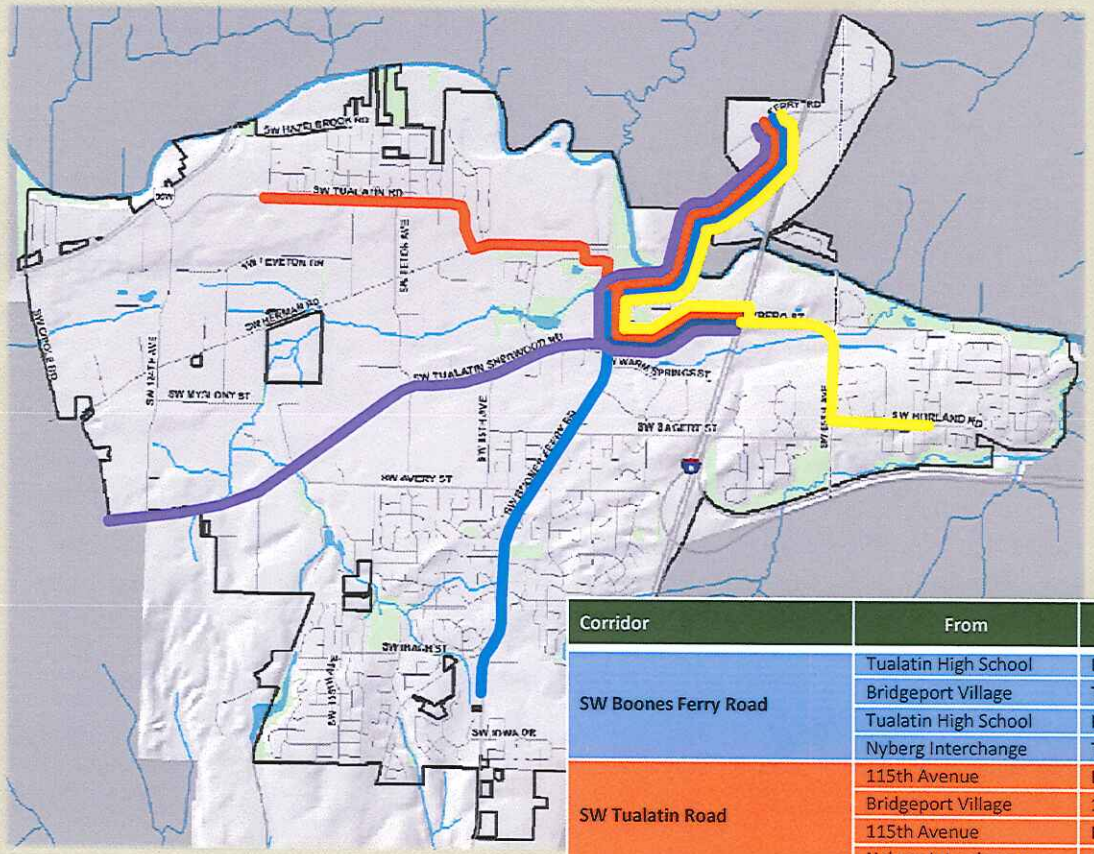
Low Build + 65th Ave + BFR Widening Volume Shifts



Low Build + 65th Ave + BFR Widening Operations



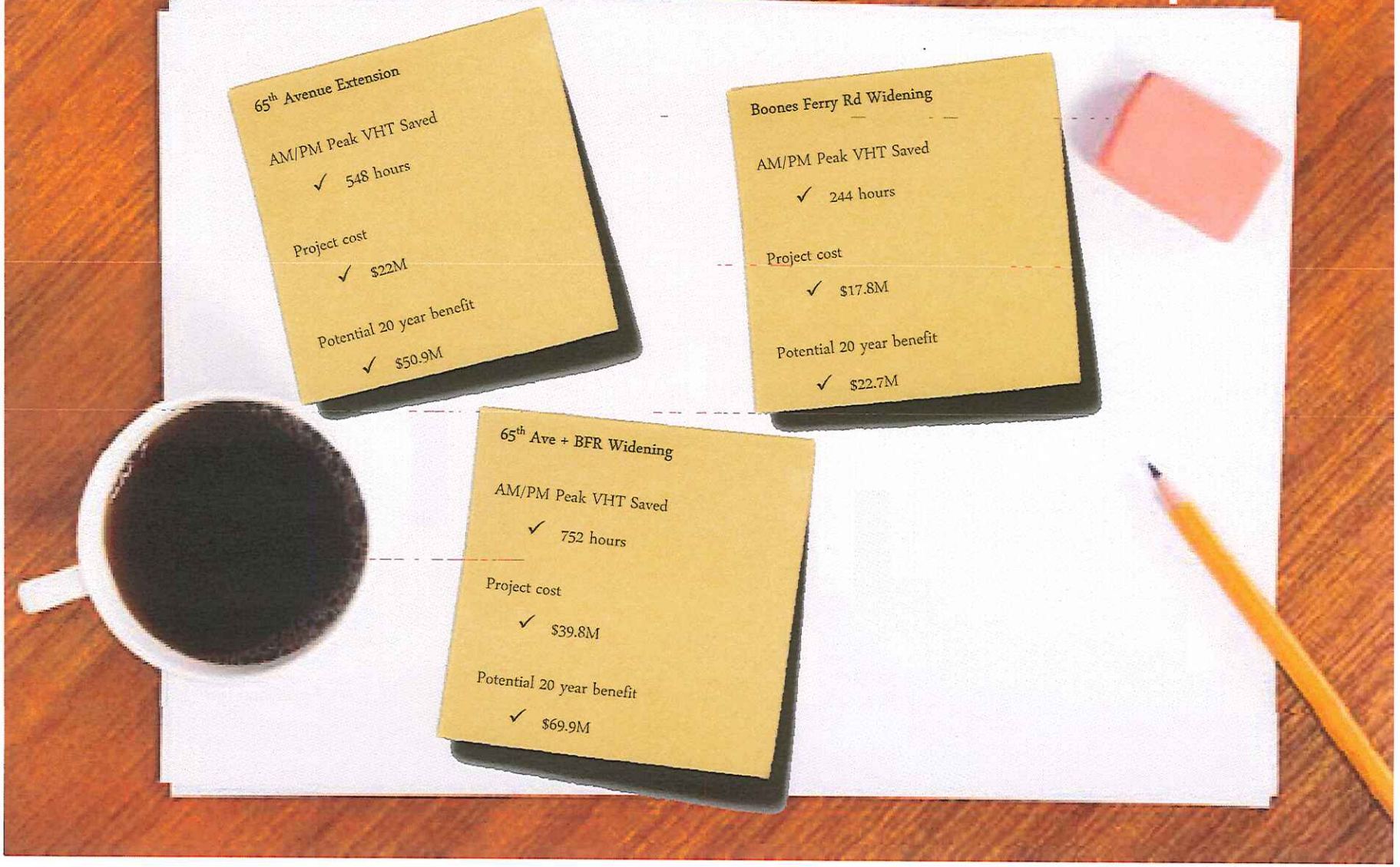
Low Build + 65th Ave + BFR Widening Travel Times



Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	12 min, 35 sec	-2 min, 30 sec
	Bridgeport Village	Tualatin High School	10 min, 35 sec	-1 min, 35 sec
	Tualatin High School	Nyberg Interchange	9 min, 50 sec	+10 sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	11 min, 30 sec	-1 min, 30 sec
	Bridgeport Village	115th Avenue	10 min, 55 sec	-45 sec
	115th Avenue	Nyberg Interchange	11 minutes	+25 sec
	Nyberg Interchange	115th Avenue	10 min, 55 sec	+30 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	14 min, 55 sec	-2 min, 5 sec
	Bridgeport Village	Cipole Road	15 min, 40 sec	-1 min, 40 sec
	Cipole Road	Nyberg Interchange	11 min, 50 sec	+15 sec
	Nyberg Interchange	Cipole Road	12 min, 20 sec	+30 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 30 sec	+10 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	10 min, 25 sec	-2 min, 30 sec
	Bridgeport Village	Bridgeport Elementary	11 min, 50 sec	-2 min, 35 sec

How do these projects pencil out?

Cost vs. Benefit Perspective



Summary of Operations and Travel Time Findings

- Tualatin becomes very congested in the future
- Low Build does a fair job of mitigating intersection operations, but minor travel time changes
- 65th Avenue extension pulls traffic from Boones Ferry Road and enhances that travel time
- Boones Ferry Road widening helps enhance travel times, but creates some intersection issues in downtown
- Combination of 65th Avenue and Boones Ferry Road widening enhances travel times in North Tualatin, but has similar downtown intersection issues

Technical Team Recommendation

- In addition to the Low Build projects, include:
  1. Include Boones Ferry Road widening project from Martinazzi to Lower Boones Ferry Road
  2. Include 65th Avenue extension as a **refinement plan** project
     - Establishes and acknowledges the need for improvements and connectivity in the area
     - Acknowledges the need to work collaboratively with surrounding jurisdictions
     - Identifies a project area that goes into deeper planning analysis to determine details

Environmental Justice

The Tualatin TSP considered the needs and impacts of its projects and policies to environmental justice populations as consistent with Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), the United States Department of Transportation (US DOT) Order on Environmental Justice (Order 5610.2), and Title VI of the Civil Rights Act. Executive Order 12898 requires that "impacts to low-income and minority populations be evaluated to determine if such populations bear an undue burden of high and adverse impacts caused by the action."[1] The policy of the DOT Order promotes the principles of environmental justice in all DOT programs.[2]

US DOT Order 5610.2 requires that agencies accomplish the following:

- Explicitly consider human health and environmental effects related to transportation projects that may have a disproportionately high and adverse effect on minority or low-income populations.
- Implement procedures to provide "meaningful opportunities for public involvement" by members of those populations during project planning and development (US DOT Order 5610.2, Section [§] 5[b][1]).

The US DOT Guidance defines the term "minority" as a person who is:

- Black (having origins in any of the black racial groups of Africa);
- Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
- Asian American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands);
- American Indian and Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition); or
- Native Hawaiian or Other Pacific Islander (a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands).

The US DOT Guidance defines the terms "low-income" and "low-income population" as:

- Low-Income means a person whose median household income is at or below the Department of Health and Human Services poverty guidelines.

---

[1] President Clinton (02/11/1994). *Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* Available online at http://www.epa.gov/fedrgstr/eo/eo12898.pdf

[2] Department of Transportation (10/30/1997). *Department of Transportation Order 5610.2(a): Final DOT Environmental Justice Order.* Available online at http://www.fhwa.dot.gov/environment/environmental_justice/ej_at_dot/order_56102a/

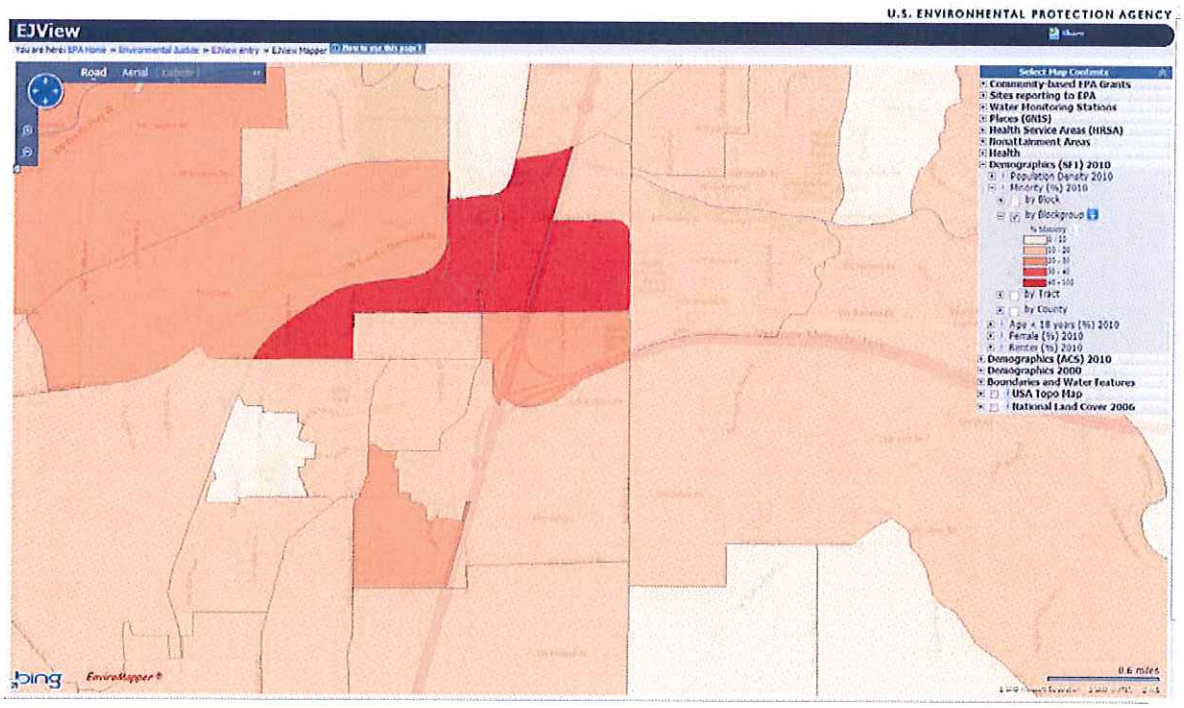
- Low-Income Population means any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed DOT program, policy or activity.

Title VI of the Civil Rights Act of 1964 requires that "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

In addition, Metro's Regional Transportation Functional Plan directs local TSPs to outreach to and identify effects of potential projects to "transit dependent" populations – including households with zero vehicles at home, those under 16 and above 65 years of age, and those with a physical disability that impacts travel.

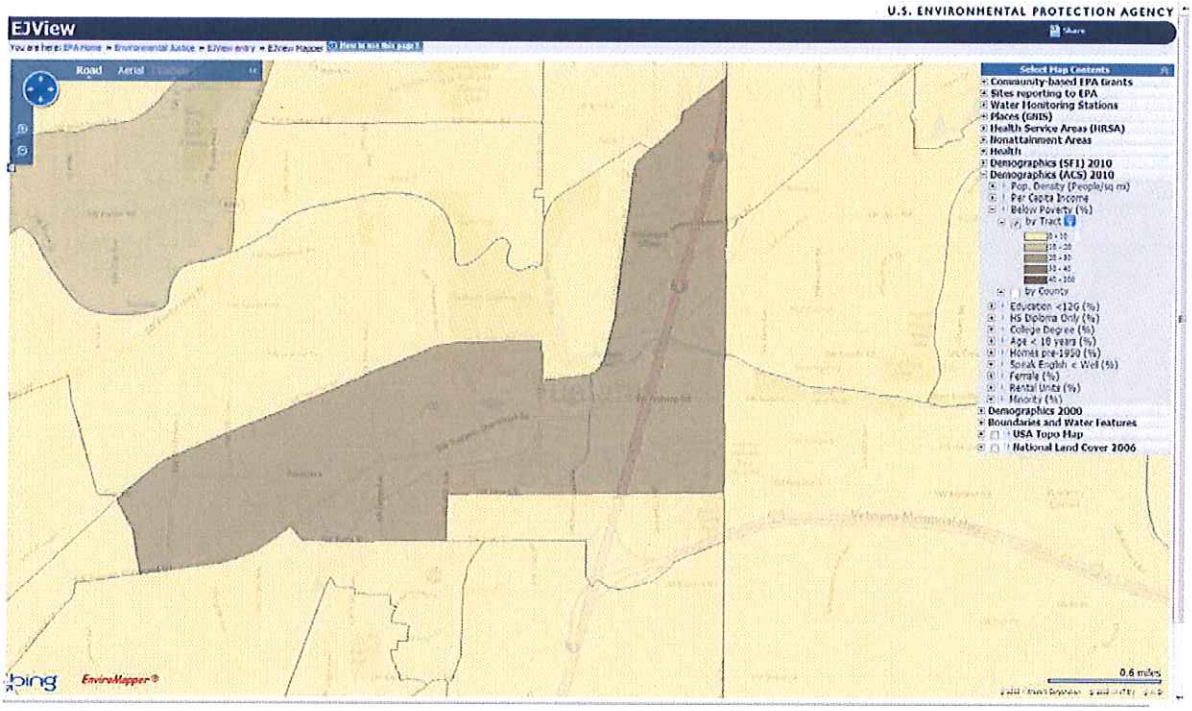
Documentation of Populations and Needs

At the beginning of the TSP process, the public involvement team documented the demographics and character of Tualatin in a memo dated March 2011. This memo documented that approximately 8 percent of families lived below the poverty level in Tualatin. Additionally, the majority (85 percent) of residents in Tualatin identify themselves as white/Caucasian; with 18 percent identifying themselves as Hispanic or Latino, and 15 percent of the population is foreign born. As per the U.S. Census Bureau 2010 Decennial Census approximately 10 percent of the population speaks Spanish at home and speak English less than "very well."



According to the 2010 Census block group data, concentrations of minority populations (40 percent or more) are located near downtown in the area east of I-5 between SW Nyberg Road, SW 65th Avenue, and SW Sagert Street. Other concentrations of minority populations occur west of I-5 between the river and SW Sagert Street, extending west to the railroad. The screen capture from the United States Environmental Protection Agency EJ View mapping tool show the areas of minority concentrations below. These areas of high minority concentrations also have high percentages of renter-occupied housing.

Household poverty data is reported at a larger scale than the minority data in the 2010 American Community Survey (ACS) three year data, and there are two census tracts with higher concentrations of households below the poverty line compared to the rest of the City. These two tracts are located along I-5 between SW Sagert Street and the northern City limits near Bridgeport Village where roughly 28 percent of households are below the poverty line, and the tract encompassing SW Tualatin-Sherwood Road west of SW Martinazzi Avenue and south of SW Herman Road and North of SW Avery Street where around 22 percent of households are below the poverty line. The remainder of the City has between 0 and 10 percent of householders below the poverty line.



Outreach

These environmental justice populations were documented and considered at the outset of the project to ensure the public involvement process provided adequate opportunities for these populations to be involved in the process. Several techniques were used to meet the needs of these identified groups.

- A banner was hung near the center of identified concentration areas at Tualatin Sherwood Road and Martinazzi to announce public events.
- Public meetings were held in locations near the center of the City, near these concentrations, and near bus routes. Meeting locations were ADA accessible.
- Food was provided at meetings.
- Children's activities were provided at meetings.
- Imagery and videos were used to explain project information so it would be accessible for all people.

Interviews with leaders in the Latino community held early in the process suggested several ways to engage the Spanish-speaking population of Tualatin. Following these suggestions, the project team:

- Made materials available in English and Spanish
- Visited bilingual Parent-Teacher organization at Bridgeport Elementary
- Provided materials at the library because families attend library events
- Shared information at local ESL classes
- Contacted local churches (Tualatin Spanish Seventh-day Adventist Church and Esperanza Iglesia)
- Left materials at local Hispanic businesses.

The team conducted interviews with Tualatin's Youth Advisory Council during development of the Public Involvement Plan. During the process or developing the plan, staff provided project updates in several local venues including at the Tualatin Senior Center.

Evaluation

The evaluation framework and the alternatives analysis process included consideration of equity impacts. Goal 4 of the TSP was equity: consider the distribution of benefits and impacts from potential transportation options, and work towards fair access to transportation facilities for all users, all ages, and all abilities. There were two objectives:

1. Promote a fair distribution of benefits to and burdens on different populations within the City (that is, low-income, transit-dependent, minority, age groups) and different neighborhoods and employment areas within the City.
2. Consider access to transit for all users.

All potential transportation investments considered in the Tualatin TSP process were evaluated in relation to this goal and the two objectives. Each project idea was scored in particular against population groups around and within the city, areas with low incomes and/or high minority populations, and the transit dependent population (e.g., zero vehicle households, those under 16 or over 65, and those with a physical disability). The full results of those evaluations are included in the alternatives analysis documentation. The end recommendations were assessed for broad distribution of benefits and effects to all populations including minority, low-income (as identified above) as well as geographic distribution – the conclusions were that the TSP provides multimodal investments throughout all sections of the city. Many of the recommendations will benefit these populations by providing safe walking areas, expanded transit service, intersection safety improvements, and multi-use pathways.

Appendix E
Transportation Funding and Improvement Costs

This Appendix describes existing transportation funding programs from federal, state and local sources, and well as potential sources that the City of Tualatin could pursue. The second section of this report also contains preliminary cost estimates for recommended alternatives. These cost estimates provide a general understanding of project costs and are intended for planning purposes only.

Established Funding Sources for Future Projects

A variety of established federal, state and local funding sources are available to fund future transportation projects in the Tualatin TSP, depending on the eligibility requirements.

Federal Funding Sources

Federal funding currently accounts for approximately 20 percent of total funding for transportation projects in Oregon. Allocation of federal funds is managed through Metro, Tualatin's Metropolitan Planning Organization (MPO). Metro generally programs federal funding for regional and local projects that affect the state transportation system, though some funds are made available directly for local projects. All projects utilizing federal funds must be programmed through Metro's 20-year Regional Transportation Plan (RTP) and the Metropolitan Transportation Improvement Program (MTIP), as well as the Statewide Transportation Improvement Program (STIP).

Most federal funding is available through the federal surface transportation program, supported by tax revenue to the Highway Trust Fund.

Federal Highway Trust Fund (HTF)

Revenues to the HTF are comprised of motor vehicle fuel taxes, sales taxes on heavy trucks and trailers, tire taxes, and annual heavy truck use fees. The fund is split into two accounts – the highway account and transit account. Funds are appropriated to individual states on an annual basis. The 2005 legislation for the federal surface transportation program (Safe, Accountable, Flexible and Efficient Transportation Equity Act – A Legacy for Users, referred to as SAFETEA-LU) will be replaced with Moving Ahead for Progress in the 21st Century (MAP-21), effective October 1st, 2012. This new 2-year program keeps total federal funding at the SAFETEA-LU rate, consolidates the 90 current programs under SAFETEA-LU into 30, eliminates transportation earmarks, and increases funding for the Transportation Infrastructure Finance and Innovation Program (TIFIA). The TIFIA program provides loans to finance transportation projects of regional or national significance, and seeks to leverage federal transportation dollars with local funds and private investment. Tualatin may be eligible to receive funding under the expanded TIFIA program.

Most federal funds must be matched with state or local funds; the current matching ratio for most projects is 10.27 percent.

Federal Transit Administration grants

The Federal Transit Administration (FTA) manages a number of grants available to transit agencies nationwide. The city of Tualatin could work with TriMet to fund transit projects serving the City.

Transit Expansion and Livable Communities Grants

Approximately $2.4 billion in funds was appropriated for this program in the current budget year. The goal of this initiative from the Federal Transit Administration is to advocate for and support projects and programs that improve the link between public transit and communities. Several formula and competitive grant programs are available through this initiative. Policy goals include better integrating transportation and land use planning, fostering multimodal systems, providing transportation options and improving access, reducing emissions, and increasing public participation in transportation decision-making. Tualatin and TriMet may be eligible for grant funding under this program.

Transportation for Elderly Persons and Persons with Disabilities (SAFETEA-LU §5310, MAP-21 §20009)

This formula grant program is managed by the state, with funds provided for capital projects that enhance the accessibility of older adults and those with disabilities.

Job Access Reserve Commute (JARC) program (SAFETEA-LU §5316, MAP-21 §20010)

Activities funded by the JARC program (formerly Section 5316 of SAFETEA-LU) have been preserved in MAP-21. The JARC program was established to address the transportation needs of welfare recipients and other low-income persons seeking to obtain or maintain employment. This program helps provide mobility to those whose work hours may fall outside traditional transit service hours and service areas. Under MAP-21, JARC activities have been integrated into the urban and rural formula grant programs. Financial assistance will be available for capital, planning and operations projects. In addition to local government and transit operators, private non-profits are eligible to receive funds. In 2012, the Chamber of Commerce received JARC monies that funded the industrial worker shuttle service.

Tri-Met is the current recipient of all JARC funds which are distributed to regional agencies through a competitive application process. Under MAP-21, the competitive application requirement has been removed. Tri-Met is currently developing its new JARC program in response to MAP-21; it is presently unclear how much funding will be available, or how agencies will apply for funding from the program. Approximately $600,000 has been available regionally under the program in recent funding cycles.

Other Federal Sources

Section 319 Non-Point Source Implementation Grants

Transportation projects that integrate stormwater treatment may be eligible to receive federal funding through Section 319 grants. This program, administered by the Oregon Department of Environmental Quality (DEQ), provides federal funds to address non-point pollution, including stormwater improvement projects. Funding is very competitive, with less than $500,000 available statewide in the most recent grant cycle. Projects that could be eligible for funding include applications of pervious pavements, stormwater detention and retention, and other low impact stormwater development tactics. Funds can be used for all or a portion of a project, but require a minimum 40 percent match. The Tualatin River and several of its tributaries are on the Clean Water Act 303(d) list for a number of pollutants, and projects within the river basin may be attractive for funding.

State Funding Sources

State funds are distributed via the Oregon Transportation Commission (OTC). The State Highway Fund is the most significant source of funding for the programs described below. To be eligible for funding, projects must be programmed through the Statewide Transportation Improvement Program (STIP).

State Highway Fund

State Highway Fund Revenues are received from a combination of fuel taxes, vehicle registration and title fees, driver's license fees, the truck weight-mile tax and federal monies. Fund revenues may only be used for construction and maintenance of state and local highways, bridges, and roadside rest areas. State law (ORS 366.514) specifies that a reasonable amount of highway funds must be spent on walkways and bikeways, and that in any given fiscal year, a minimum of 1 percent of State Highway Funds must be spent on these projects by funding recipients. However, cities and counties receiving may allocate these funds to a reserve fund, which they must expend within a period not to exceed 10 years. All funds must be expended on projects within road, street, or highway rights-of-way.

State Highway Funds are appropriated by the OTC on an annual basis. Sixty percent of fund revenues are kept at the state level, 24 percent is distributed to counties based on the number of vehicles registered in each county, and 16 percent is distributed to cities based on population.

Statewide Transportation Improvement Program (STIP)

The STIP is the 4-year capital improvement program for the state of Oregon. It provides a schedule and identifies funding for projects throughout the state. Projects included in the STIP are generally "regionally significant" and have been given a high priority through planning efforts and by the relevant area commission on transportation

(ACT) or metropolitan planning organization (MPO). For Tualatin, the relevant MPO is Metro. The current 2010-2013 STIP has six program categories: modernization, safety, preservation, bridge, operations, and special programs. All regionally significant state and local projects, as well as all federally-funded projects and programs, must be included in the STIP. The City of Tualatin does not have any projects in the 2010 – 2013 or 2012 – 2015 STIP.

The 2010-2013 STIP includes projects totaling $1.25 billion and covers the period from October 2009 to the end of September 2013. The 2012-2015 STIP was recently approved. About 80 percent of projects are expected to use federal funds. Federal funding levels projected for the 2010-2013 and 2012-2015 STIP are assumed to be at the same annual level distributed under SAFETEA-LU from 2005 to 2009.

ODOT has started the planning process for the 2015-2018 STIP. The STIP will be reorganized into two broad categories: "Fix-it" and "Enhance" that encompass the previous funding categories detailed in the 2012-2015 STIP. "Fix-it" projects are those that fix or preserve the current transportation system; "Enhance" projects are those that enhance, expand or improve the transportation system. The main purpose of this reorganization is to allow maximum flexibility to fund projects that reflect community and state values, rather than those that fit best into prescriptive programs. "Fix-it" activities will include:

- Bicycle and pedestrian facilities on state routes only
- Bridges (state owned)
- Culverts
- High Risk Rural Roads
- Illumination, signs and signals
- Landslides and Rockfalls
- Operations (includes ITS)
- Pavement Preservation
- Rail-Highway Crossings
- Safety
- Salmon (Fish Passage)
- Site Mitigation and Repair
- Stormwater Retrofit
- Transportation Demand Management (part of Operations)
- Work zone Safety (Project specific)

"Enhance" activities will include:

- Bicycle and/or Pedestrian facilities on or off the highway right-of-way
- Development STIP (D-STIP) projects (development work for projects that will not
- be ready for construction or implementation within the four years of the STIP)
- Modernization (projects that add capacity to the system, in accordance with ORS
- 366.507)
- Most projects previously eligible for Transportation Enhancement funds
- Projects eligible for Flex Funds (the Flexible Funds program funded Bicycle,
- Pedestrian, Transit and Transportation Demand Management (TDM) projects,
- plans, programs, and services)
- Protective Right-of-Way purchases
- Public Transportation
- (capital projects only, not operations)
- Safe Routes to School (infrastructure projects)
- Scenic Byways (construction projects)
- Transportation Alternatives (new with MAP-21, the federal transportation
- authorization)
- Transportation Demand Management

Under this new STIP organization, there will be one application for all projects eligible under the "Enhance" program. Communities will apply for the "Enhance" projects that best serve their community and ODOT will determine the appropriate funding mechanism. "Fix-it" projects will be selected through a collaborative process between ODOT and Metropolitan Planning Organizations. This new organization is primarily intended to increase funding flexibility and does not represent a fundamental change in the type of projects that will be funded through the STIP. The current "Enhance" application process for the 2015-2018 STIP will close at the end of November, 2012.

Other State Programs

*Connect*Oregon

*Connect*Oregon funds are lottery-backed bonds distributed to air, marine, rail, transit and other multimodal projects statewide. No less than 10 percent of *Connect*Oregon IV funds must be distributed to each of the five regions of the state, provided that there are qualified projects in the region. The objective is to improve the connections between the highway system and other modes of transportation.

Oregon Transportation Infrastructure Bank (OTIB)

The OTIB is a statewide revolving loan fund available to local governments for many transportation infrastructure improvements, including highway, transit and non-motorized projects. Most funds made available through this program are federal, and roads must be functionally classified as a major collector or higher to be eligible for loan funding.

Oregon Parks and Recreation Department: Recreational Trails Grant

The Oregon Parks and Recreation Department (OPRD) administers this program using Oregon Lottery revenues. These grants can fund recreational trail projects to build new recreation trails, including trail bridges and installing wayfinding signs, restoring existing trails, developing and rehabilititating trailhead facilities, and acquiring land and permanent easements for trails. OPRD has distributed $4 million annually under this program through a competitive grant process. A match of at least 20 percent is required, and cities are eligible to apply. Recent grants (2011) ranged from $10,000 to $130,000.

Oregon Immediate Opportunity Fund

The Oregon immediate opportunity fund supports primary economic development in Oregon through construction and improvements of streets and roads. Funds are discretionary and may only be used when other sources of financial support are unavailable or insufficient. The objectives of the Opportunity Fund are providing street or road improvements to influence the location, relocation, or retention of a firm in Oregon, providing procedures and funds for the OTC to respond quickly to economic development opportunities, and providing criteria and procedures for the Oregon Economic and Community Development Department (OECDD), other agencies, local government and the private sector to work with ODOT in providing road improvements needed to ensure specific job development opportunities for Oregon, or to revitalize business or industrial centers.

Regional Funding Sources

Metro, the elected regional government, coordinates two transportation grant programs relevant to Tualatin.

Flexible Funds

Metro manages the allocation of regional federal flexible funds. These funds come from two federal funding sources: the Surface Transportation program (STP) and the Congestion Mitigation/Air Quality program (CMAQ). These funds can be spent on a wide variety of projects. In the most recent funding round, $24 million was made available to Metro jurisdictions for various projects, including transit oriented development, high capacity transit, transportation system management, and regional planning projects. Funding is allocated through a competitive process.

preferred. Shared/multi-use path as well.

B16	Add a separate bicycle/pedestrian bridge over I-5 Is it within our control? There is a better way to make this connection. Improve what you have. Group feels C1 could be a reasonable "Replacement" for B16 provided there is connectivity on Sagert.	1	**7**	2
B17	Create a bike path to Old Town Sherwood as this area develops Tonquin Trail may cover this (partially).	4	**6**	
B18	Add a grade-separated crossing over 99W Tonquin Trail should put that in. (Could be part of that project). The trail project could better secure funding than the City.	1	**9**	
B19	Add bike detection loops at major intersections (indicated by purple dots) Has to do with the weight. Paint bicycle where the loop is. Good for bike/pedestrian friendliness.	**9**	1	
B20	Add benches between residential and commercial areas throughout the city, especially between the Heritage Center and Haggens (not on map) Are there benches elsewhere? Concerns with vandalism in targeted locations.	2	**8**	

Trail-Focused Ideas		Green	Yellow	Red
C1	Construct multi-use trails (between Martinazzi and 65th Aves, east-west connection to downtown, Tonquin Trail, and east of the hospital)	**10**		
C2	Build bridges for pedestrian and bicycle access over the Tualatin River A couple bridges are good idea, but not all. Think about destinations on the north side of the river, one on east side (look at destinations), one on west side, maybe near Jurgens Park. Don't need all shown but here are the "top" ones: Cipole (north of it), Jurgens Park (lowest priority of these), 65th Ave, east near the Urban Growth Boundary.		**10**	
C3	Add a pedestrian shortcut between Hazelbrook Rd and 99W Why? What purpose? Currently graveled, hard to walk/bike to 99W. Concern – there is nothing to walk to. May be too steep.	3	**4**	3
C4	Create multi-use path loops connecting all major areas including residential areas (Not on map) Where is the best place to you spend the money? What are the impacts on existing residences? Would it be right next to homes? Would be nice to connect/have a complete system. Modify – look at gaps that exist.	**5**	3	2
C5	Tonquin Trail This is ok to evaluate for TSP. There is a planned path under I-5 (wetland), hospital to Fred Meyers – waterfront is priority. Evaluate further. Functional, reduce need for improvements to Nyberg.	**9**	1	
Martinazzi – 65th			1	

Additional projects that were discussed that were not on the map:

- Connecting sidewalks, ie. Pedestrian bridge from Park across Boones Ferry to Commons, all should connect
- Wider sidewalks to allow strolling and outdoor café's with tables, chairs, etc.

Bicycle and Pedestrian Working Group #3 Summary

The Bicycle and Pedestrian Working Group met on June 6th, 2012 from 6-8 p.m. at the Tualatin Police Department. The working group heard how the project team evaluated each project, and then discussed the evaluation and the projects. At the end of the working group meeting, attendees were given five red and five green dots. Attendees were asked to place green dots on the projects that were the most important to the community and red dots on projects that they thought should not be carried forward into the TSP given the discussion and the preliminary evaluation results. One dot per project per person was allowed (attendees were not able to put all of their dots on one project).

ID	Project Idea	Green Dots	Red Dots
A1	Add pedestrian crossing treatments at key locations on Tualatin-Sherwood and Nyberg		1
A2	Multi-use path on 65th Ave between Borland and Nyberg		1
A3	Improve visibility and safety near schools at crosswalks		
A4	Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd		
A6	Provide wayfinding for Safe Routes to School	3	
	Strong support for city-wide wayfinding signage program		
B1	Connect Tonquin trail with neighborhoods	2	
	Make "vibrant community" circle a whole circle		
B2	Add sidewalks and bicycle lanes on Norwood Rd Discussion about Norwood – separated with and without bike lane – as it exists now instead of standard sidewalks and bike lanes. Require a multi-use path on Norwood, and/or allow flexibility in codes throughout the city.		2
B3	Improve Tualatin-Sherwood Rd for bicyclists and pedestrians Part of a corridor that will be studied further.		1
B4	Add bicycle facilities near the hospital, 95th and Martinazzi		
B5	Improve bicycle facility treatments in downtown core Include bike parking		
B6	Better accommodate pedestrians on the bridges Boones Ferry Road specifically	1	

ID	Project Idea	Green Dots	Red Dots
B7	Build a raised intersection at Seneca and Nyberg Full circle on vibrancy; dinged on things we don't want anyway Had 3 red and 1 green when initially discussed, and then the green dot was changed to red when it was clarified that it was on Boones Ferry Rd, not Martinazzi. There is no sidewalk on the west side of Boones Ferry Road, so most attendees were against this project moving forward.		4
B8	Fill sidewalk gaps on Grahams Ferry, Boones Ferry, and Herman Graham's Ferry Road specifically – this is a huge need.	3	
B9	Add bicycle and pedestrian facilities on 105th Ave, Blake St, and 108th Ave Separated path; nothing on-street. Leave at half circle for ability to be implemented – there are ongoing talks with a property owner, and potential paths in conjunction with already planned paths.		
B10	Add bike box on Boones Ferry Rd near the Sweek House What is the need here? Tualatin is not like Portland. Attendees were against this project moving forward into the TSP.		3
B11	Add dedicated bike lane through Avery and Boones Ferry intersection		
B13	Improve bicycle and pedestrian treatments at railroad crossings This should count for roads too, not just sidewalks and bike lanes.	3	
B14	Improve pedestrian crossing along Boones Ferry Rd Corridor for further study this summer.		
B15	Add bicycle lanes on Boones Ferry Rd to Day Rd Corridor for further study this summer		1
B16	Add I-5 multi-use crossing – connect to planned and existing multi-use paths Carl and Paul mentioned that this is already planned for under I-5 near Fred Meyer, and would make the most sense to put in there, as future paths are planned to connect.	2	
B17	Create a bike path to Old Town Sherwood as this area develops This would be redundant with the Tonquin Trail.		1
B18	Add a grade-separated crossing over 99W This will help connect the Tonquin Trail, and attendees felt that the Tonquin Trail project should pay for the improvement.		1
B19	Add bike detection loops at major intersections		1
B20	Add benches for walkers throughout the city Need to accommodate the aging population.	3	

ID	Project Idea	Green Dots	Red Dots
B21	Allow wider sidewalks for strolling and outdoor cafes	3	
C2	Build pedestrian and bicycle bridges over the Tualatin River Currently there are 7 on the list – it is not feasible to build all of them. Will need to narrow the options to two or three bridges and determine where makes the most sense.. Want other people to pay. Bridges are expensive	1	1
C4	Create a bicycle boulevard system connecting major areas. Would provide an alternative to the busier streets for bicyclists.	2	
C5	Build the Tonquin Trail This project received a perfect score on the evaluation criteria – maybe add GPS markers on trail	2	

General Comments

Most benefit to community

MU Path standardization through City with benches, Spring Water Trail

PRELIMINARY

City of Tualatin

Tualatin Transportation System Plan
Downtown Working Group Summary
February 28, 2012

Issues:

- Pedestrian Crossing
  - Length of light
  - Vehicles don't respect the crosswalk
- 90th/Kaiser Accidents
  - 4-Way stop?
- Train drivers/education
- Congestion
- Retail on LBFR
- Getting out of park
- Congestion at Tualatin/SW etc.
- Kmart/Fred Meyer intersection
- Rush hour congestion
- Downtown is a pass through
- Lack of connection

Solutions:

- Build a Park & Ride on 99W
- Our own transit service
- Seneca connect through Lake and council building
- Traffic circles – 1 way streets
- Bike path along Tualatin River from Browns Ferry to downtown
- Boardwalk connects near PD
- Expand WES service
- Tear down Kmart
- Pedestrian crossing re-work
  - Lighted crosswalk
  - Overcrossing
- Boones Ferry Rd over Tualatin Sherwood Rd
- Skywalk /Commons to park (shopping)
- Buy "Riverhouse" site and provide exit from park
- Re-route school busses off of Tualatin Rd
- No left turn from Park
- Pedestrian connectivity
- Raised sidewalks
- Different design widths for sidewalk
- Corridor study – Connect BPV/Kmart
- 2nd right turn lane from EB Tualatin Sherwood Road to southbound on-ramp
- 2 lanes southbound onto I-5 at 72nd/BFR

City of Tualatin

Tualatin Transportation System Plan
Downtown
Working Group Summary
April 2, 2012
Tualatin Police Department

The purpose of this working group meeting was to study and discuss the potential solutions generated from the previous working group meeting, and to discuss the feasibility of potential projects to help decide if they should be considered in the evaluation phase of the TSP process.

The Working group separated into groups of no more than six people to discuss the project ideas on the maps. Each meeting attendee was given three cards (green = yes, yellow = maybe, and red = no). Groups first went through each project idea and showed the card that they thought was appropriate for the project to be carried forward into evaluation for the TSP. Once the projects were tallied, groups then discussed the projects and whether they should be forwarded into the TSP for further evaluation. The tally is reported below, along with notes from the conversation. Projects that received all green votes from members were not discussed further, and the recommendation from the group is to evaluate the project in the TSP.

Potential Safety-Focused Ideas		Green	Yellow	Red
A1	Upgrade bridge surface and improve illumination along path near Hedges Creek	**16**		
A2	Consider raised intersections for pedestrians at Seneca St and Nyberg St	**10**	7	
A3	Add a grade separated railroad crossing on Tualatin-Sherwood Rd Huge cost – could be cost prohibitive. Does not necessarily solve problem. With a tunnel, you have problems with youth, flood conflicts. Technically feasible? Does the city control? Potential railroad conflicts.		5	6
A4	Reduce speeds near Bridgeport Village Not sure if makes a difference. Speed not the issue, it's the signal timing. Pedestrian refuge island. Pedestrian bridge? (is there an issue? Mixed)	6	**7**	
A5	Redesign Fred Meyer & Kmart intersection – upgrade the pedestrian connection	**13**	2	
A6	Add a roundabout at Lower Boones Ferry Rd and Boones Ferry Rd Ask Durham. May fill up traffic circle. Impacts on downtown/Boones Ferry. How will this work? Space it would take up – private property. Right on river. Would it solve the problem?	4	**6**	5
A7	Add a pedestrian island on Martinazzi Ave north of Seneca St Part of all downtown circulation ideas. One-way loop pedestrian refuges needed. Signs help. Pedestrian improvements may not be needed with Loop. Don't need because of A2.	4	**7**	6

	Potential Congestion-Focused Ideas	Green	Yellow	Red
B1	Reconfigure park entrance to right in/right out only. North intersection (Dog Park). Left turn is dangerous. Would be OK if there was another way in/out. Not sure there is a problem at current intersection. Coupling with B2, mixed on B2's.	4	**9**	3
B2	Provide secondary exit from park, and provide additional parking Can't use private bridge. OK to remove as a project idea. How expensive? Concerned with converting private property to parking/city. Where? Senior center. Revisit access on B1 – not just right in/right out. Impacts on Boones Ferry Road traffic.	3	**7**	3
B3	Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi Ave to I-5 Cost? Impacts to Fred Meyer?	**13**	4	
B4	Add a travel lane on I-5 northbound (between Tualatin and OR 217) Not feasible with ODOT, Tualatin does not control. Encourage ODOT? Can it be done?	1	7	**9**
B5	Create a one-way circulator loop roadway around downtown Look at more – move South "Street" to Warm Springs. Adding congestion. Where does ROW come from? Expensive.	3	**10**	4
B6	Reduce ambient noise along Boones Ferry Rd in downtown Trail safety. Worse on Tualatin-Sherwood Road. Take this project off the list. Who is there to notice the noise? Not transportation-related	1	6	**9**
B7	Replace/widen bridge on Boones Ferry Rd	**14**	3	
B8	Add HOV lanes on Tualatin-Sherwood Rd Adds traffic, Remove! Don't think it will work. No space to add lanes. Don't want Tualatin-Sherwood road to become the next highway.	1	6	**10**
B9	Widen Boones Ferry Rd to 5 lanes 5-lane, nowhere to go – would create bottlenecks elsewhere in the system. Bridge is 2-lane. Take it out of consideration. OK if cost effective.	5	**8**	4

B10	Widen Tualatin-Sherwood Rd through downtown	2		**4**
B11	Focused pedestrian crossing on Martinazzi & Tualatin-Sherwood Rd.	1		

Potential Connectivity-Focused Ideas		**Green**	**Yellow**	**Red**
C1	Build a trail from Boones Ferry Rd to the downtown core along the river to the Tualatin River Greenway	**14**	2	1
	Private property. Transportation nexus? (Mixed) – does it go across freeway? Discussion mixed – provide in TSP if developer were to build?			
C2	Extend Boones Ferry Rd to 85th Ave/Hall Blvd	2	5	**10**
	Not enough room for roadway. Per Kittelson study – has to be over park, not OK with being over park. Look at another river crossing if it helps traffic between 65th & 108th. Legal hurdles – traffic – Pandora's box, wetlands & regulatory, SWS, multiple jurisdictions.			
C3	Connect Nyberg Rd through the Commons	2	3	**12**
	No way for pedestrians to get on either side of commons without major road/delays to go around/impacts on the Lake/bridge may cause more problems. Turn to a pedestrian bridge or move to Seneca as road (closed on weekends). Pedestrian only? Economic – park not good connectivity could improve. Returns investments made in Commons.			
C4	Create a grid system near the Kmart, connect to Seneca St	4	**8**	5
	Problems with private ownership and public street. Keep private. Covered by F1. Forcing on property owners? Additional traffic in front of library. (mixed discussion – positives of straightening I/5) (Two felt driveway closed after library)			
C5	General – improve street connectivity in downtown	5	**8**	4
	Keep. Sounds nice but don't know what it means.			
C6	Create a public road between Boones Ferry Rd and SW 90th Ave.	4	**9**	4
	Keep. Little room – signs can help. Mixed road exists, good connectivity. Private property.			
C7	Extend Lower Boones Ferry Rd across Tualatin River	2	3	**12**
	Requires a vote to go through the park. Downtown loop may help. Trucks off road. Exacerbates to failing interchange 290 – Need vote. Legal challenge – vote serve Tualatin? Serves other communities.			

	Potential Land-Use Focused Ideas	Green	Yellow	Red
F1	Encourage better circulation for all modes and a transit-oriented focus when these major land uses redevelop	**14**	2	1
	Loop makes cars travel around to some locations. Discourage thru traffic. Ideas about Loop routes impacts on south Martinazzi. Transportation nexus.			
F2	Look for opportunities to improve connections from downtown to the riverfront. Transportation nexus.	**11**	3	3
F3	General – Eliminate parking minimum development requirements and consider parking maximums in downtown	2	**11**	4
	Need to have parking downtown. Create a pedestrian environment and parking need is less. Market will control maximum. Don't encourage "sea of parking". Lake Oswego example. Majority – throw out. Need to balance parking needs. Drive around looking for spaces?			
F4	General – add structured parking in the downtown core	**12**	5	
	Transit-Focused Ideas	**Green**	**Yellow**	**Red**
E1	Look for opportunities to build a new park-and-ride to the west of downtown towards 99W (not shown on map)	**13**	4	
	Bicycle/Pedestrian-Focused Ideas	**Green**	**Yellow**	**Red**
D1	Redesign pedestrian crossing, consider flashing lights	**13**	5	
D2	Upgrade Nyberg interchange to improve the crossing experience for bicyclists	**13**	4	
D3	Optimize intersection to reduce conflicts between cars and pedestrians (Tualatin-Sherwood Rd & Martinazzi Ave and Boones Ferry Rd)	**14**	2	1
	Concern about the implications to flow, capacity – not specific enough a suggestion.			
D4	Add pedestrian crossings along Boones Ferry Rd	3	**12**	2
	No sidewalk on the west side of Boones Ferry. No need – cross at signal. Funnel pedestrian and bike thru downtown. Doesn't make sense. No sidewalk on west side. Does this mean to add sidewalk?			
D5	Create a pedestrian skybridge that connects downtown retail businesses and the park	3	**12**	2
	Sky bridge – no place to go. Take off. Should line up with Commons and foot bridge. Don't think there is a reason for it. There is no need, Boones Ferry is not that big of road. Why would people park? Maybe if this is where future			

	structural parking is located? Other ways to address the pedestrian safety concern. Steve Titus – look at illumination in downtown. Color of bulbs, location of masts.			
D6	Improve sidewalks and bicycle lanes on Boones Ferry Rd	**16**	1	
D7	Improve bicycle and pedestrian facilities near Bridgeport Village	**13**	2	2
	Already there – tie to A4.			
D8	Provide "Share the Road" signage and/or other visual cues to motorists to accommodate bicycles on Boones Ferry Rd	**11**	1	5
	Signs are not effective.			
D9	Add bicycle lane or "Share the Road" signs on Martinazzi Ave	**15**	1	1
	Signs are not effective. OK A9 if bike lanes. Look at Bike Boulevards instead.			
D10	General – coordinate traffic signal timing to accommodate pedestrians in downtown	**11**	3	3
	Tualatin is a pass through city – what are the implications for cars?			
D11	Focused pedestrian crossing at Tonka Rd and Boones Ferry Rd (added by one group at the meeting)	1		

Downtown Working Group #3 Summary

The Downtown Working Group met on June 4th, 2012 from 6-8 p.m. at the Tualatin Police Department. The working group heard how the project team evaluated each project, and then discussed the evaluation and the projects. At the end of the working group meeting, attendees were given five red and five green dots. Attendees were asked to place green dots on the projects that were the most important to the community and red dots on projects that they thought should not be carried forward into the TSP given the discussion and the preliminary evaluation results. One dot per project per person was allowed (attendees were not able to put all of their dots on one project).

ID	Project Idea	Green Dots	Red Dots
A1	Upgrade bridge surface and improve illumination along path in back of Haggens Not a transportation issue – it's a park issue It is a pedestrian and bicycle issue Who owns the path from police station to Haggens? It is currently dark and dangerous Include in TSP/Move to Parks Department	6	
A2	Consider raised intersections on Martinazzi for pedestrian safety No. Don't think it makes sense here. Need better lighting there instead.		3
A4	Reduce speeds near Bridgeport Village		2
A5a	Redesign Fred Meyer / Kmart intersection Really needs consideration – YES!	2	
A5b	Improve pedestrian crossing at Fred Meyer/Kmart intersection Really needs consideration – YES!	2	
A6	Add roundabout at Boones Ferry and Lower Boones Ferry Road No – property impacts, and a roundabout would make it difficult for trucks Yes – they do move traffic – it stacks in two directions and a roundabout would allow traffic to move		2
A7	Add pedestrian island on Martinazzi Ave north of Seneca There is not enough room. There is no need; it is not a wide road.		1

ID	Project Idea	Green Dots	Red Dots
B1	Improve circulation into and out of the Tualatin Community Park Right In/Right Out access to dog park/community park Look at all 3 park entrances – congestion issues, seniors going to exercise classes Concerned about implementation. It's important to look more at it and see what the options are. More discussion needed. Do not change road in park. Add lights to get out of park during rush hour.	4	2
B3	Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi to I-5 Good idea. Needs more discussion. Need to involve the two property owners in discussion (also A5a and A5b). There is room near Jack in the Box	1	
B7	Replace/widen Boones Ferry Road bridge over Tualatin River Important. Makes sense	9	
B9	Widen Boones Ferry Rd Related to B7 (widening). The choke point is the two lane section. This is needed for circulation. McLain already uses it as major truck through way. We don't want this to be a route for trucks going through downtown and near the community park. It would impact downtown and livability.	3	1
B10	Widen Tualatin-Sherwood Rd through downtown Property impacts. Not sure widening would help improve circulation.		8
C1	Build a trail from Boones Ferry to downtown core along river and extend to the greenway Great idea. Crossing at I-5 would be challenge.	3	
C2	Provide north-south connectivity over Tualatin River for vehicles Needs discussion – where would it go?	3	4
C4	Create a grid system near the Kmart upon redevelopment with a connection to Seneca Will never happen. Impact to City Hall is big problem – voters rejected a bond to build a new city hall recently. Ability to implement should be empty circle. This would be hard to implement		4
C5	Improve downtown core street connectivity This project is not clear. Don't understand how this would be implemented. More discussion needed. Don't always need roads to connect.		3

ID	Project Idea	Green Dots	Red Dots
C6	Create road connections between Boones Ferry Rd and SW 90th Ave This would impact private property, and a connection is not necessary		
D1	Redesign pedestrian crossings, consider flashing lights in the downtown core This should stay in the TSP. Really hard to cross streets in downtown. Positive comments from group	5	
D2	Upgrade Nyberg interchange to improve the crossing experience for bicyclists More discussion is needed on Nyberg Interchange		
D3	Optimize intersections to reduce car/pedestrian conflicts along Boones Ferry and Tualatin Sherwood Roads Yes. One person really likes this project.	1	
D4	Add pedestrian crossing at the WES stop (Seneca) Crossings to WES are not needed at this location – there is no where to go once you're across Boones Ferry Rd		5
D6	Improve sidewalks and bicycle lane at Boones Ferry to Lower Boones Ferry. This is not a bad idea – should be part of a bike/ped plan. Coordination with Durham would be required Improve signage by public parking lots downtown	6	
D7	Bike and pedestrian treatments near Bridgeport Village Signal timing could help, but difficult to implement Include overpass/interchange at Bridgeport Village area in project – this is a safety concern. There are often debris in bike lane	2	
D8	Provide signage and/or other visual cues to motorists to accommodate bicycles Not expensive, may not be effective		
D9	Add bicycle lane or "Share the Road" signs Most people liked this project	1	
D10	Coordinate traffic signal timing to accommodate pedestrians. Everyone agrees		2
D11	Add focused pedestrian crossing over Boones Ferry Road at Tonka Some discussion occurred about where nearest crossing options are. Pedestrian crossing not allowed on south side of intersection at Boones Ferry and Tualatin--Sherwood Road.		1

ID	Project Idea	Green Dots	Red Dots
F1	Encourage better multimodal circulation and transit-oriented redevelopment for major downtown uses Most people liked this project	5	
F2	Look for opportunities to open downtown's connection to the riverfront Most people liked this project	3	
F3	Eliminate parking minimums, consider parking maximums		2
F4	Add structured parking in downtown core Is there enough need for it? Seems like a good idea. Would need more density in future.	3	

General Notes

Don't change names of streets through downtown

PRELIMINARY

City of Tualatin

Tualatin Transportation System Plan
Industrial and Freight
Working Group Summary
February 28, 2012

Issues:

- Freight through neighborhoods
  - BFR
  - Avery
  - Tualatin
  - 90th
- Boones Ferry Road congested
- 65th /Borland
- 65th Bridge over river
- 90th left turn onto Tualatin
- Herman extended over river to I-5
- Teton/Tualatin congested (left hand turns)
- I-205 Exit to 65th
- Off ramps congested
- How much through traffic?
- Better way for employees to get to work
- School buses impact traffic
- Connections-lack of
- Rail mobility-freight vs. comm.
- Shuttle program works
- Reduce SOV

Ideas:

- Reduce Tri-Met bus service
- SW 124th construct to I-5
- Complement residential/commercial
- Increase transportation knowledge
- Drivers meet w/consultants
- Right turn arrows
- Adjust signal timing

Questions:

- Volume/Capacity
- How do we determine capacity?

- What time is peak hour?
- What month was study conducted? - October
- Do we have data from AM peak?
- Are we less congested further from I-5?
- How much delay is "F"? - 80 seconds; 2 cycles

Solutions/Ideas:

- Urban interchange BR/BFR
- Grade separation railroads
- Tunnels/Hall ext. & Herman Rd.
- I-205 interchange to 65th
- Staggered traffic patterns
- More kids on buses vs. individual cars
- Boones Ferry bridge widening
- 124th construction-long term in mind (6 lanes)
- Limit accesses
- Rail station/freight
- Hwy 99-Build Park & Ride
    - Loop transit system-Tualatin Loop Road
- Sound walls at neighborhood
- Plan for future
- Telecommute
- Signal timing

City of Tualatin

Tualatin Transportation System Plan
Industrial and Freight
Working Group Summary
April 10, 2012
City Operations Department

The purpose of this working group meeting was to study and discuss the potential solutions generated from the previous working group meeting, and to discuss the feasibility of potential projects to help decide if they should be considered in the evaluation phase of the TSP process.

The Working group separated into groups of no more than eight people to discuss the project ideas on the maps. Each meeting attendee voted via a show of hands if they thought each project should be forwarded for evaluation in the TSP. Groups first went through each project idea and voted if they thought the project was to be carried forward into evaluation for the TSP, discussion on each project happened as the projects were voted on. The tally of the votes is reported below, along with notes from the conversation. Projects that received all green votes from members were not discussed further, and the recommendation from the group is to evaluate the project in the TSP.

	Congestion Focused Ideas	Yes	Maybe	No
A1	Add a signal or roundabout at Sagert St and Martinazzi Ave	**12**	8	
A2	Divert truck traffic from Tualatin Rd to Herman Rd	6	6	**9**
A3	Provide an undercrossing for Nyberg through traffic under I-5 to avoid signal/conflicts. Create an urban interchange Expensive.		2	**18**
A4	Reconsider the connection between 99W and Tualatin-Sherwood Rd (note: in Sherwood)	7		**14**
A5	Extend 124th Ave and connect to I-5 south of Tualatin	**21**		
A6	Provide coordinated signal timing and access management along major arterials. Restrict trucks to right lane. Widen travel lanes Most agreed for this project along major arterials, but disagreed with restricting trucks. Coordinated signal timing – 7 yes, access management – 6 maybe, restrict trucks – 6 no, widen travel lanes – 7 no.	1	6	**7**
A7	Widen Boones Ferry Rd. Remove right turn light at Tualatin-Sherwood Rd Based on southbound left turns.	1		**20**
A8	Close 90th Ave to 18-wheel trucks	**12**	2	5
A9	Improvements to help mobility of through-traffic (Tualatin-Sherwood Rd)	8	**9**	1

	What does this mean? What are the options? Finish light timing – widen to all nine lanes.			
A10	Create a loop road around central downtown, with a turn radius that works for trucks Need to see options, pros and cons.		**14**	7
A11	Improve turn radius at Avery St and Teton Ave, look at congestion	**11**	7	
A12	Synchronize turn signals to/from Boones Ferry Rd to Tualatin-Sherwood Rd; coordinate with the train signal	**18**		

Transit-Focused Ideas		**Yes**	**Maybe**	**No**
B1	General – Add Saturday, Sunday, late evening transit shuttle WES service (evenings and weekends). No public transit at those hours to connect to. Need business specific.	9	**10**	
B2	Add rail station with easy offload and access for industry Freight terminal = location? Who will operate? Determine targeted growth industries. Accessibility to 99W & I-5. Freight only?	4	**15**	
B3	General – Provide local loop bus Is the ridership there? Study Yamhill County connection.	**17**	1	1
B3	General – Provide bus from Clackamas MAX stop to WES for employees And Yamhill County transit. Include Newberg. Needs more study.	3	**13**	1

Connectivity-Focused Ideas		Yes	Maybe	No
C1	Add connection and entry to I-205	5	6	**7**
C2	Provide direct connection between Herman Rd & Boones Ferry Rd. Consider a tunnel Alternative could be: provide connections outside of city core. Impacts to parks and residences. Concern about more traffic. Alternative project – More connections to I-5 (i.e. C11 & North Wilsonville). This will decrease need for Herman Road – less traffic on Tualatin-Sherwood. Herman Road and Chinook – add sign to direct traffic to Tualatin Road.	3		**18**
C3	Add a connection to Hall Blvd/Tigard		3	**18**
C4	Add a left turn from Teton Ave to Tualatin Rd Does not mesh with moving traffic to Herman. Needs to be a light.		**12**	9
C5	Extend 65th Ave north Expensive; challenges with property owners. Need more improvements to connecting roads. Inter-jurisdictional challenges.	3	**9**	7
C6	Improve 115th Ave Not sure if this is a public street. Also needs a light on Tualatin Road if gets improved. Not viable at this time. When property is developed it will resolve.	1	**11**	6
C7	Improve cross-section on Herman Rd	**14**	6	
C8	Improve connection between Tualatin Rd and Boones Ferry Rd; add signal	5	**9**	6
C9	Balance the needs of neighborhood with local truck movement along 108th/105th Aves. Consider removing trucks/adding truck info signs. 108th – green, 105th – yellow.	**11**	9	
C10	Extend 95th Ave north to Tualatin Rd		4	**18**
C11	Add an interchange on I-5 at Norwood Rd	2	6	**12**
C12	Create an east/west connection across I-5 (near Greenhill Rd)	**12**	6	1

Other Ideas		Yes	Maybe	No
D1	General – Coordinate freight receiving/shipping times Commercial delivery also.	**12**	7	2
D2	Add vision & sound walls; reduce cut-through traffic. Avery, 105th too. Ugly; doesn't kill noise, sends in another direction. Expensive. Urban design criteria – to address sound and vision instead of sound walls.	6	**8**	7
D3	General – Improve safety and reduce congestion by education and incentivize telecommuting Business decision.	7	**12**	2
D4	Move industrial area to the SW area (no direct truck route), change to multi-family residential, or buffer existing neighborhood better from industrial area Next cycle with long range Master Plan. Put with Southwest Concept Plan.	3	**12**	7
D5	Add a lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Add traffic camera for red light violations.	**11**	3	7
D6	Improve signs to direct traffic to correct street	**19**	2	
D7	Add traffic signal at 97th Ave and Tualatin-Sherwood Rd	2	2	**14**
D8	Improve visibility, restrict left turns from 108th Ave onto Tualatin Rd Improve visibility but no left turn restrictions. Not needed, should move to D9.	2	**16**	1
D9	Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd Remove Jurgens Road.	**9**	1	5
D10	Improve Tualatin-Sherwood Rd/Martinazzi Ave signal timing/add a red light camera	**10**	4	6
D11	Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd Freight usage, allow large trucks form 11 PM – 5 AM	**16**	2	1
D12	General – Make "Truck Route" signs larger Designate specific roads as "Truck Routes" and enforce specific times.	**11**	1	7

New Ideas:

Traffic calming on Tualatin Road – make it a roadway for local access only. Non-local truck traffic should be diverted to Herman and Leveton Roads.

Additional measures to reduce truck traffic on local/minor streets. Business hours rules different, prohibitions.

More connectivity in roadway system to provide options

All Yellows need more information

Industrial and Freight Working Group #3 Summary

The Industrial and Freight Working Group met on June 13th, 2012 from 11:30 a.m.-1:00 p.m. at the City of Tualatin Operations Building. The working group heard how the project team evaluated the project ideas, and then discussed the evaluation and the projects. At the end of the working group meeting, attendees were given five red and five green dots. Attendees were asked to place green dots on the projects that were the most important to the community and red dots on projects that they thought should not be carried forward into the TSP given the discussion and the preliminary evaluation results. One dot per project per person was allowed (attendees were not able to put all of their dots on one project).

ID	Project Description	Green Dots	Red Dots
A1	Add a signal or roundabout at Sagert/ Martinazzi		1
A2	Divert truck traffic from Tualatin Road to Herman Road • Tied to C4. • Teton should be the main off route for truck traffic. • Truck traffic isn't the issue, it is cars/vehicles. Each meeting said this. • Teton should be widened and needs to be the main connection to Tualatin-Sherwood Road. • We will need to take the kink out of Teton and adjust the signal at Tualatin-Sherwood Road and Teton to let UPS get onto Tualatin-Sherwood Road.		2
A5	Extend 124th Ave south	2	
A6	Provide coordinated signal timing and access management along major arterials	1	
A7	Remove northbound right turn light on Boones Ferry Road (at the McDonalds)		1
A9	Improvements to help mobility of through-traffic on Tualatin-Sherwood Rd		
A11	Address congestion on Avery and Teton		
A12	Synchronize turn signals to/from Boones Ferry to Tualatin-Sherwood; coordinate with the train signal	2	

ID	Project Description	Green Dots	Red Dots
A13	Widen Boones Ferry Rd through downtown • Add to memo (missing) • When widening Boones Ferry Road through downtown, Boones Ferry Road impacts/reduces those connections. • Objective of residents from South to the park is connectivity. Widening will negatively impact this.		3
B1	Expand service hours of chamber shuttle to nights and weekends		1
B2	Add rail station with easy offload and access for industry in the west part of town • This should also include loading considerations.		
B3	Provide local loop bus • TriMet may be able to implement this within 10 years.	2	
C3	Provide north-south vehicle connectivity over Tualatin River • Overwhelming public sentiment (per Jan): don't bring more traffic into downtown • For this option to continue, we probably need to incorporate it into another project like 90th. • Explore extending 90th to the north, while being sensitive to existing uses. • North – South citizens don't want it. • Park & Ride in Transit. Important to transit!		5
C4	Add a right turn from Teton Ave to Tualatin-Sherwood Rd • Trucks on 90th have a significant impact to livability of residents • Teton could be widened through the entire length, being sensitive to impacts • The original C4 project (left turns from Teton to Tualatin Road) was intended as originally written. Would like the original project put back on the list. Note – left turns already exist on Teton to Tualatin Road. • Traffic lights for UPS when they leave need signal timing to prioritize UPS from Teton. • UPS has difficulty getting onto Teton. • Improve Teton including intersections. • May need to be a project to improve all of Teton including all intersections. • Change this project to include all of Teton.	4	

ID	Project Description	Green Dots	Red Dots
C5	Extend 65th Ave north • Big arrow rather than show narrow alignment. • Needs a big arrow for general North-South connection. Should be yellow.		
C6	Improve 115th Ave	2	
C7	Improve cross-section on Herman Rd		1
C8	Add signal to Tualatin Road and Boones Ferry Road intersection • Speed reduction through curves is a good thing. • Probably doesn't move forward. • C8 would speed traffic, this is a bad project. • Not a good idea.		4
C9	Consider removing trucks/adding truck info signs along 108th/105th Aves		
C10	Extend 95th Ave north to Tualatin Rd Not a good idea.		1
C12	Create an east/west connection across I-5 (near Greenhill Rd)	2	
C13	Provide travel options by improving connectivity in the roadway system		
C14	Widen Myslony St to standards - reduce on-street parking		
C15	Upgrade Cipole Rd to standards with sidewalks and bike lanes	1	1
C16	Improve Tonquin Rd between Oregon St and Waldo Way		
C17	Improve circulation east of the Bridgeport/I-5 Interchange		
D1	Coordinate freight receiving/ shipping times	2	
D2	Add vision and sound walls; reduce cut-through traffic • Thought was dropped, remove. • D2 dropped off? • Should be dropped during last round.		1
D3	Provide incentives to telecommute		
D5	Add lane on Tualatin-Sherwood to Fred Meyer, better I-5 lane signage, add red light camera	3	
D6	Improve signs to direct traffic to correct street		
D7	Add traffic signal at 97th Ave and Tualatin-Sherwood Rd • Business cannot make left turns		

PRELIMINARY

ID	Project Description	Green Dots	Red Dots
D8	Improve visibility, add signal restrict left turns from 108th onto Tualatin • School buses use Jurgens – Holland. A signal should go there instead.		1
D9	Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd • Is this a better location for a signal over D8 because of school buses?		
D10	Improve Tualatin-Sherwood and Martinazzi signal timing		
D11	Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd		
D12	Make "Truck Route" signs larger	1	
D13	Add traffic calming on Tualatin Road		2
D14	Add measures to reduce truck traffic on local and minor streets		
D15	Improve turning radius from Herman Rd northbound onto 108th Ave		
D16	Increase speed limit to 40 or 45 MPH on 124th Ave		1
D17	Reconfigure the intersection of 115th and Tualatin-Sherwood		
D18	Improve turning radius from Tualatin-Sherwood to Cipole		
D19	Improve NB right and left turns onto Herman		
D20	Improve southbound left turns at 63rd and Lower Boones Ferry		
D21	Improve SB left turns from Jurgens and 106th onto Tualatin		
D22	Improve 65th Ave south across I-205; widen and address dip in the roadway		
D23	Ensure that future roundabout designs can accommodate larger trucks		
All	• Address with neighborhood CIOs what their problems and desires are		

GENERAL NOTES

- Suburan Door – Biggest issue time to get to freeway.
- Goals not achieved
  - Reduce traffic on TS road
    - Not park project but removing traffic
    - Working on transit E/W loop and Park & Ride
  - Doesn't support parking garage at Bridgeport
  - Goal should be to reduce Single Occupancy Vehicles (SOV)

PRELIMINARY

  - Nothing to destroy parks
    - Park has huge impacts to livability and environment (i.e., pollution)
  - Add Park & Ride recommendation to Industrial & Freight map. Note – the transit working group map has this concept, and all concepts moving forward will be combined in the TSP.
- Park commission must review this process.
- Goal should be reduce traffic (SOV) on TS Road.
- Truck traffic on Tualatin Rd is not a problem, car traffic is the problem.
- Teton needs to be widened.
  - Keep left turn
  - Traffic signals work with WACO on timing for UPS
- Traffic on Avery – talk to the neighborhood.
- Widening Boones Ferry in downtown would adversely impact the park.
- Need park & ride on the Industrial & Freight map. Note – the transit working group map has this concept, and all concepts moving forward will be combined in the TSP.
- Comments during introductions:
  - Suburban door, has not attended before.
  - Goal we missed: Limit single occupancy vehicles on TSR. Would like to see a Park & Ride at 99W to show on Industrial & Freight map. Note – the transit working group map has this concept, and all concepts moving forward will be combined in the TSP.
  - Don't bring more traffic into downtown via Hall extension.

DRAFT

City of Tualatin

Tualatin Transportation System Plan
Major Corridors and Intersections
Working Group Summary
March 1, 2012

Guess the intersection with most collisions:

- Avery/Tualatin Sherwood Road
- Boones Ferry Road/Tualatin Sherwood Road (9 votes)
- Boones Ferry Road/Bridgeport
- 115th/Tualatin Sherwood Road
- 65th/Sagert
- Teton/Tualatin
- Martinazzi/Tualatin Sherwood Road (2 votes)
- Nyberg Interchange
- Martinazzi/Warm Springs

ANSWER: Nyberg Interchange

Deficiencies:

- Tualatin Sherwood Road and Boones Ferry Road – there is too much going on at this intersection.
- Sagert/Martinazzi – 4 way stop.
- Sagert/Borland – Stop sign here causes congestion.
- Garden Corner curves.
- The curve on Grahams Ferry Road is dangerous.
- Traffic volumes along Tualatin Sherwood Road.
- Conflicts between through traffic in Tualatin vs. local/neighborhood traffic.
- Boones Ferry Road – Conflicts and congestion along corridor.
- 65th in the vicinity of Sagert and Borland – too much activity for this to be a stop-controlled intersection. Backups.
- Tualatin Sherwood Road/90th – Collisions/Cut through/Speeds.
- Tualatin Sherwood Road/Boones Ferry Road – Issues with left turn (from Boones Ferry Road) when train going through. Causes backups.
- Boones Ferry Road/Boones Ferry Road – at Bridgeport. Too much activity and confusion – safety and congestion issues.

Project Ideas:

(NOTE: The below ideas are just highlights recorded in large group discussion. All ideas generated by groups on maps will be recorded in the long list of project ideas.)

- Eliminate left turns onto I-5. Consider redesigning I-5/Nyberg interchange to a cloverleaf design.

- Coordinate the signal timing along Tualatin Sherwood Road, Boones Ferry Road and Martinazzi Avenue.
- School zone – Make the school zone signage consistent at the various locations in the City.
- Add a northbound left lane on Boones Ferry Road at Tualatin Sherwood Road. Further, the southbound right lane at this intersection needs more length or lane.
- Add capacity to Boones Ferry from Lower Boones Ferry to Tualatin.
- Add a signal on Boones Ferry Road at the High School.
- 65/Sagert – Add a left turn lane and realign signal.
- 90th and Tualatin Sherwood Road at Frontage – Add a stop sign.
- Put in a signal on Tualatin Road at Teton or 108th.
- Consider a roundabout at the vicinity of 65th/Sagert/Borland.
- Implement the 124th extension project.
- Add a signal to the intersection of Tualatin/Teton.
- Martinazzi/Sagert intersection – consider a signal or roundabout.
- Consider one big traffic circle around downtown – a one-way loop that allows right turns only.
- Eliminate the school buses at Park.
- Eliminate left turns at Park.

City of Tualatin

Tualatin Transportation System Plan
Major Corridors
Working Group Summary
April 16, 2012
Police Department Training Room

The purpose of this working group meeting was to study and discuss the potential solutions generated from the previous working group meeting, and to discuss the feasibility of potential projects to help decide if they should be considered in the evaluation phase of the TSP process.

The Working group separated into groups of no more than eight people to discuss the project ideas on the maps. Each meeting attendee was given three cards (green = yes, yellow = maybe, and red = no). Groups first went through each project idea and showed the card that they thought was appropriate for the project to be carried forward into evaluation for the TSP. Once the projects were tallied, groups then discussed the projects and whether they should be forwarded into the TSP for further evaluation. The tally is reported below, along with notes from the conversation. Projects that received all green votes from members were not discussed further, and the recommendation from the group is to evaluate the project in the TSP.

Safety-Focused Ideas		Green	Yellow	Red
A1	Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd Not familiar with road.	**18**	2	1
A2	Add traffic signal at Tualatin High School This would only be two times during the day for two accesses. Study it. Don't put in more signals because traffic is already a problem today. Needs something, but a signal may not be the solution.	6	**11**	3
A3	Consistent speed zones for both Tualatin High School & Byrom Elementary School	**20**	2	
A4	Raise the southbound off-ramp to allow a better view of traffic on Nyberg Rd The money needed to construct this project is not justified. There is a cost for the Right-Of-Way. This would not be practical for truck turns.	4	**10**	7
A5	Add traffic signal on Tualatin Rd at 108th Ave If a signal is installed at Teton Ave, it is not needed at 108th Ave. Teton Ave maybe a better location. There is bad visibility at this location. All "greens". Need more information on this project.	2	**15**	3
A6	*General* – consistent use of yellow turn signals on all traffic signals	**23**	1	

A7	Improve sight distance and reduce speeds at Boones Ferry Rd and Arapaho Rd Do not know what this project is about. More information is needed. Is this a problem?	5	**14**	3
A8	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd. Make residential access easier. The problem is cars cutting through, not trucks. Need to address Tualatin-Sherwood Road issues for cut through to solve this problem. Herman Rd has too many lights – people will not divert to Herman Rd. Provide signal to move to somewhere else. Add lights too.	**13**	5	5

Congestion-Focused Ideas		**Green**	**Yellow**	**Red**
B1	Widen Tualatin-Sherwood Rd Where exactly would it be widened? This is a bottleneck issue. Congestion is just being moved to where it would narrow again.	**19**	3	1
B2	Signal or roundabout at Sagert St and Martinazzi Ave Prefer a signal over a roundabout. The roundabout consumes too much land, and this is a challenging intersection.	8	**11**	3
B3	Realign Sagert St/Borland Rd intersection	7	**14**	1
B4	Consider a traffic loop in downtown (one way, right turn only) Not sure if this is the best solution, and the project is very unclear. Not sure what intersection problem this would address. Would this project increase safety concerns downtown? It is unclear where the one-way roadways would be. Other towns have struggled and converted back and forth between one way and two-way. Study this to see what it would do. Is there room to implement this? Doesn't make sense. This project would cause more problems and have a serious impact on business. This project would be expensive.	3	3	**18**
B5	Restrict right turn on red at Nyberg Interchange	7	**9**	7

	What purpose does this serve? Don't restrict turns. This intersection shouldn't be a traffic signal, just a stop sign. This project is very unclear. This would cause more congestion. Note this is the solution. Is a signal the solution?			
B6	Rethink access in vicinity of Tualatin Community Park The access is fine most of the time. No problem here.	8	6	**9**
B7	Consider removing ramp signals at Nyberg interchange Projects B7 through B11 are not feasible. Consider moving the meter to minimize the spill back. Question of control. Not in our control, bad idea.	1	5	**17**
B8	Prohibit left turns out of 108th Ave or remove trees in the southwest corner Not sure this is a problem. No problem seen. Signal is not required if one is installed at Teton Ave. Not sure if it's a problem. Don't prohibit left turn. Clear the trees.	5	8	**10**
B9	Coordinate signal timing on Boones Ferry Rd and Tualatin-Sherwood Rd; widen Boones Ferry Rd Adaptive signal technology. Just widened Boones Ferry Road. Good with signal timing. Separate traffic signal from widening in the project.	**14**	2	1
B10	Redesign the intersection at the Fred Meyer (from Nyberg Rd) Only useful redesign would be elimination.	5	**18**	1
B11	Consider redesigning the Nyberg interchange into a full cloverleaf This project is not feasible. There is too much land/cost when compared to the benefit. Would have been good for ODOT to have widened cloverleaf in the first place. No go.	1	**12**	11
B12	Make two right turn lanes from I-5 north onto Nyberg Rd More information needed. ODOT just built there. This project isn't needed. Consider one big fix instead of all smaller fixes.	3	**13**	7

B13	Extend the northbound left turn lane and create a southbound right turn lane on Boones Ferry Rd at Tualatin-Sherwood Rd to reduce backup from WES train; add red light cameras Two separate issues. The problem is on the south side. Consider timing WES train. There is a congestion issue at this intersection. Not sure this is the right solution. Need flow. Not sure of the correct solution. Make train wait for green light. Still need help for Northbound turn pocket. Look at WES also.	**19**	2	2
B14	Reconfigure Boones Ferry Rd at Tualatin Rd This slows people down the way it is today. There is not enough room. Would require additional land. Cost plus functioning adequate. Confused, no trouble here.	4	7	**11**
B15	Add a 4-way stop by 90th Ave at Kaiser Why a signal? Isn't needed. Traffic would back up into Tualatin-Sherwood Rd. Remove bushes. This is a sight distance issue.	**13**	6	2
B16	Add bus pullouts on Boones Ferry Rd Only downtown Northbound.	**19**	2	1
B17	Widen Boones Ferry Rd Lots of debate. Pedestrian safety concern. Worried about right of way acquisition. Consider three lanes. This is the same as project B9. Need more information. This would create a barrier and a divided city. Consider a roundabout on Boones Ferry, Victoria Woods house intersection would flow down. Consider 3 lanes. Add bus pull outs, bike lanes, deal with different speed zones.	8	**13**	3
B18	Add a southbound left turn and right turn lane to Nyberg interchange Don't understand this project. There are already 2 lanes in each direction. Cost benefit. Don't know what this is.	6	**12**	6
B19	Restrict trucks to right lane. Widen travel lanes.	4	1	**18**

This project is not feasible, it won't work. Impossible, requires too much land. Not practical. Don't encourage more through traffic in or on Tualatin-Sherwood Road. How would this happen and what purpose would it serve?			
B20 Roundabout or signal intersection at Nyberg Rd/65th Ave; keep Nyberg Rd 2 lanes	5	6	**11**
Roundabout sounds like a crazy idea. Signal exists. Don't want business near roundabout. Too much traffic for this location. Is there enough space? Wetlands on one side, and a bridge. The roundabout is a crazy idea.			
B21 Extend 124th Ave and connect to I-5	**17**	4	3
Under review by Washington County. More support if it goes down to Beckman. Impacts to neighborhoods. Understudy by another project. Should go to Beckman.			
B22 Address congestion caused by high school	**17**	5	
B23 Add a dedicated right turn lane on Teton Ave at Tualatin-Sherwood Rd	**17**	2	
B24 Add right turn lane on Tualatin-Sherwood Rd at 124th Ave	**21**	7	1
Not sure there is a problem here. Not sure there is a need. Already 5 lanes.			
B25 Limit access and grade separate the intersection of Tualatin-Sherwood Rd and Boones Ferry Rd		8	**15**
Too expensive. This project would destroy retail and create a barrier to the community. This would be expensive. Cost prohibitive and permits would be impossible.			

Connectivity-Focused Ideas	Green	Yellow	Red
C1 Extend 124th Ave to Tonquin Rd This project is not problematic. All about connectivity to I-5.	**18**	6	
C2 Extend 65th Ave north There could be better connections across river elsewhere, maybe make the improvement near Boones Ferry Rd instead. This project would have high residential impacts, and is politically infeasible. Connect other cities via McKewan Rd instead.		8	**15**
C3 Construct a new road between Tualatin High School and Byrom Elementary Don't understand problem. This would impact neighborhoods. Can't make a decision because the project is too vague. What is the need? Negatively effects neighborhood. School district property is out of city control. Don't understand the need.		3	**20**
C4 Improve traffic flow on Lower Boones Ferry Rd near Bridgeport Village into downtown Tualatin We should look at widening bridge to 3-4 lanes. Needs to include a Boones Ferry Rd bridge.	**11**	**11**	2
C5 Improve intersection at 99 W and Tualatin Rd Would encourage traffic on Tualatin Rd. Not worth the cost, this intersection was just improved. Just fine, not needed. New intersection there. Existing is fine.	1	5	**16**
C6 Extend Tualatin Rd to Lower Boones Ferry Rd Concern about park and intersection at 90th Ave. Destroys park. This has been studied already. Goes through golf course and would destroy park. This would impacts exit 290 on I-5.	1	4	**18**
C7 Add a connection between Tualatin Rd and Boones Ferry Rd; revise signal Charter amendment money Tualatin TSP for Tualatin. Don't invite other traffic loads. Moving bottleneck. Destroys park. Studied already. Goes through golf course.	1	6	**16**

C8	Need on/off ramps from I-5 to Norwood Rd This would have negative impacts on I-205, and large impacts on residential areas. ODOT won't approve. Too close to other interchange, and would encourage more traffic in this area.	1	4	**18**
C9	Widen Sagert St to 2-lanes each way with pedestrian median Why? This project is too expensive with few benefits to justify. A pedestrian median would be okay, but extra lanes are not needed. The bridge is a bit narrow - concerned about the cost of bridge. Look at strobe lights for a pedestrian crossing.	3	**11**	10
C10	Extend Helenius Rd (Grahams Ferry Rd to Norwood Rd) This would be difficult to build and would increase traffic cut through in the area. Would impact a wetland and the neighborhoods and would require displacements and residential impacts. Grade issues to construct.	2	4	**18**
C11	Create street grid in Bridgeport There is already a street grid, and this is private property. More information is needed, the project is too vague. This would be the developers' responsibility. It is too late to require it now – the area is built-up.	3		**21**
C12	Extend Boones Ferry Rd to Hall Blvd The Hall extension is a bad idea. Destroys park. Too much traffic through Tualatin, and the residential area in Durham. What is the cost benefit? This project straddles multiple jurisdictions, and could have impacts to wetlands. This has already been studied, and there are constraints with the railroad right-of-way. This would interfere with the park system. A connection over the park turns Boones Ferry Rd into a freeway. There would be too much through traffic.			**24**

Other Ideas		Green	Yellow	Red
D1	Add lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Install traffic camera for signal violations. Need detailed information. Don't like red light cameras. Where would they be installed? East? Would a longer lane address the problem?	9	**10**	4
D2	Better signs needed to direct traffic to correct street	**18**		6
D3	Tualatin-Sherwood Rd/Martinazzi adjust signal timing, and add a red light camera Lights are already timed. Don't like cameras. Make flashing yellow light consistent throughout the City.	**12**		
D4	Adjust signal timing The timing now is fine - satisfied with the existing system.	**18**		4

Ideas from Previous Planning Efforts		Green	Yellow	Red
P1	SW Tualatin Concept Plan Roadways (2005) Should be lower priority for funding over existing roads. Lower priority over existing road.	6		3
P2	Extend Pacific Drive to 124th Ave Hwy 99W (2001 TSP) The project does not add any transportation value.	3	6	1
	Planned traffic signal locations (Various) 2001 TSP A signal at Ibach & Grahams Ferry makes sense. Maybe add a signal at Avery & Teton. Yes for a signal at Tualatin Rd and Teton Ave.	6		3

Additional Comments

Group all items/changes to get final results:

Group - A2/B22

Group - A4

Group - A8

Group - B12

Group - B18

Group – B11, B12, B5, A4, B18

Major Corridors and Intersections Working Group #3 Summary

The Major Corridors and Intersections Working Group met on June 14th, 2012 from 6-8 p.m. at the Tualatin Police Department. The working group heard how the project team evaluated the project ideas, and then discussed the evaluation and the projects. At the end of the working group meeting, attendees were given five red and five green dots. Attendees were asked to place green dots on the projects that were the most important to the community and red dots on projects that they thought should not be carried forward into the TSP given the discussion and the preliminary evaluation results. One dot per project per person was allowed (attendees were not able to put all of their dots on one project).

ID	Project Idea	Green Dots	Red Dots
A1	Reduce speeds, add guardrail and shoulders to section of Grahams Ferry	4	
A2	Add traffic signal at Tualatin HS Is this a seasonal problem only?	2	3
A3	Consistent speed zones for Tualatin HS and Byrom Elementary	1	
A4	Improve sight distance at I-5 and Nyberg Rd interchange		
A5	Add traffic signal on Tualatin Rd at 108th	1	1
A6	Consistent use of yellow turn signals at traffic signals	6	
A8	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Amendment to A8: traffic from Herman to Teton not through to Tualatin Rd Add signs to direct cars onto Herman	2	1
B1	Widen Tualatin-Sherwood Rd Need to do Boones Ferry Road all the way	5	1
B2	Signal or roundabout at Sagert and Martinazzi	2	
B3	Realign Sagert /Borland to one intersection Just add a signal at Sagert/65th	1	2
B5	Restrict right turn on red at Nyberg Interchange		1
B6	Rethink access in vicinity of Tualatin Community Park EGRESS only – no change to existing circulation in park	5	7
B8	Prohibit left turns out of 108th Ave or remove trees in the southwest corner		
B9	Coordinate signal timing on Boones Ferry	7	
B10	Redesign Nyberg/Fred Meyer intersection and improve pedestrian crossing	3	1
B12	Make two right turn lanes from I-5 north onto Nyberg Rd	1	3

ID	Project Idea	Green Dots	Red Dots
B13	Extend NB left turn and create SB right turn lane on Boones Ferry at Tualatin-Sherwood to reduce backup from WES train	3	
B14	Reconfigure Boones Ferry at Tualatin C7 Revise connection between Tualatin Rd and Boones Ferry Road		13
B15	Add a 4-way stop by 90th Ave at Kaiser		1
B16	Add bus pullouts on Boones Ferry Rd	4	
B17	Widen Boones Ferry at south end of City	1	5
B20	Roundabout at Nyberg and 65th intersection		3
B21	Extend 124th Ave to south	7	4
B22	Address congestion caused by high school	4	
B23	Add a dedicated right turn lane on Teton at Tualatin-Sherwood	6	
B24	Add right turn lane on Tualatin-Sherwood at 124th	5	1
C2	Extend 65th Ave to the north	3	4
C4	Improve traffic flow on Lower Boones Ferry Rd between Bridgeport Village and downtown	5	
C7	Revise connection between Tualatin and Boones Ferry near the railroad tracks Combined with B14		
C9	Widen Sagert to 2-lanes each way	1	4
C12	Look for ways to provide north-south connectivity over Tualatin River for vehicles		9
D1	Add lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Install traffic camera for signal violations.	1	2
D2	Better signs needed to direct traffic to correct street		

Boones Ferry Road/Nyberg – look at signal, allow left turns during WES.

Add a project that improves Teton between Tualatin Road and Tualatin Sherwood Road (this needs to be evaluated as a new idea)

Kaaren will look into providing a session on Modeling 101 by Metro, if sufficient interests exists

As part of the Herman and Tualatin options, look at improving 124th between the two roads and making it less convenient to turn onto Tualatin from 124th.

City of Tualatin

Tualatin Transportation System Plan
Neighborhood Livability Working Group Summary
March 5, 2012

Issues:

- Cut-through traffic:
  - Halcion/Joshua
  - Siletz
  - Other (Tualatin)
- Intersections:
  - Large
  - High traffic
  - Difficult lane configurations
- Schools/pedestrians:
  - Safe Routes to School
  - Signage along the biking/walking routes
- Cut-through traffic in neighborhoods – traffic moves too fast, break speed limit and other laws
- Trucks and traffic take Tualatin Road – they don't take 125th Ave and Herman, which is a better alternate route
- Neighborhoods feel "boxed in" by large streets and manufacturing areas, reduces the quality of life:
  - Noise
  - Air pollution
  - Safety issues
- Access to/from neighborhoods to Tualatin Road is difficult
- It is hard to get into/out of Tualatin Community Park
- Access in and out of town (especially by alternatives to the car):
  - How to address an aging population that may not be able to drive
- North side issues:
  - Traffic near Hazelbrook
  - Cut-through
  - Need lighting and safety improvements
- Boones Ferry Road - do not want it to become the Tualatin-Sherwood Road to the south
  - Boones Ferry Road should not be a barrier – 5 lanes would be too wide
- Basalt Creek will add additional traffic - want to make sure that future traffic will avoid neighborhoods
- The industrial land-uses along Avery cause problems for the neighborhoods
- Along Boones Ferry Road the speed limit changes from the urban to rural feel – it is not consistent (especially with the school zone)
- Safety at High School and Elementary School is important:
  - There is lots of activity near there
  - There are no medians or traffic calming

Themes:

- Industrial and residential uses next to each other causes conflicts

- Safety and noise issues
- Cut-through traffic
- Connectivity and isolation of neighborhoods is a problem.

Project Ideas:

- 124th needs to be a priority for industrial traffic
- Neighborhoods should be "havens" that support livability - some beautification projects are needed
- Continue focus on needs of community through the TSP process
- North Tualatin projects:
    - Lighting in neighborhoods (Hazelbrook), for all users
    - Bus traffic or a traffic study is needed to better route buses.
- Create a consistent speed on Boones Ferry Road
    - Provide east-west connectivity across Boones Ferry Road
    - Roundabout at Boones Ferry Road and Norwood to slow traffic down
- Basalt Creek needs a connector to I-5 south of the residential area
- Sound walls on 99W and I-5
- Small circulator bus within the city
- Build larger roads around Tualatin to reduce cut-through traffic on Tualatin roads
- Improve sidewalks, add benches and amenities at bus stops
- Add lights and slow traffic down near pedestrian crossings
- Provide access to transit in north Tualatin
- Encourage students within a certain distance (1/2 mile?) of schools to walk and bike to school
- Re-work bus routes
- Add strategic roundabouts
- 65th and Sagert crossing
- Safe Routes to School committee for each school
- Create Parkways and Boulevards – add medians, fewer access points, and increase design to help slow traffic down
- Add amenities for pedestrians
- Add medians, lighting and seating at high-traffic areas

Important corridors:

- Boones Ferry Road
- Tualatin Road
- 124th Avenue
- Herman Road

City of Tualatin

Tualatin Transportation System Plan
Neighborhood Working Group Summary
Meridian Park Hospital, (19300 SW 65th Ave, 97062)
April 11, 2012

The purpose of this working group meeting was to study and discuss the potential solutions generated from the previous working group meeting, and to discuss the feasibility of potential projects to help decide if they should be considered in the evaluation phase of the TSP process.

The Working group separated into groups of no more than six people to discuss the project ideas on the maps. Each meeting attendee was given three cards (green = yes, yellow = maybe, and red = no). Groups first went through each project idea and showed the card that they thought was appropriate for the project to be carried forward into evaluation for the TSP. Once the projects were tallied, groups then discussed the projects and whether they should be forwarded into the TSP for further evaluation. The tally is reported below, along with notes from the conversation. Projects that received all green votes from members were not discussed further, and the recommendation from the group is to evaluate the project in the TSP.

Safety-Focused Ideas		Green	Yellow	Red
A1	Discourage/restrict through & truck traffic along Tualatin Rd while encouraging a shift to Herman Rd & Leveton Rd. Make residential access along Tualatin Rd easier. Rebuild Tualatin Rd to make it prohibitive for trucks. Plant flowers and make it a neighborhood street. Cut off access along Teton and 108th Aves.	6	**10**	
A2	Improve lighting on Hazelbrook Rd Walking to the park is really dark. There is also a retirement home and school nearby	**13**	3	
A3	Reroute school buses away from Tualatin Community Park and two railroad crossings	**11**	3	2
A4	Add a roundabout at Boones Ferry Rd &Norwood Rd Look at signal options. Is this the best place to do this? The intersection is really small. There is not a lot of room so the City would need to buy ROW. However, this would slow traffic down. Boones Ferry Rd is a major collector, so don't use a roundabout here. If Norwood and I-5 were connected, we would need traffic calming. We don't want the connection, so we don't need traffic calming.	3	7	6
A5	Explore ways to make Boones Ferry Rd more pedestrian-friendly, including the creation of one consistent speed limit, without widening	6	10	

	Speed limit because of school zones is not really an issue. Separate bike/pedestrian paths needs more exploration and conversation. When the project is only make it more pedestrian friendly – 4 green and 1 yellow. When the project is creating a consistent speed limit – 5 yellows.			
A6	Improve intersection at 108th Ave and Tualatin Rd Improve visibility? Yes. Improve signal? No. Remove the trees on the southwest corner. There is lots of traffic in the morning and it is difficult to make turns. Light would discourage traffic. Traffic coming through tries to avoid Tualatin-Sherwood Rd.	2	12	2
A7	Improve sight distance and reduce speeds at Boones Ferry Rd and Arapaho Rd This seems strange. Not sure of the need or what to do about it? This conflicts with A5. Reduce the speed or keep the speed consistent? Not sure what the sight distance issue is. It is already ok.	6	9	1
A8	Reduce speed, add sidewalks and bike lanes on Blake St curves. Possibly add trail through wooded area. Trail would be hard, private property owners would likely not sell or approve the easement. There is no room for sidewalks and bike lanes. Once you drive it once, you know that you can't go the speed limit on the curves. Add wayfinding signs. For sidewalks only, 2 red, 2 yellow, for reducing speed, 3 green, 1 yellow, for Trail only, 4 yellow.	9	15	1
A9	Eliminate free right turns Not needed for Tualatin and Herman Roads. A1 would eliminate the problem. Light warranted? Don't eliminate free right, though this makes it hard for pedestrians. If Tualatin Rd is redone, you don't need right turns. Not may pedestrians in the area, however needs further study.	2	9	5
A10	Require a stop before vehicles turn right onto Boones Ferry Rd between Mohawk St and Greenhill Ln Isn't that already required on side streets? There are collision issues if this project is added at streets with signals. Don't know where this is. Have to stop before you get on Boones Ferry Rd anyway from side streets.	2	5	4

Congestion-Focused Ideas		Green	Yellow	Red
B1	Add a signal or roundabout at Sagert St and Martinazzi Ave Offset to avoid apartments. For signal only – 3 green, 2 red. For roundabout only - 2 green, 3 red.	13	2	2
B2	Add a dedicated right turn lane into Nyberg Woods Apartments Not needed. The shopping area already has a right turn lane. A new solution is B7 – 2 right turns to northbound I-5. Doesn't make sense. Not enough traffic. Maybe it's a left turn?	2	8	7
B3	Realign Sagert St and Borland Rd intersection (roundabout or signal) Study all options. If roundabout is oblong, consider Nyberg/65th. Realigning is first priority. For realign Sagert and Borland – 5 green. For Signal – 2 yellow, 3 red. For Roundabout – 4 green, 1 yellow.	16	10	5
B4	Improve intersection at Avery St and Teton Ave If we improve the road for truck traffic, it will cause irreparable harm to the residential neighborhood. Encourage more turns.	10	3	4
B5	Address congestion caused by high school What does this mean? Only problem for 20 minutes in the morning: this project is not needed. Needs more discussion. More kids bike to schools. Increase the parking rates for school when it's a fire lane road. We'll have signals.	4	13	
B6	Adjust signal timing to reflect traffic needs	16	1	
B7	Add two right turns onto I-5 northbound from Nyberg St Is there a need? Not going to happen. Not needed and expensive. Congestion because of freight, not because of the single turn lane. Could own Stafford and south of Borland interchange on I-205. Difficult to understand with additional context. This is similar to B2.	5	5	7
B8	Add right turn lane from Tualatin-Sherwood Rd to northbound 124th Ave Would be nice to have. May be needed in the future. Make sense to add a roundabout on Tualatin-Sherwood Road & 124th Ave	12	6	

Connectivity-Focused Ideas		Green	Yellow	Red
C1	Connect 124th Ave to Tonquin Rd	15	2	
C2	Balance neighborhood needs with trucks along 108th/105th Aves. Consider disallowing trucks/truck info signs. Add traffic calming. Will the 124th Ave connection solve this problem? Close the street at the curves. Add it to Blake Street Greenway. Too many ideas. Truck route signs aren't useful – the City can't enforce if they area on an arterial road.	11	2	4
C3	Balance the needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school No room for turn lane. Can't restrict truck traffic.	6	10	
C4	Add I-5 Interchange with Norwood Rd Not going to happen, it is cost prohibited. Too close to other interchanges.	3	2	12
C5	Limit Siletz to exit only at Boones Ferry Rd and 105th Ave to minimize cut-through traffic. Residential street acts like a connector. Don't like the exit only. Could push traffic to other residential streets. Eliminate cut through without speed bumps. Residential road accommodates traffic. Would stop signs work?	7	7	2
C6	Create a street between Boones Ferry Rd and Bridgeport Rd Formalize informal road - "secret resident cut-through". Private property and parking lot. Remove speed bumps.		8	8

Bicycle/Pedestrian-Focused Ideas		Green	Yellow	Red
D1	Consider a pedestrian overcrossing on Boones Ferry Rd Won't get used – it is out of direction. An overcrossing is expensive	3	3	11
D2	Consider pedestrian islands on Boones Ferry Rd, near Byrom Elementary and Tualatin High schools Island won't help Byron Elementary access on Blake Street. There is already a pedestrian island near Iowa Dr on the south end, need one on Ibach St	3	8	6
D3	Provide a multi-use path along the river	11	4	2

	Good for the area west of I-5			
D4	Connect sidewalk on east side of 65th Ave	16	1	
D5	Repair gap in sidewalk on the south side of Borland Rd	17		
D6	Add multi-use path as part of Tualatin Trail	11	3	3
D7	Provide focused pedestrian crossing improvements (may need signal)	14	1	1
	Teton Ave and Tualatin Rd intersection needs a light. Slow traffic carries a lot of traffic accident issues. Safety issue. Hard to make a left turn westbound on Tualatin Rd			
D8	Add bike facilities & continuous sidewalks; reduce speed limit	16	1	
D9	Build the Tonquin Trail	13	4	
	Build it, it is not our money (Metro will be funding).			
D10	Provide neighborhood connections to Tonquin Trail	10	2	
	Crossing - Pedestrians and railroad don't mix. Overcrossing is no good, expensive, and too large. Undercrossing has safety concerns.			
D11	Connect to Tualatin Path	10	7	
	Undercrossing issue, safety/visibility. Would be great, nature walk, bike to grocery store.			
D12	General – add benches around the city for pedestrians, especially between Heritage Center and Haggens	7	1	
D13	General – Provide 3 loop walking paths that connect all Tualatin neighborhoods	9	3	4
	Too vague, impractical and overly broad.			

Transit-Focused Ideas		**Green**	**Yellow**	**Red**
E1	Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin	14	3	
	As stand-alone this doesn't make sense. People won't take it to do downtown. Ok as long as it part of a larger circulator transit system.			

Other Ideas		Green	Yellow	Red
F1	Consider ways to lessen noise from 99W and I-5 on nearby residences Not a lot of residences near 99W. "Consider" doesn't cost money. Noise proof window incentive program. Impractical. We have sound walls already along I-5.	3	9	5
F2	Consider changing "no right on red" sign Keep the sign. Don't see the need why? Unclear. Who has a problem with this? Trying to cut commute but serious safety issue.		5	12
F3	Intersection of Ibach/Grahams Ferry is confusing; rename road or better signs; need better lighting Not confusing every time. Do it once, you know. Not needed. Is it a problem? Not a priority. People who live here know how it works. Not necessary, except lighting.		8	9
F4	*General* – Add gateway signs to announce CIOs Why? What is the benefit? Not transportation. Not needed, cost prohibited. Not a transportation issue.		1	16
F5	Move industrial area to the SW area (no direct truck route), change to multifamily residential, or buffer existing neighborhood better from industrial area It is impractical to restrict truck traffic. This would create blight in transition. Residential right along rail line. The railroad and ODOT rail would not approve an additional rail crossing. For move industrial to the SW area – 1 yellow and 4 red. For buffer existing neighborhood better – 3 green, 2 yellow.	7	6	10
F6	Create small, neighborhood commercial for residents to walk to No one will walk there because it is already commercial. Make Tri-County neighborhood/commercial.	8	4	5

Ideas already in other Plans		Green	Yellow	Red
P1	Extend Boones Ferry Rd to Hall (from the 2001 TSP)		2	5
P2	SW Tualatin Concept Plan Roadways (2005)	7		

General Comment:

- When we talk about congestion, consider time and length of congestion.

Other Ideas:

- All school zone speed restrictions consistent. Why are they different?
- Pedestrian benches on Tualatin Rd. (Could be an Eagle Scout project)
- PI – Bring additional traffic downtown, take out the park.
- Look into and extension of 65th to enhance the neighborhood connectivity and relieve congestion on I-5.

Neighborhood Livability Working Group #3 Summary

The Neighborhood Livability Working Group met on June 13th, 2012 from 6-8 p.m. at the Tualatin Police Department. The working group heard how the project team evaluated each project, and then discussed the evaluation and the projects. At the end of the working group meeting, attendees were given five red and five green dots. Attendees were asked to place green dots on the projects that were the most important to the community and red dots on projects that they thought should not be carried forward into the TSP given the discussion and the preliminary evaluation results. One dot per project per person was allowed (attendees were not able to put all of their dots on one project).

ID	Project Idea	Green Dots	Red Dots
A1	Discourage through and truck traffic along Tualatin while encouraging through and truck traffic along Herman This wording for the project is better than the wording on other Working Group maps The City does not have a lot of control over trucks on Tualatin Different design elements could be used to restrict trucks Herman Rd would be good alternative (it should be labeled an Expressway with specific design standards). Herman is a good connection to 99W Herman Rd could handle the truck, you could put urban design criteria on to shift the traffic Differences in opinions based on which neighborhood you live in UPS trucks hold up traffic on Teton Avenue This project should stay on the list for further evaluation Need to work with school buses on traffic	1	
A3	Reroute school buses away from Tualatin Community Park and two railroad crossings Forward to school, should not be on the TSP	1	
A4	Add roundabout at Boones Ferry and Norwood A roundabout would make a more vibrant neighborhood Accessibility for pedestrian/cyclists could be addressed through design (in response to concerns that roundabouts are hard to navigate for bicyclists and pedestrians)		2
A5	Make Boones Ferry Rd more pedestrian-friendly If Boones Ferry was better, people would use it - change equity to ½ circle	2	
A6	Improve intersection at 108th and Tualatin		3
A8	Reduce speed, possibly add trail through wooded area Issue is somewhat being addressed this year, interim solutions will be constructed	1	

ID	Project Idea	Green Dots	Red Dots
A9	Eliminate free right turns on Herman at Teton and Tualatin The improvements at these intersections were recently made By removing these free right turns turns, you could keep people on Herman		4
B1	Add signal or roundabout at Sagert and Martinazzi Needs to be either a signal or a roundabout, but the only time there is trouble is during peak traffic times Roundabout could probably work, it could be smaller, set the stage for using Sagert more	2	
B2	Add dedicated right turn lane into apartments near Nyberg Woods Shopping Center This project doesn't make any sense. This whole area needs work. Originally this concept was to help traffic get onto I-5 northbound, when the other project fell off the list; this project no longer makes sense.		1
B3	Realign Sagert /Borland to one intersection Most agreed this was good, though there was disagreement	1	4
B4	Improve intersection at Avery and Teton What is the improvement?		
B5	Address congestion caused by HS Add utilize busses more	2	
B6	Adjust signal timing to give priority to Tualatin Road through traffic. At Tualatin Country Club Contradicts the intent of project A7	1	1
B8	Add right turn lane on Tualatin-Sherwood at 124th Agreed	3	
C1	Extend 124th to south Concerns about making sure it connects east to west	4	
C2	Consider removing trucks/adding truck info signs along 108th/105th Aves	2	
C3	Balance neighborhood needs and trucks movement along Avery; provide turn lane for traffic entering school This project isn't practical – where does the right-of-way come from? A turn lane is a good idea into the school.		

PRELIMINARY

ID	Project Idea	Green Dots	Red Dots
C6	Create a street between Boones Ferry and Bridgeport This project does not meet any need, and should be removed from the TSP	1	5
C7	Extend 65th to the north This requires more analysis, and would be difficult to do. This would be a lot of money to spend for people to avoid driving a few blocks. Would it be possible to make this a bike/pedestrian project?	5	
D2	Add pedestrian islands on Boones Ferry, near Byrom Elementary and Tualatin HS An island already exists south of the HS driveway. How about standardizing the flashing lights for schools, making them only when students are likely to be present (20 mph when the lights flash) as opposed to 20 mph between 8 am and 5 pm?	3	2
D3	Provide a multi-use path along the river Would create good path connections	6	
D4	Connect sidewalk on east side of 65th Would create good path connections – yes, add into the TSP. Close sidewalk gaps	1	
D5	Repair gap in sidewalk on south side of Borland Good path connections		
D6	Add multi-use path as part of Tualatin Trail Would improve path connections	6	
D7	Provide focused pedestrian crossing improvements along Tualatin Road Would improve path connections	4	
D8	Add bike facilities and continuous sidewalks along Graham's Ferry Don't know why – what is there to walk to? Would create good path connections	2	1
D9	Build the Tonquin Trail Good path connections	2	
D10	Connect Tonquin trail with neighborhoods Would create good path connections.	2	
D11	Connect to Tualatin Path Would create good path connections.	2	
D12	Provide benches for walkers throughout city Really like this project.	3	

DRAFT

ID	Project Idea	Green Dots	Red Dots
D13	Create a bicycle boulevard system connecting major areas	2	
E1	Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin	3	
F2	Remove NB right turn signal on Tualatin out of Police Station There is not a problem at the Police Station; the issue is with pedestrians trying to cross the north side of the intersection, because there is a free right turn here for vehicles going to Tualatin Road. If the Tonquin Trail is built, it will allow pedestrians to get around most of these issues.		6

Add SDC fees to Commercial/Industrial areas for parks

Overall – Neighborhoods projects should include transit serving neighborhoods and a park and ride near where people live. Making left turn on Tualatin Rd from Cheyenne Way is very difficult

PRELIMINARY

Transit Working Group - Meeting #2 Summary

Date: 3/8/12

Loca on: Police Department Training Room (8650 Tuala n Road, Tuala n, 97062)

A endees: ***City of Tualatin:*** Cindy Hahn, Aquilla Hurd-Ravich, Kaaren Hofmann, Ben Bryant

Consultants: Brandy Ste en, Kate Lyman, Theresa Carr

Purpose

The purpose of this mee ng was to review ideas proposed during the rst Transit Working Group mee ng, answer demographic ques ons raised during the rst mee ng, and provide an opportunity for the group to brainstorm ideas for poten al projects for transit improvements, both at a regional and local level.

Approximately 12 people a ended the event, including several members of the Transporta on Task Force. The following is a summary of comments received during the various phases of the mee ng.

Welcome and Introductions

Cindy welcomed the group and introduced the City and Consultant sta in a endance. Then the mee ng a endees introduced themselves. The mee ng par cipants also said which Ci zen Involvement Organiza on (CIO) they represented:

- CIO 1 – 4 par cipants
- CIO 2 – 2 par cipants
- CIO 3 – 1 par cipant
- CIO 6 – 1 par cipant
- Commercial CIO – 2 par cipants

Brandy welcomed the group and reviewed the ground rules and expecta ons for par cipa on from the a endees.

Follow up/Review Last Meeting

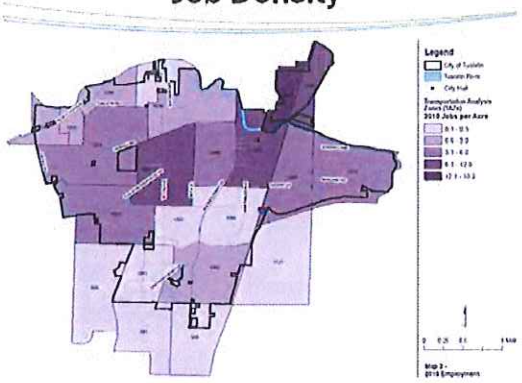
Kate presented informa on to ques ons that were raised during the rst mee ng. Below are the slides she presented:

Demographics in Tualatin

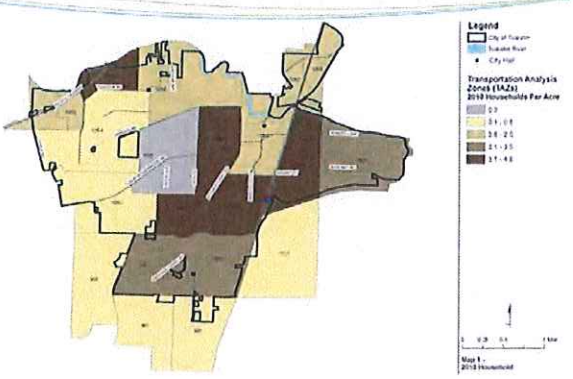
- Median income slightly higher than region as a whole
- There are more jobs than residents in Tualatin – many people commute in from other places
- There are more children under 18 and fewer adults under 65 in Tualatin than in the region as a whole
- Approximately 72% of residents in Tualatin have moved here since 2000

Source: 2005-2009 American Community Survey

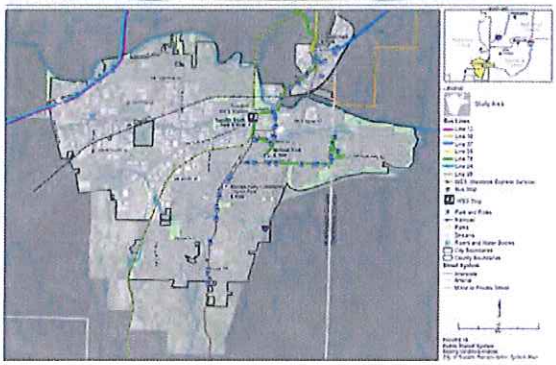
Job Density



Household Density



Existing Transit Service



Park & Ride Use

- Tualatin Park & Ride (at Bridgeport Village) – 466 spaces, 83% full
- Mohawk Park & Ride – 232 spaces, 22% full
- Tualatin South Park & Ride – 147 spaces, 24% full
- Boones Ferry Community Church Park & Ride – 20 spaces, 10% full

Source: TriMet, 2011

Bus Stop Amenities

- 79 total bus stops within the city of Tualatin
  - 67 include pole and sign only; remaining 12 include a shelter with posted schedule
  - Approximately half include street lighting
  - A few of the larger stops include bike parking

Commuting to Work

- 77% of Tualatin commuters drive alone to work
- 7.4% carpool
- 4.2% use public transit
- 2.9% walk
- 6.1% work at home

Source: 2010 American Community Survey

Ridership in 2011

Transit Service	Average Total Weekday		Average Saturday		Average Sunday	
	Boardings	Alightings	Boardings	Alightings	Boardings	Alightings
Bus line 12 (Barbur/Sandy Blvd)	66	66	38	38	27	25
Bus line 36 (South Shore)	18	21				
Bus line 37 (Lake Grove)	26	25				
Bus line 38 (Boones Ferry Road)	27	19				
Bus line 76 (Beaverton/ Tualatin)	504	576	416	423	259	263
Bus line 96 (Tualatin/I-5)	603	591				
WES	229	212				

Ques ons raised at this point include:

- Ci zens asked City Council for more service in the past, but didn't get that funded
- No informa on about number of drivers at Park & Ride (Number from outside Tuala n)
  - Sta will try to follow up to see if more informa on is available.
- TriMet survey of riders on #94
  - Survey restults should be ready in September 2012 - some data will be ready within the next month and will be presented to the Transit Working Group
- Where does SMART go in Tuala n?
  - Tuala n Park & Ride (and Barbur Blvd)
- Have the TriMet lines already been cut?

  - Not yet. Hearings are being held now and it will be voted on in May. They will then take e ect in September 2012. Proposed changes include:
    - Fare structure, stop free rail, line 96, no zone transfer change
    - Line 12 will split at Tigard = Sherwood to PDX transfer in Tigard
    - 37/38 keep service, fewer morning trips
    - 96 decreases frequency by 5 minutes
    - 76 had no change
    - 94 ends at Barbur with connec on to Sherwood/Tigard
- There is no Park & Ride on 99W
- Can we nd out the number of employees who are residents vs. outside employees?
  - The Chamber of Commerce will forward that informa on to the project.
- No east/west transit
- Chamber shu le informa on:
  - 2 shu les in the morning, 1 in the evening – serves 35 businesses
  - 70-80 people in morning, 50 people in evening
  - $4.70 cost/ride, but riders are not charged anything

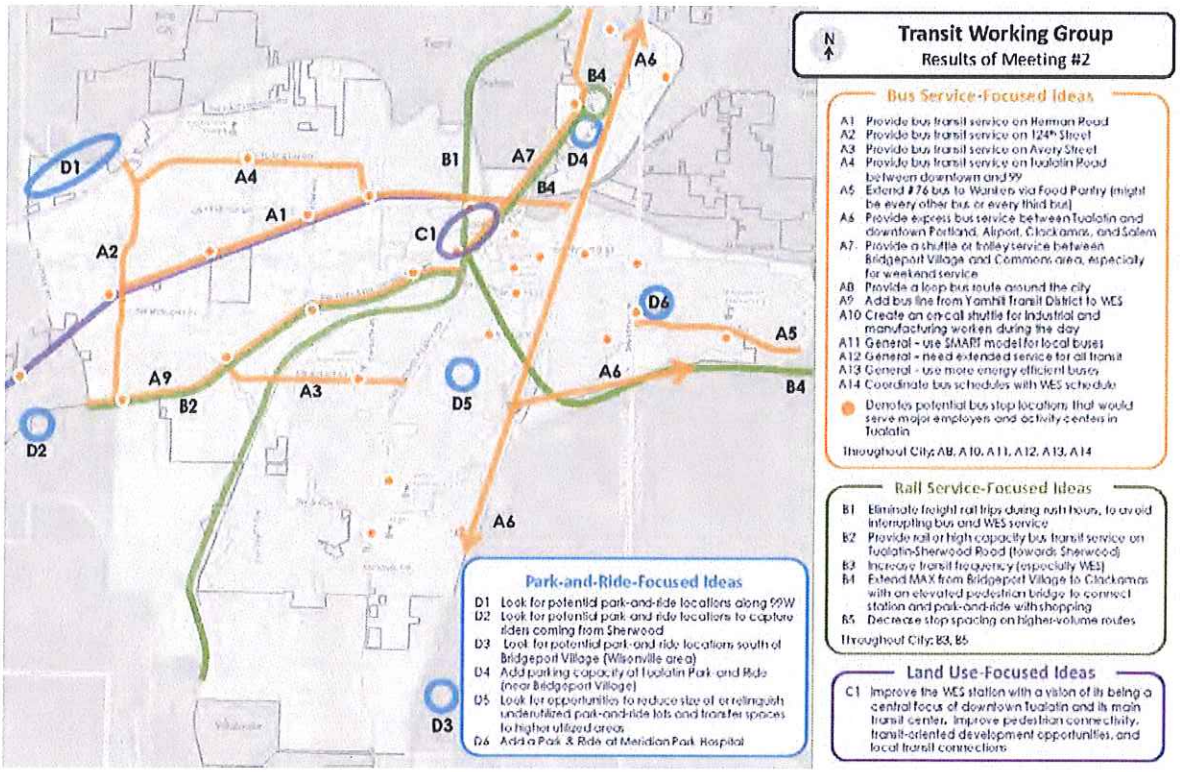
Transit Improvements

Brandy broke the larger group into three small groups, each of which had a sta person to help facilitate the small group discussions. The groups looked at maps based on the ideas developed during the rst mee ng and then brainstormed ideas for transit improvements at the local and regional level.

A er the small group break-out sessions, Brandy had each small group report out to the larger group on their discussion. Here are the highlights of that larger discussion, which allowed for follow-up ques ons and addi onal thoughts raised a er the small group discussion.

- Residen al/jobs downtown
- Food Pantry doesn't have bus
  - 96 should loop there on the 3 days the Pantry is open
- Transit hub – Bridgeport Park & Ride has the most use, shopping area and Park & Ride
  - Use parking at other shopping areas
  - Stop some tra c at Park & Ride farther south by using parking built at Raleigh Hills, Costco and church
  - Opportunity to shop before/a er
- Don't ruin livability
  - Keep out of car, HCT to local service
  - No parking in Sherwood
  - Need business incen ves
- Fear Haggens had about WES was un-founded
  - Under u lized transit
- Work with Yamhill County Transit to run service to WES (this would provide east-west service in Tuala n)
- Create be er, faster connec on to PDX airport
- Create a local shu le that could serve two purposes – on weekdays would circulate to employers, on weekends would circulate to shopping areas and event loca ons
- Build bus stops to serve employers (see map for speci c loca ons)
- Bring the new southwest corridor MAX line to the WES sta on; create a transit hub

This map shows all of the ideas collected during the mee ng.



Wrap-Up

Theresa reminded the group that their comments from the mee ng would be reviewed by City sta and presented to the TTF and eventually to City Council. Cindy thanked the group for a ending and encouraged them to a end the next Transit Working Group on March 29, 2012 (same loca on and me).

Evaluation Forms

Evalua on forms were collected from a endees to let project sta know what should be changed in future mee ngs or to provide other wri en comments.

	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree	Not applicable
Informa on presented was clear and understandable	6					
Mee ng facilitator encouraged and allowed all par cipants to share their ideas	6					
Mee ng was e cient and made good use of my me	5	1				
I now have a be er understanding of transit issues in Tuala n	4	1	1			
The Transit Working Group will in uence decision-making	3	2				
I'm glad I am participating in the Transit Working Group	5					

Below are the open-end comments that were collected:

- Excellent ideas tonight
- Thank you
- I hope so (to ques on 5: Transit working group will in uence decision-making)

Transit Working Group - Meeting #3 Summary

Date: 5/21/2012

Location: Police Department Training Room (8650 Tualatin Road, Tualatin, 97062)

Attendees: ***City of Tualatin:*** Aquilla Hurd-Ravich, Kaaren Hofmann, Alice Rouyer, Colin Cortes

Consultants: Matt Hastie, Brandy Steffen, Kate Lyman

Purpose

The purpose of this meeting was to review the changes to the focus areas that will be used by the Linking Tualatin project, comment on the draft land use types that should be explored for the future, and comment on the feasibility of the draft project ideas.

Approximately 22 people attended the event, including several members of the Transportation Task Force. The following is a summary of comments received during the phases of the meeting.

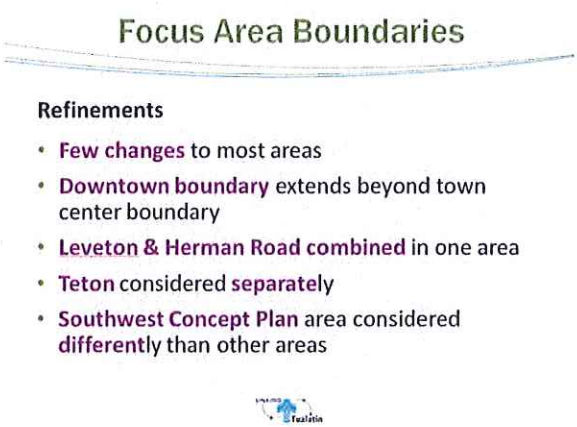
Welcome and Introductions

Brandy welcomed the group and reviewed the agenda for the evening. Aquilla then introduced the City and Consultant staff in attendance. The meeting attendees introduced themselves. Brandy quickly reviewed the ground rules and expectations for participation from the attendees, reminding the group that there was a lot of information to cover but that this meeting was only the first of many discussions on this topic. Many of these topics will be covered during other working group meetings, the May open house, and the June 4-day workshop (charrette).

Follow up/Review Last Meeting

Brandy reminded the group what information was discussed during the second meeting; the group reviewed a long list of project ideas during the last agenda item (as developed during the second meeting).

Matt reviewed the changes to the focus area boundaries, moving from the earlier versions (circle shaped) to the current versions with streets forming the boundaries.



Then he discussed the idea of land use types, which describe the different sets of "goodies" or features that you need to make the City look the way that residents and businesses would like it to grow in a given area; ways that will help attract and retain high capacity transit (such as MAX or express buses). *More information about land use types and deciding what type of development should take place to*

encourage/promote high capacity transit will be part of the 4-day workshop in June (charrette). Businesses, residents, and agencies will be invited to this workshop to collect feedback on this topic.

Questions/thoughts raised at this point include:

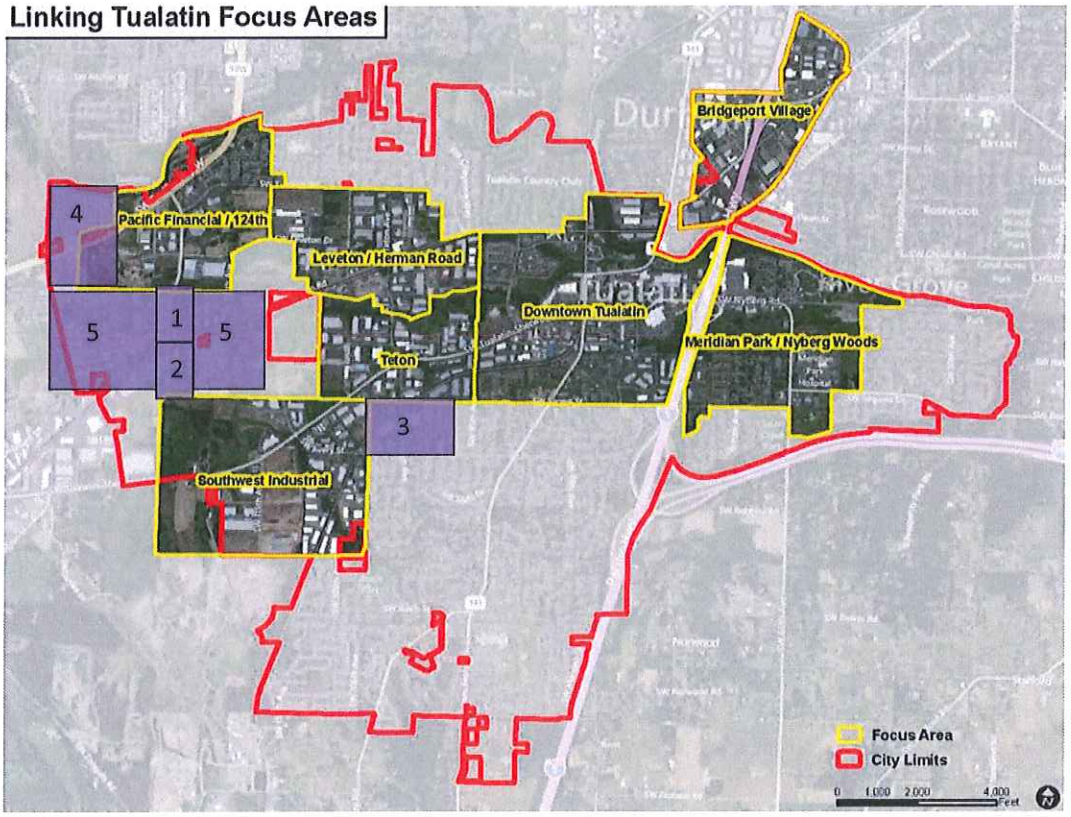
- Need to include residential areas in the discussion and on the maps, since they are important to transit
- Don't use the word "charrette" but say 4 day-workshop
- Don't use the word "typologies"

Group Work

Brandy broke the larger group into three small groups, each of which had a staff person to help facilitate the small group discussions. The groups were asked to review and comment on three topics:

Focus Areas

The focus areas are shown in the figure below.



Suggested changes to the focus areas, included (highlighted in purple on above figure):

1. Extend Pacific Financial/124th area south to Herman Road (around 124th Street)
2. Extend Southwest Industrial north to Herman Road (around 124th Street)
3. Extend Teton south to include industrial area
4. Extend Pacific Financial/124th area west to edge of city limits
5. Extend Pacific Financial/124th area south to reach the Southwest Industrial area

Other notes from this discussion:

- Northern part of downtown focus area (PacTrust) is not part of downtown; consider making the Downtown boundary smaller to make it more consistent with the established Town Center boundary

- Consider taking out Pacific Financial area
  - question about city boundary, why does focus area include land outside of Tualatin
  - doesn't have a lot of redevelopment potential except if there is a Park and Ride *(this group did not reach consensus on this topic)*

Land Use Types

The groups were asked to review the draft land use types, make changes, pose questions, and inform the facilitators if the land use types would fit in the proposed focus areas.

General comments collected about land use:

- Builders find it difficult to sell residential in employment areas
- Downtown concepts are old
- Would be difficult to develop in Pacific Financial
- What differentiates Teton from Leveton?
- Leveton/Herman: business employment designation is good
- SW Industrial/Teton is ok
- Development in SW industrial should wait until 124th is built

Comments for each of the land use types:

- **Mixed-Use Center**, applicable for the Bridgeport Village and possibly the Pacific Financial/124th areas.
  - Hard to have residential in Bridgeport Village
  - No big box retail
  - More restaurants, specifically in Pacific Financial area
  - Residential should be mixed income, to attract the residents that also work in the area
  - Is there sufficient demand for this use at 124th?
  - Need to include park-and-rides in this land use
  - Need more residential (in all land uses)
  - Need taller building options (over 4 stories)
  - Could apply this land use type to downtown Tualatin as well
- **Town Center**, applicable for downtown Tualatin
  - Downtown north end doesn't feel busy enough
  - Not enough parking
  - Need renter and owner occupied housing
  - Appropriate in the core, but not on the edges (which are more like mixed-use centers)
  - Flooding in downtown
  - Current boundary incorporates broader set of uses than people typically associate with the downtown
- **Business Employment District**, applicable for Herman Road/Leveton
  - Also see this land use in SW industrial and Pacific Financial (the main part, center should be for mixed-use)
  - Include transit service beyond 8-5 hours, to capture residential use
  - Should include some residential, that attracts
  - Attract creative businesses
- **Mixed-Use Institutional/Employment**, applicable for Meridian Park/Nyberg Woods and possibly for Pacific Financial/124th
  - Currently very transit deficient
  - Could also describe a portion of downtown (around Kaiser), need a campus specific area there
  - 10-hour work day doesn't work here because of lots of shift workers. Should be 24 hours

- Better at Nyberg Woods, similar to existing uses
- Pacific and Meridian are very different now; it would be a big change to Pacific
- Difficult to sell residential; concern about noise
- There needs to be a community wide discussion; including displacements
- Maybe Meridian Park and Nyberg Woods should be separate areas

Project Idea Feasibility

Each meeting attendee was given three cards (green = yes, yellow = maybe, and red = no) to answer the question "is this project feasible and should it be evaluated further?" Each group facilitator asked this question for each of the project ideas listed below. Prompts to help determine if an idea was feasible:

- Is it a transportation project?
- Is it within the city's control or influence?
- Is it technically feasible?
- Do you have concerns about cost?

Each group then revisited project ideas that had red or yellow responses (responses are shown in italics in a row below the idea). Participants were asked to suggest ideas to make the project feasible or explain why it was not feasible for further evaluation. Not every participant answered for each idea.

General comments about the projects:

- Not sure if connection to Yamhill County is needed; probably would not decrease traffic on Tualatin-Sherwood Road
- Vehicle parking is in more demand than bike parking at WES. Once Haggen has redeveloped there will be more need for bike parking
- Travel time is the most important factor, include one or no transfers

Potential Bus Service-Focused Ideas	Green	Yellow	Red
A1 Provide bus transit service on Herman Road *Move to green (rail)* *if part of a loop bus route; not enough demand and already served by shuttle; one group thought this as part of a loop bus to Sherwood would be fine (perhaps alternating on Tualatin Rd)*	**11**	9	1
A2 Provide bus transit service on 124th Street	**13**	2	
A3 Provide bus transit service on Avery Street *One group said doesn't work with businesses and school, better on Teton* *One group was concerned about additional traffic in the neighborhood*	5	**6**	3
A4 Provide bus transit service on Tualatin Road between downtown and 99W	**20**		1
A5 Extend bus service to east Tualatin	**17**	4	
A6 Provide express bus service between Tualatin and downtown Portland, Airport, Clackamas, and Salem *One group didn't like extension to PDX Airport & Clackamas Town Center(not enough ridership); liked "Maintain/Improve" service to Portland since it already exists and providing service to Salem (though some thought there wasn't enough demand)*	**15**	3	3

A7 Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service	**13**	4	3
A8 Provide a loop bus route around the city	**21**		
A9 Add bus line from Yamhill Transit District to WES	**12**	5	4
A10 General - Create an on-call shuttle for industrial and manufacturing workers during the day – consider charging fares *Intel Model; two groups suggest changing the wording to "expand" since it already exists with the chamber shuttle)* *One group gave greens for charging fares* *One group said on call can be a problem and "during the day" is a concern*	9	**11**	1
A11 General – use SMART *concept* for local buses (leave TriMet service area) *One group wanted to use SMART model for local buses and TriMet model for regional travel and would support if it didn't necessarily include leaving TriMet's service area* *One group said this doesn't seem cooperative, Tualatin should partner with TriMet*	**13**	4	3
A12 General – need extended service for all transit *One group said extended hours of service; all green*	**14**	7	
A13 General – use more energy efficient buses *One group said small buses for local trips; all green* *One group said not in City's control*	**20**	1	
A14 Coordinate bus schedules with WES schedule *One group said this should already happen; all green*	**19**	1	
A15 Provide transit service to Lake Oswego	**11**	7	1

Potential Rail Service-Focused Ideas	**Green**	**Yellow**	**Red**
B1 Eliminate freight rail trips during rush hours, to avoid interrupting bus and WES service *Not Eliminate = reschedule* *Two groups felt that this was out of the City's control or influence = would like to encourage freight at less busy times/night* *One group felt this is not a problem*	6	3	**9**
B2 Provide rail or high capacity bus transit service on Tualatin-Sherwood Road (towards Sherwood)	**16**	3	1
B3 Increase WES frequency *One group said it's a good idea but not in the City's control, nor are they seeing the ridership to support this*	**10**	9	2
B4 Extend MAX from Bridgeport Village to *Clackamas* with an elevated pedestrian bridge to connect station and park-and-ride with shopping *MAX from Bridgeport Village to Clackamas; 5 red and 1 green* *Pedestrian Bridge from Bridgeport to Park and Ride; 2 red and 6 green*	**13**	2	4

B5 Decrease stop spacing on higher-volume routes = *express bus*		**9**	2
Add more stops; local bus = safe stops	**5**		2
Most groups were unclear about this wording and one group felt it should be in the bus category			
One group said don't add stops to express bus			
B6 Extend WES to Salem	**14**	5	2
B7 Oregon Passenger Rail between Portland and Eugene (route to be determined)	3	**7**	3
One group said that this isn't in the City's control or influence and there was a concern about cost			
B8 SW corridor High Capacity Transit	3	**4**	2
High capacity bus on 99W	**3**	**3**	
MAX on 99W	1	**4**	
One group said no fixed rail, but they do want HCT/Rapid transit			
B9 Add a WES Station in south Tualatin	6	3	**8**
One group said this is worth looking at/evaluating further			
One group said this is outside the City's control and not a need yet			
B10 General – Add more spaces for bicycles on WES trains	2	**7**	5
One group said this isn't a project, nor within the City's control			
B11 Add bicycle storage at the WES station	**9**	5	1
One group said they weren't sure if it is a problem			
B12 Follow the existing rail line with High Capacity Transit		5	**10**
One group said it would be ok if it went to downtown Portland, but that Lake Oswego is opposed to the idea so it is out of the City's control and there is an express bus to Portland already (though it needs to run at night)			

Potential Land Use-Focused Ideas	**Green**	**Yellow**	**Red**
C1 Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections	5	**10**	2
One group said to remove "a central focus of downtown" not sure if it helps congestion, warrants further evaluation			

Potential Park-and-Ride-Focused Ideas	**Green**	**Yellow**	**Red**
D1 Look for potential park-and-ride locations along 99W	**21**		
D2 Look for potential park-and-ride locations to capture riders coming from Sherwood	**21**		
D3 Look for potential park-and-ride locations south of Bridgeport Village (Wilsonville area)	**16**		5
One group said it is outside City control, good to have one when Basalt Creek area gets developed in the future if there is need			

D4 Add parking capacity at Tualatin Park-and-Ride (near Bridgeport Village)	**17**	3	
D5 Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots and transfer spaces to higher utilized areas *One group said this project doesn't make sense, since you can't transfer land and may make it hard to transfer between buses if fewer buses frequent a park and ride*	**12**	3	6
D6 Add a Park & Ride at Meridian Park Hospital	**11**	9	1
D7 Add a Park & Ride at Rolling Hills Community Church *One group said this is a good idea but out of the City's control*	4	**6**	5

Wrap-Up

One group finished 5 minutes before the other groups and left early. Brandy thanked the remaining group for attending and encouraged them to attend the next Transit Working Group in June and reminded them that they would be able to comment on land use types at the 4-day workshop (charrette) in June and on many of the same project ideas at the other working group meetings in early April.

Evaluation Forms

Evaluation forms were collected from attendees to let project staff know what should be changed in future meetings or to provide other written comments.

	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree	Not applicable
Information presented was clear and understandable	3	4				
Meeting facilitator encouraged and allowed all participants to share their ideas	6					
Meeting was efficient and made good use of my time	4	3				
I now have a better understanding of transit issues in Tualatin	2	4	1			1
The Transit Working Group will influence decision-making	3		3			
I'm glad I am participating in the Transit Working Group	5	1				

Below are the open-end comments that were collected:

- Pacific-Financial is not a good name
- No more cute words like charrette, not in some dictionaries! Typology is silly!
- Remember the residents
- Great idea with the yes/no/maybe cards
- Thank you

Transit Working Group - Meeting #4 Summary

Date: 6/27/2012

Location: Tualatin Public Library, Community Room (18878 S.W. Martinazzi Ave., Tualatin)

Attendees: ***City of Tualatin:*** Cindy Hahn, Alice Rouyer, Colin Cortes

Consultants: Matt Hastie, Brandy Steffen, Kate Lyman, Theresa Carr

Purpose

The purpose of this meeting was to review the results of the Linking Tualatin community workshop results so far and to collect comments from the Working Group on post-it notes. The second purpose of the meeting was to review the preliminary evaluation results from the Transportation System Plan with the group and collect their comments.

Approximately 15 people attended the event, including several members of the Transportation Task Force. The following is a summary of comments received during the phases of the meeting.

Welcome and Introductions

Brandy welcomed the group and reviewed the agenda for the evening. Cindy then introduced the City and Consultant staff in attendance. The meeting attendees introduced themselves.

Presentation

Matt reviewed the results of the Linking Tualatin community workshop, including the efforts made to identify strategies and options on the maps around the room. The Working Group was provided with comment forms to fill out about the maps and would have the opportunity to comment on the maps or provide ideas for the Pacific Financial/124th area during the next phase of the meeting.

Theresa then presented the preliminary evaluation results of the transit projects, many of which were proposed during the previous meetings. Theresa reviewed what the TSP (Transportation System Plan) is and what the project team has done since the previous Working Group meeting. She reviewed the project ideas and put them into three categrories, including those that meet the project goals and should be included in the TSP, those that don't meet the goals and should not be included, or those that needed more refinement.

Here are some questions that were raised during the presentations:

- **Question**: When will there be an opportunity to comment on the dropped options?
  - **Answer**: There will be outreach to the community in July/August about proposals
- **Question**: Need origin/destination information for transit riders
  - **Answer**: TriMet will have (and distribute) WES ridership information in October, additionally, Bus lines 12/94/96 information should be avaialble by end of year, maybe have a draft by September
- **Question**: Why does the Loop bus perform poorly? I disagree.
  - **Answer**: Not enough riders are anticipated to support the service
- **Question**: SMART has been extremely successful, within 10 years we need that type of service
  - **Answer**: Leaving the TriMet service area concept was screened out because we wanted to do short term recommendations/improve existing service before considering leaving the service area. The SW Corridor project will do a HCT (high capacity transit) analysis.
- **Question**: Do we need money from TriMet to run our own service/loop to do on call? How do we get money for that?

  - **Answer**: We have the chamber shuttle, could we expand the shuttle to accomplish the "loop" idea – expand the shuttle, inter-city bus system
- **Question**: Need to know where people on the bus are going now. The information we have now is not complete because low ridership numbers may not reflect those interested in riding the bus but don't ride because of poor service

Group Work

Brandy had the group walk around the room to review the boards developed during the Linking Tualatin Community Workshop, adding their comments to post-it notes and to their comment forms.

After this time, the group reconnected as two small groups, each of which had a staff person to help facilitate the small group discussions. The groups were asked to ask questions regarding the TSP evaluation results, using the evaluation table and the project idea maps at the tables. After a few minutes the group was asked to take 5 red and 5 green dots to select those project ideas that are most important for inclusion in the TSP (green) and those that should not be included (red). Below are some of the issues that were raised during the small group discussions:

- One bus on Herman Road does not equal good transit, need 24/7 service
- The Portland model doesn't work for Tualatin
- If you have a local circulator/expanded shuttle service, then you will have solved most of the problems
- Need to connect to SMART.
- A loop – route zigzag to allow expansion
- Don't need to decide a bus loop route
- Need to figure out TriMet's interest/willingness to have Tualatin drive the transit discussion.
- Need more east-west transit service
- Need additional analysis for river crossing, if that is selected as a project/alternative
- Need link to east Tualatin, 94-→96

After everyone had placed their dots, Brandy reviewed the results with the group (see table below).

ID	Project Idea	Green Dots	Red Dots
A1	Provide bus transit service on Herman Road		
A2	Provide bus transit service on 124th Street		1
A3	Provide bus transit service on Avery Street		
A4	Provide bus transit service on Tualatin Road between downtown and 99W 4A – Concerned that this service would go over the park, support this concept if it doesn't go over park Oppose if over the park	2	
A5	Extend bus service to east Tualatin Foodpak limited service	2	
A6	Provide express bus service between Tualatin and Salem		3
A7	Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service		2
A8	Provide a loop bus route around the city	11	

ID	Project Idea	Green Dots	Red Dots
A10	Create an on-call shuttle for industrial and manufacturing workers during the day – consider charging fares Expand, not create	3	
A12	General –extend service hours for all transit	2	1
A13	General – use more energy efficient buses Planning to do it anyway		4
A14	Coordinate TriMet and SMART bus schedules with WES schedule		3
A16	Add stops on higher volume bus routes		2
B1	Add more bicycle storage at the WES station		6
B2	Provide rail or high capacity bus transit service on Tualatin-Sherwood Road In context of SW Corridor Plan, transit may not go down Tualatin-Sherwood, may be 99W C10 loop bus where does it go – only HCT didn't need to be on Tualatin-Sherwood, just anywhere, voting for 2 things, Tualatin-Sherwood might not be right area. East-west on 99W is the weakest link This services needs to be somewhere, but not necessarily on Tualatin-Sherwood	10	1
B4	Build an elevated pedestrian bridge to connect the Tualatin park-and-ride with shopping at Bridgeport Village	1	8
C1	Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections Buses need to go to that stop for the whole point – to be the center A: May fit into short/med/long term to make small to large improvements	4	2
D1	Look for potential park-and-ride locations in west Tualatin	7	
D2	Look for potential park-and-ride locations in south Tualatin	3	
D3	Add parking capacity at Tualatin Park-and-Ride - Potential structure Try to encourage riders from Newberg etc to use 99W	6	1
D4	Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots and transfer spaces to higher utilized areas		
D5	Add a park-and-ride in east Tualatin	1	2

Wrap-Up

Brandy thanked the group for attending and encouraged them to attend the next Transit Working Group in July, as well as the Tualatin Farmers Market on July 13 when the TSP will have a booth to review the draft plan with the public.

MEETING AGENDA

Future Land Use Assumptions for the Tualatin TSP

TUALATIN TRANSPORTATION SYSTEM PLAN

ATTENDEES: Sherry Oeser, Metro
Aquilla Hurd-Ravich, City of Tualatin
Colin Cortes, City of Tualatin
Dayna Webb, City of Tualatin
Steve Kelley, Washington County
Theresa Carr, CH2M HILL
Alan Snook, DKS and Associates
Terra Lingley, CH2M HILL

MEETING DATE: November 29, 2011

MEETING TIME: 3-4:30 p.m.

VENUE: City of Tualatin Council Chambers

Meeting Purpose

Discuss expected future land uses in the City of Tualatin and areas of potential uncertainty. Identify locations for up to two alternate land use scenarios to be evaluated in the TSP.

Agenda

Duration	Topic	Lead
3:00-3:05 p.m.	Welcome and Meeting Purpose	Dayna
3:05-3:15 p.m.	Review of project timeline and future conditions task	Theresa/Alan
3:15-3:30 p.m.	Overview of baseline land use assumptions	Terra
3:30-4:00 p.m.	Potential areas of differences, based on market, current planning efforts	All
4:00-4:20 p.m.	What a scenario might look like	Terra/Theresa
4:20-4:30 p.m.	Wrap up and next steps	Dayna

MEETING AGENDA

Future Land Use Assumptions for the Tualatin Transportation System Plan

ATTENDEES: Sherry Oeser, Metro
Deena Platman, Metro
Aquilla Hurd-Ravich, City of Tualatin
Steve L. Kelley, Washington County
Theresa Carr, CH2M HILL
Alan Snook, DKS and Associates
Terra Lingley, CH2M HILL

MEETING DATE: December 22, 2011

MEETING TIME: 11:00 a.m.-12:00 p.m.

VENUE: Metro Room 270 (Main Floor)

Meeting Purpose

Finalize land use assumptions for baseline future no build conditions analysis. Discuss content and timing of alternate land use scenarios.

Agenda

Duration	Topic	Lead
11:00 a.m.	Welcome and Meeting Purpose	Theresa
11:10 a.m.	Report back on baseline land use assumptions • Basalt Creek area • Tonquin employment area • SW Concept Plan area • East of I-5	Terra
11:30 a.m.	Discuss, agree to baseline assumptions	All
11:40 a.m.	Report back on content of alternate land use scenarios based on city staff discussions	Aquilla/Theresa
12:00 p.m.	Next Steps and Adjourn	All

Tualatin Transportation System Plan Comment Summary

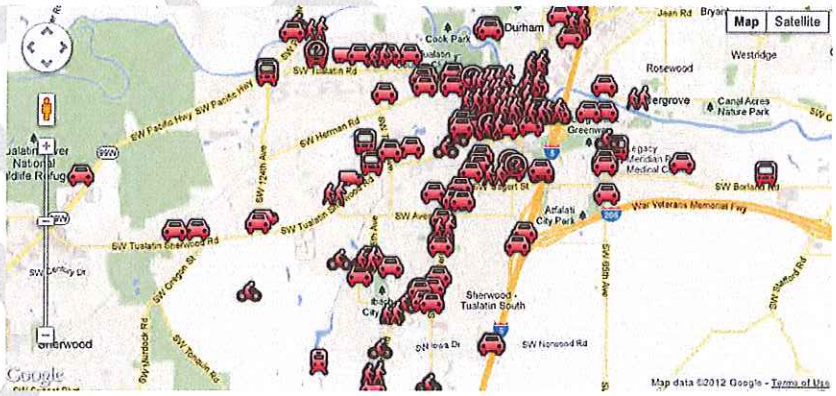
Between July 15, 2011 and January 15, 2012, an interactive comment map was featured prominently on www.tualatintsp.org and promoted at community events as way to gather feedback about transportation issues for the Tualatin Transportation System Plan (TSP). Similar to Google Maps, the comment map allowed users to zoom in and around a map of Tualatin. Users were encouraged to click on the map and leave transportation related comments for others to read. In addition, users were given the opportunity to agree or disagree with posts and submit additional comments. Additionally, City staff collected comments from the public at a variety of community events, and added comments to the map. Those commenting were able to classify their comments according to travel mode - cars, bikes, freight, pedestrians, and transit.

The interactive map provided a unique opportunity for the public to conveniently share feedback to the TSP update process. Comments will be used to identify needed improvements and existing system deficiencies. Input received through this process will also contribute to the identification of options and potential solutions. Comments will be incorporated into the Tualatin TSP Existing Conditions Report. To view the map and the complete list of comments, visit: http://www.tualatintsp.org/?p=geocomment-map.

The following is a summary of the 369 comments left on the map:

Total number of comments: 369
Total number of people that commented: 248
Total number of comments from special events:

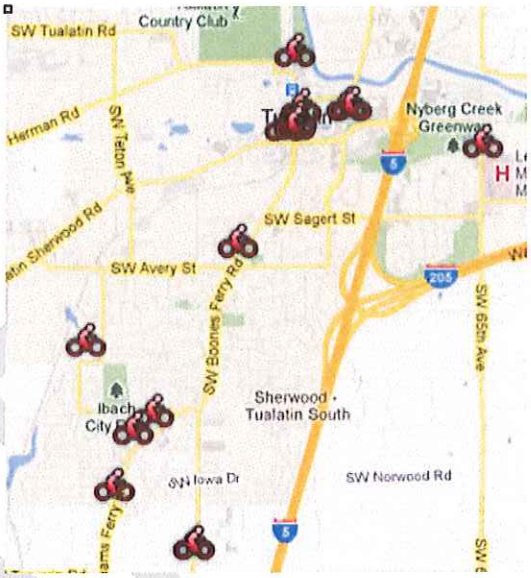
- Chamber Events: 29
- Concerts on the Commons: 17
- Crawfish Festival: 39
- Farmers Markets: 96
- Pumpkin Regatta: 11



Percentage of comments per mode (only if specified in comment):

- Bike: 14.0%
- Car: 55.3%
- Freight: 1.6%
- Pedestrian: 19.6%
- Transit (Bus/WES - Westside Express Service commuter rail): 9.5%

Bike – Comments were generally about the need for new and/or improved bike lanes on busy roads and through dangerous intersections. Bike issues across Tualatin were discussed, but 35% of all bike comments highlighted issues or suggested improvements along SW Boones Ferry Road. Participants made the following bike-related comments on the map:



Areas/intersections that need new and/or improved bike lanes:

- SW Tualatin Rd @ SW Nyberg St and Tualatin Park
- SW Boones Ferry Rd @ SW Avery St (1 agreed)
- SW Boones Ferry Rd @ SW Tualatin-Sherwood Rd
- SW Boones Ferry Rd @ McDonalds (1 agreed)
- 99W Bridge
- Downtown

Streets that need new and/or improved bike lanes:

- SW Old Tualatin-Sherwood Rd (1 agreed)
- SW Tualatin-Sherwood Rd
- SW Boones Ferry Rd (2 agreed)
- SW Grahams Ferry Rd
- SW Martinazzi Ave
- SW 65th Ave (1 agreed)
- SW Blake St
- SW 95th Ave

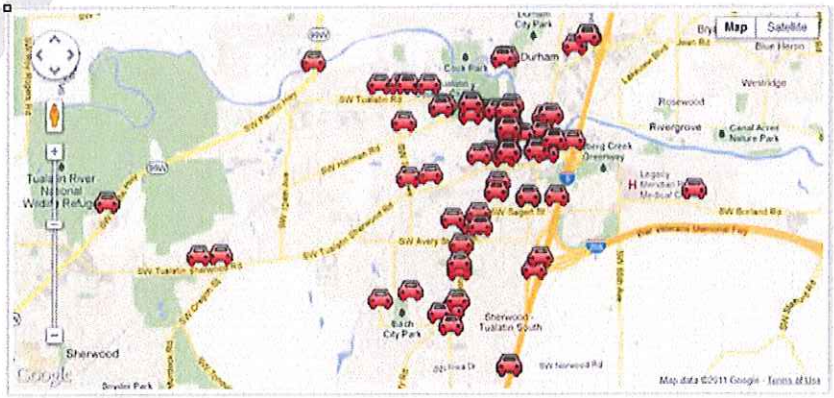
Streets too narrow for multiple modes of transit:

- Downtown

Need improved access to:

- Tonquin Trail

Car – Many participants mentioned congestion on major roads throughout Tualatin (mainly during peak times) and the inability to turn safety onto or across these major roads from side streets. Many participants commented about congested intersections and roads, especially along SW



DRAFT

Tualatin-Sherwood Rd and SW Boones Ferry Rd. Participants were concerned about the timing of stoplights at specific major intersections and many felt that signal timing contributes to congestion. Participants made the following car-related comments on the map:

Intersections with congestion during peak times:

- SW Ibach Rd @ SW Boones Ferry Rd
- SW Avery St @ SW Boones Ferry Rd (1 agreed)
- Tualatin High School @ SW Boones Ferry Rd (1 agreed)
- SW Siletz Dr @ SW Boones Ferry Rd
- SW Tualatin-Sherwood Rd @ SW Teton Ave (5 agreed)
- SW Tualatin-Sherwood Rd @ SW Lower Boones Ferry Rd
- SW Tualatin-Sherwood Rd @ SW Martinazzi Ave and
- Martinazzi @ Public Library

Roads with congestion during peak times:

- SW Tualatin-Sherwood Rd (17 agreed)
- SW Lower Boones Ferry Rd (1 agreed)
- SW Boones Ferry Rd south of river
- SW Boones Ferry Rd north of Sagert (1 agreed)

Roads that should be expanded and/or improved:

- SW Tualatin-Sherwood Rd (3 agreed)
- SW 65th Ave (add bridge over river)
- SW Boones Ferry Rd
- SW Nyberg St at SW 65th Ave
- SW Seneca St @ the Tualatin Commons
- SW Sagert St (2 lanes in each direction)
- Extend SW 124th Ave to SW Tonquin Rd (1 agreed)

Streets with poor visibility, safety concerns, and accidents:

- SW Boones Ferry Rd (2 agreed)
- SW Boones Ferry Rd @ SW Arapaho Rd
- SW Sweek Dr @SW 90th Ave (3 agreed)
- SW Avery St @ SW 90th Ave
- Need guardrail @ SW Chippewa Trail on SW Tualatin Rd
- Better signage @ SW Herman Rd @ SW Tualatin-Sherwood Rd
- SW Herman Rd (dangerous gulch)

Re-align roads:

- SW Borland Rd /SW 65th Ave /SW Sagert St
- Between 105th Ave/SW 108th Ave/SW Blake St
- SW Tualatin Rd

Through-access areas that need improvement:

- Alternate route to 99W (2 agreed)
- Limit SW Tualatin Rd local access (3 agreed)
- SW Tualatin Rd to Connect SW 95th Ave

DRAFT

- SW Tonka Rd to SW Tualatin-Sherwood Rd
- SW Helenius Rd between SW Grahams Ferry and SW Boones Ferry Rds
- Open SW Hazel Fern Rd to SW Lower Boones Ferry Rd
- Upgrade unofficial road between SW Boones Ferry Rd and SW 90th Ave
- Connect SW Boones Ferry Rd with dead-end near Tualatin-Sherwood Rd (1 agreed)
- Connect SW Bridgeport Rd and SW Lower Boones Ferry Rd
- Contradicting feedback:
    - Keep SW Hall Blvd access (4 agreed)
    - Should be no SW Hall Blvd/SW Boones Ferry Rd connection (3 agreed)

Difficult/dangerous turns and intersections:

- K-Mart/Fred Meyer (10 agreed)
- Tualatin High School
- SW Sagert St @ SW Martinazzi Ave (7 agreed)
- SW Tualatin Rd @ SW Cheyenne Way (4 agreed)
- SW Tualatin Rd @ Tualatin Community Park entrance
- SW Nyberg St @ SW 65th Ave
- Library access onto SW Martinazzi Ave

Streets with speeding traffic:

- SW Borland Rd @ SW Wilke Rd
- SW Tualatin Rd @ SW Cheyenne Way
- SW 108th Ave (2 agreed)
- SW Arapaho Rd
- SW Sweek Dr between SW 90th Ave and SW Tualatin Rd (1 agreed)
- SW Sagert St Bridge over I-5

Improve signal timing:

- Along SW Tualatin Rd (3 agreed)
- SW Tualatin Rd @ SW 90th Ave (1 agreed)
- SW Tualatin Rd and residential side streets
- SW Tualatin Rd @ Tualatin Country Club (1 agreed)
- SW Tualatin Rd @ SW Boones Ferry Rd (1 agreed)
- SW Tualatin-Sherwood Rd @ SW Boones Ferry Rd (1 agreed)
- SW Tualatin - Sherwood Rd @ SW Martinazzi Ave
- Signal @ 99W (1 agree)
- Signal @ SW 97th Ave
- SW Ibach Rd @ SW Grahams Ferry Rd (light shield too low) (3 agreed)
- Traffic camera @ SW 72nd Ave and SW Bridgeport Rd is too bright

Running red lights:

- Bridgeport Village
- SW Boones Ferry Rd @ SW Tualatin Rd
- SW Tualatin-Sherwood Rd @ SW Martinazzi Ave

Lack of parking:

- Library/City Hall (5 agreed)

DRAFT

- Tualatin Community Park (2 agreed)
- Senior Center
- Downtown
- SW Tillamook Ct (2 agreed)

Highway ramps:

- SW Norwood Rd access ramps from I-5 (3 agreed)
- SW Nyberg Rd off ramp is disorganized, dangerous (1 agreed)
- Ramp from SW 65th Ave onto I-205

Excessive noise:

- SW Boones Ferry Rd downtown (1 agreed)
- Tualatin Greens (2 agreed)
- SW 115th Ave @ SW Tualatin Rd

Participants also mentioned the following issues:

- Poor visibility and safety at some intersections,
- Areas where speeding or running red lights is a problem,
- Lack of parking,
- Need for improved access and signage,
- Noise, and
- The need to expand SW Tualatin-Sherwood Rd.

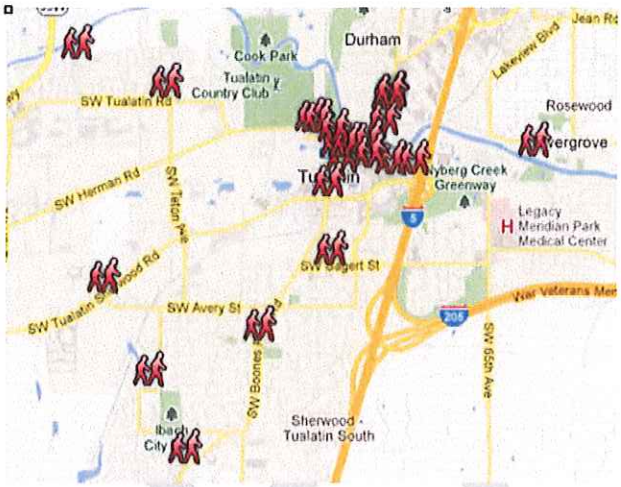
Freight – Although freight comments were limited, most comments mentioned heavy truck traffic noise and congestion, mainly on SW Tualatin-Sherwood Rd/SW 124th Ave. This intersection has many manufacturing and industrial businesses, and is a heavily used access route between 99W and I-5. Participants made the following freight-related comments on the map:

Comments included:

- Restrict heavy trucks from SW 124th Ave to SW Tualatin-Sherwood Rd
- Local access only on SW Tualatin Rd through to I-5/99W/SW 124th Ave/SW Herman Rd
- Too much heavy traffic on SW Tualatin-Sherwood Rd (1 agreed)

DRAFT

Pedestrian – Most pedestrian comments addressed pedestrian safety concerns: dangerous crossings, poor sidewalks, no sidewalks, and poor crosswalk timing. There were also comments advocating for more convenient access to recreation and shopping areas via footbridges. Overall, the majority of comments expressed the need for better pedestrian safety and improved facilities, especially in areas along SW Boones Ferry Rd. Participants made the following pedestrian-related comments on the map:



Footbridges at/over:

- Tualatin River (1 agreed)
- Jurgens Park over the Tualatin River (1 agreed)
- SW Sagert St over I-5 (3 agreed)
- Browns Ferry Park over the Tualatin River
- Lake of the Commons

Safer pedestrian crossings at:

- SW Lower Boones Ferry Rd
  - SW Boones Ferry Rd @ Tualatin View Apts.
  - SW Boones Ferry Rd @ SW Martinazzi Ave (1 agreed)
  - SW Boones Ferry Rd @ SW Siletz Dr (1 agreed)
  - SW Boones Ferry Rd @ SW Lower Boones Ferry Rd (1 agreed)
  - SW Boones Ferry Rd @ Travellers Ln
- SW Martinazzi Ave @ SW Seneca St (1 agreed)
- SW Nyberg St @ Fred Meyer and Kmart
- I-5 @ SW Nyberg St (2 agreed)
- SW Tualatin Rd (1 agreed)
- SW Industrial Wy between SW 105th Ave and SW 108th Ave

Better timing at crosswalks:

- Downtown
- SW Avery St @ SW Tualatin-Sherwood Rd
- SW Sweek Dr @ SW Tualatin Rd
- SW Boones Ferry Rd @ SW Tualatin Rd

Better sidewalks/access on:

- SW Grahams Ferry Rd (access to Target/Costco) (1 agreed)
- SW Grahams Ferry Rd (near high school) (5 agreed)
- SW Boones Ferry Rd (both sides of road) (4 agreed)
- SW Boones Ferry Rd @ SW Tualatin-Sherwood Rd
- SW Boones Ferry Rd bus stop @ the Tualatin river
- SW Boones Ferry Rd over Tualatin River
- Along Tualatin River
- Kmart driveway
- SW Blake St (3 agreed)
- SW Tillamook Ct
- Tualatin Community Park (7 agreed)

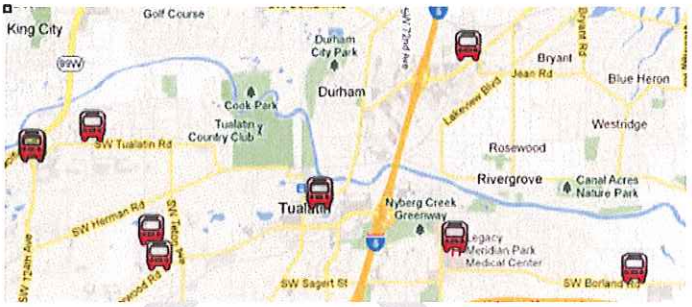
DRAFT

- SW 108th/105th Aves @ Garden Corner (1 agreed)
- Near the Alara Hedges Creek Apts along SW Sweek Dr

Trees/weeds at:

- Sidewalks along SW Tualatin Rd

Transit (bus/WES) – The majority of transit related comments requested additional bus service hours on evenings and weekends with route extensions to downtown and Sherwood. There were also some suggestions for additional Park and Rides areas. Many agreed that extending the hours (and line) of WES and adding bike storage would be beneficial as well. Participants made the following transit-related comments on the map:



Better connections:

- WES/bus lines on SW Boones Ferry Rd
- To Rolling Hills church (food bank) (1 agreed)
- Extend service hours on weekend (1 agreed)
- Tualatin to downtown Portland on weekends, more lines (3 agreed)
- Sherwood to 99W (1 agreed)
- Tualatin to Lake Oswego (1 agreed)
- Extend WES service hours (9 agreed)
- Extend WES line to Portland (1 agreed)
- Extend line to Bridgeport and Kruse Way (Lake Oswego)

Add Park and Rides:

- Add park and rides @ industrial areas
- SW 124th Ave @ SW Tualatin Rd (1 agreed)

DRAFT

Tualatin TSP Agency Meeting to Discuss Existing and Future Conditions

January 30th, 2012
City of Tualatin Develop Service Conference Room
18876 SW Martinazzi Ave

Agenda

Purpose of meeting: *discuss agency comments on draft Technical Memorandum #5, and share initial findings for the future conditions analysis.*

3:30 **Welcome, Review Agenda**- *Theresa*

3:40 **Existing Conditions Comment Review** – *All*

4:20 **Revised Goals and Objectives** - *All*

4:30 **Future Conditions Preview** - *Alan*

4:50 **Next Steps** – *Terra/Alan*

5:00 **Adjourn**

Tualatin Year of Transportation Kick-off Meeting
February 16, 2012

Public Meeting & Comments Summary

City of Tualatin

LINKING Tualatin

TUALATIN
TRANSPORTATION
SYSTEM PLAN

Background

Meeting Purpose and Format

The City of Tualatin held the **Tualatin Year of Transportation Kick-off Meeting** to provide information and an opportunity to comment on various transportation projects in the Tualatin area. The meeting was held on Thursday, February 16 from 4:00 p.m. to 7:00 p.m. at the Living Savior Lutheran Church in Tualatin. Thirty-five people signed in for the event.

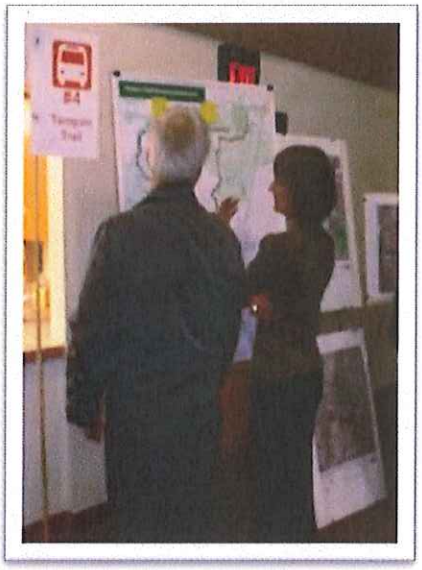
The purpose of the kick-off meeting was primarily to share information about the Tualatin Transportation System Plan (TSP) Update and the Linking Tualatin projects, to obtain feedback on the goals and objectives of both projects, and to obtain feedback on transportation needs and problems from the public point of view. Staff from Metro and Washington County also provided information about other projects in the area, including the Tonquin Trail, 124th Ave Extension, SW Boones Ferry Rd project, and the Basalt Creek Transportation Refinement Plan.

The meeting was an informal, drop-in style event. Attendees were greeted at the sign-in table where they received project handouts, a comment form, and a meeting guide. People were invited to take a "bus tour" of the various projects by following the meeting guide that led them to five bus stops, which included:

1. ***Existing Transportation Issues and Future Growth***: Various display boards provided information from the recent Existing Conditions study for both the TSP update and Linking Tualatin, including existing and future conditions for corridor traffic operations, intersection operations, bicycle and pedestrian issues, public transit, and number of motor vehicle trips.
2. ***Linking Tualatin***: Various display boards provided information on the Linking Tualatin project goals and key transit linkages. Large maps and display boards explained the project's seven focus areas. Participants were invited to provide their comments and suggestions for transit in Tualatin on each of these sets of materials. A looping PowerPoint provided

additional information about the project, and staff members were available to further describe the planning effort and answer questions.

3. ***Tualatin TSP***: Several display boards walked participants through information on the TSP goals and process. A looping PowerPoint provided a "TSP 101," explaining why Tualatin is updating its TSP now. Participants were invited to provide ideas for projects to be considered in the TSP for all transportation modes on large maps of Tualatin laid out on tables. Tables were facilitated by Transportation Task Force members.
4. ***Tonquin Trail***: Staff from Metro provided information about the Tonquin Trail project.
5. ***Washington County Projects***: Staff from Washington County provided project information about the SW Boones Ferry Rd Project, SW 124th Ave Extension, and the Basalt Creek Transportation Refinement Plan.



The meeting was staffed by project team members from the City of Tualatin, Washington County, Metro, JLA Public Involvement, CH2M Hill, DKS and Associates, and Angelo Planning Group.

Meeting Notification and Outreach

People were invited to attend the meeting through a number of outreach methods, including:

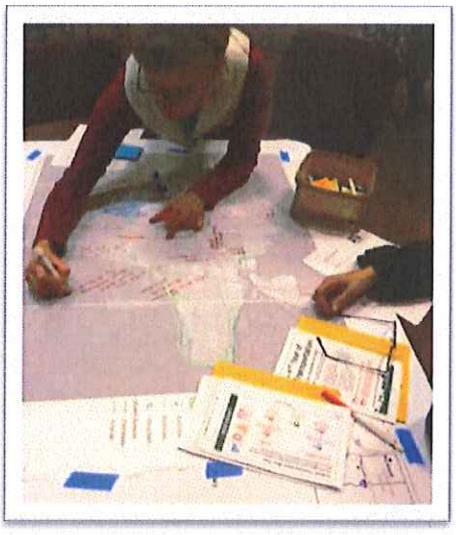
- **Newsletter Announcements** – The meeting was advertised in the Tualatin City Newsletter, the Tualatin Chamber of Commerce Newsletter, the Tualatin CIO e-newsletter, and various school newsletters.
- **CIO 5 Meeting Announcement** – Washington County staff announced the meeting at the CIO 5 Meeting.
- **Website Announcements** – The meeting was announced on the Tualatin TSP, Linking Tualatin, and Tonquin Trail project websites. It was also announced on the Tualatin CIO website, the City of Tualatin's online events calendars, and the Tualatin Chamber of Commerce events calendar, and the El Hispanic News online calendar.
- **Flyer** – JLA created a flyer for the event in English and in Spanish. The City of Tualatin posted the flyer in high-traffic locations around the city, and in minority and low-income areas, including:

- Apartment complexes (Tualatin Meadows Apartments, Forest Rim Apartments, Tualatin Heights Apartments, Berg Properties, Chelan Apartments, Terrace View Apartments, and J Con Properties)
- Grocery Stores (Tualatin Food Store, Haggen Food and Pharmacy, El Sol Latino, and 7-Eleven)
- Churches (Tualatin Spanish Seventh-Day Adventist Church, The Table, Rolling Hills Community Church, Tualatin United Methodist Church)
- Tualatin Library
- Skate Park
- Bridgeport Village
- Legacy Medical Center
- Transit areas (WES Station and Tualatin Park & Ride)
- Three city bulletin boards

- **Banner at Major Street Intersection** – JLA produced a banner that announced the meeting location and time and directed people to the Tualatin TSP project website. The banner was at the corner of SW Tualatin-Sherwood Rd and SW Martinazzi Ave, a high-traffic intersection in the Tualatin Commons area starting Wednesday February 8th.
- **Media Release** – A media release announcing the event was distributed to local media outlets, including the El Hispanic News and the Asian Reporter.
- **Media Coverage** – Tualatin KATU.com announced the meeting in an article on its website on February 2, 2012.
- **Email Blast** – An email was sent to the City of Tualatin's distribution list, the Tualatin Mayor's email list, the Chamber of Commerce email list, as well as to members of the Transportation Task Force and City Council members. Emails were also sent to seventeen major employers including Meridian Park Hospital, Novellus and Precision Wire Components, and the Tigard-Tualatin School District, among others.
- **Outreach to Portland Hispanic Professionals Network**

Public Input Overview

Six (6) people submitted comment forms. Other participants made comments directly on the Linking Tualatin displays. Another approximately 60 individual comments were made on the Tualatin TSP maps. The comments summarized below are from either the comment form or were captured at the Linking Tualatin or TSP areas during the event.



Tualatin TSP Comments

Project Goals: Those who commented felt that the TSP project goals were complete with the exception of two suggested additions. One person suggested including constructing alternate connections, and another person felt the goals do not have a strong statement for the protection and consideration of neighbors and the neighborhoods.

Bike/Ped: Many comments were made on specific areas that have missing or inadequate sidewalks, need better crosswalks, or need better bike lanes and bike facilities. Four people commented the Tonquin Trail is a great idea that should be incorporated into the TSP.

Downtown: People commented that Tualatin needs a vibrant and livable downtown neighborhood that is easy to get around.

Freight: Several people noted that the intersection of Teton and Tualatin Sherwood Rd is difficult for freight, and that Avery St should be avoided as a freight route.

Transit: Several people commented that a public transit loop around Tualatin would be helpful, and would like more intra-city service through the neighborhoods. People wanted more park and ride options. A couple of people noted that there is not enough transit on the west side. Several comments were made about the WES system, and suggesting a shuttle service to get to WES stations and other transit connections. A couple of people would support a service like the Wilsonville SMART system.

Roads and Traffic: Several suggestions were made about installing roundabouts or traffic lights at specific intersections. A number of people commented about traffic and safety issues at Tualatin High School. A couple of people commented that the speed limit is an issue on Avery St. One person noted that more east-west connections are needed. One person was concerned about the widening of Boones Ferry Rd.

Working Groups: Also at the TSP station, participants were encouraged to attend one of several working group meetings occurring about two weeks after the event. A handout explaining the working groups was made available. Four people signed-up to attend one of the upcoming working group meetings.

Linking Tualatin Project Comments

Project Goals: Those who provided comments felt that the project goals were complete and were in support of them. There was a question about the "consistency and coordination" goal, and whether being consistent would help to leverage funds and how these two items go together.

WES/Bus: Some people would like to see an increase in WES frequency to Portland on weekends (more frequency in general), and some people don't think it's convenient for commuting to Portland. Some would like to see better transit along Tualatin Sherwood Rd, Herman Road, and Avery Road for commuters.

Other comments on transit included:

- Suggestion that Tualatin should switch from TriMet to a SMART model for a local transit circulator, but still maintain Park and Rides (like at 99W) for people going to downtown Portland or other locations outside of Tualatin.
- There are gaps in transit, such as from the Park and Rides to the WES station.
- Expanded shuttles (or even a trolley/streetcar) would lead to better transit use and connectivity to the WES and bus stops, as would lower or free fares.
- Expanded transit to Estacada/Oregon City and Tualatin/Sherwood would be favorable.
- Focus not only on high capacity transit, but also rapid high capacity transit to serve residents and seniors who do not drive.

NOTE: This information has been shared with the TSP team.

Roads/Traffic/Connectivity: The message was that east to west traffic congestion is a problem, but just building bigger roads is not the solution. An extension of 124th was suggested as a favorable solution to alleviate congestion. A number of people felt there is a lack of connectivity between the parks, paths and downtown.

NOTE: This information has been shared with the TSP team.

Employment connections: A lot of people live in Tualatin and work outside the city and vice versa. Participants who commented said that there needs to be better connectivity from residential areas to employment areas within and outside of Tualatin.

SW Washington County Projects

One person commented that, for the SW Boones Ferry Rd Project, there are three main problems: 1) 45 MPH is too fast for the SW Iowa Dr. intersection at Boones Ferry. 2) No police patrols to enforce speed limit. 3) No traffic or crosswalk light to improve safety at SW Iowa Dr.

Tualatin Transportation System Plan

Agency Review Meeting
May 21, 2012
Tualatin City Council Chambers
18880 SW Martinazzi Avenue

Purpose of meeting: *review preliminary evaluation results, discuss process and timeline for further evaluations*

3:00 **Welcome, Review Agenda** - *Theresa*

3:10 **Update on Work Completed to Date** – *Terra*
- Evaluation criteria
- Scoring and review process

3:20 **Review and Discussion of Evaluations by Topic Area** – *All*
- ODOT facilities
- Clackamas County facilities
- Washington County facilities
- Regionally significant projects

4:00 **Task Force and Working Groups** – *Theresa*
- Purpose of May 24th TTF meeting
- Timeline for and purpose of 3rd round of Working Group meetings
- Purpose of June 21st TTF meeting

4:10 **What Does the "Further Refinement" Look Like?** – *Alan/Theresa*
- Areas for further refinement include:
  - Northern arterial
  - Boones Ferry Road
  - Tualatin Sherwood Road
  - Nyberg Interchange
  - Connectivity within the Downtown Core
  - Herman and Tualatin Road corridors
- Geometric and traffic analysis
- Conversations with community – who, when?

4:20 **Adjourn**

ODOT

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Nyberg Interchange								
D2	Upgrade Nyberg interchange to improve the crossing experience for bicyclists *(Downtown)*	●	●	◒	○	◒	◒	○
A4	Improve sight distance at I-5 and Nyberg Rd interchange *(Major Corridors)*	N/A	●	N/A	◒	◒	◒	◒
B5	Restrict right turn on red at Nyberg Interchange *(Major Corridors)*	○	●	N/A	○	◒	●	○
B12	Make two right turn lanes from I-5 north onto Nyberg Rd *(Major Corridors)*	●	◒	N/A	◒	○	●	◒
B2	Add dedicated right turn lane into apartments near Nyberg Woods Shopping Center (*Neighborhood Livability)*	◒	◒	◒	○	◒	◒	◒
Other ODOT Facilities								
A6	Add roundabout at Boones Ferry and Lower Boones Ferry Road *(Downtown)*	◒	○	○	◒	◒	◒	○
B7	Replace/widen Boones Ferry Road bridge over Tualatin River *(Downtown)*	●	●	◒	●	◒	●	◒
I-5 or 99 Crossings								
B16	Add I-5 multi-use crossing – connect to planned and existing multi-use paths *(Bike/Ped)*	●	○	●	●	◒	◒	◒
B18	Add a grade-separated crossing over 99W *(Bike/Ped)*	◒	●	○	○	◒	○	○
C12	Create an east/west connection across I-5 (near Greenhill Rd) *(Industrial)*	●	●	◒	◒	◒	◒	◒
B3	Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi to I-5 (*Downtown, also Industrial D5 and Major Corridors D1)*	●	◒	○	●	○	◒	◒

PRELIMINARY

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
A5a	Redesign Fred Meyer / Kmart intersection *(Downtown)*	◒	●	◒	●	◒	◒	◒
A5b	Improve pedestrian crossing at Fred Meyer/Kmart intersection *(Downtown)*	●	●	◒	◒	◒	◒	◒

Clackamas County

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
D5	Repair gap in sidewalk on south side of Borland (*Neighborhood Livability)*	●	●	●	N/A	●	◒	●

PRELIMINARY

Washington County

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
65th Avenue								
C7	Extend 65th to the north *(Neighborhood Livability, also Industrial C5 and Major Corridors C2)*	●	▬	○	●	○	▬	○
D4	Connect sidewalk on east side of 65th (*Neighborhood Livability*)	●	▬	●	●	▬	●	▬
D22	Improve 65th Ave south across I-205; widen and address dip in the roadway *Industrial)*	▬	▬	N/A	▬	N/A	N/A	▬
B3	Realign Sagert/Borland to one intersection *(Neighborhood Livability, also Major Corridors B3)*	●	▬	○	○	○	○	○
B20	Roundabout at Nyberg and 65th intersection *(Major Corridors)*	▬	N/A	○	○	○	○	○
A2	Multi-use path on 65th Ave between Borland and Nyberg (*Bike/Ped)*	●	▬	●	●	▬	●	▬
Tualatin Sherwood Road								
A1	Add pedestrian crossing treatments at key locations on Tualatin-Sherwood and Nyberg *(Bike/Ped)*	▬	●	●	▬	▬	●	▬
B3	Improve Tualatin-Sherwood Rd for bicyclists and pedestrians *(Bike/Ped)*	▬	▬	N/A	▬	●	●	○
B3	Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi to I-5 (*Downtown, also Industrial D5 and Major Corridors D1)*	●	▬	○	●	○	▬	▬
D3	Optimize intersections to … improve safety and mobility … on Tualatin Sherwood Road (*Downtown, Industrial A6, A9, A12, D10)*	▬	●	▬	○	▬	▬	▬
D7	Add traffic signal at 97th Ave and Tualatin-Sherwood Rd *(Industrial)*	▬	▬	▬	▬	▬	N/A	▬

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
D11	Encourage off-peak usage on ... Tualatin-Sherwood Rd *(Industrial)*	▬	N/A	N/A	▬	●	N/A	▬
D17	Reconfigure the intersection of 115th and Tualatin-Sherwood *(Industrial)*	▬	▬	N/A	▬	N/A	N/A	▬
D18	Improve turning radius from Tualatin-Sherwood to Cipole *(Industrial)*	▬	▬	N/A	▬	N/A	N/A	▬
B1	Widen Tualatin-Sherwood *(Major Corridors, through downtown (Downtown B10))*	●	▬	○	●	○	●	○
A5a	Redesign Fred Meyer / Kmart intersection *(Downtown)*	▬	●	▬	●	▬	▬	▬
A5b	Improve pedestrian crossing at Fred Meyer/Kmart intersection *(Downtown)*	●	●	▬	▬	▬	▬	▬
B24	Right turn lane on Tualatin-Sherwood at 124th *(Major Corridors, Neighborhood B24)*	▬	▬	N/A	▬	▬	○	▬
Vicinity of Bridgeport Village								
C17	Improve circulation east of Bridgeport/I-5 Interchange *(Industrial)*	▬	▬	▬	▬	▬	▬	▬
C6	Create a street between Boones Ferry and Bridgeport *(Neighborhood Livability)*	●	▬	○	○	○	○	○
A4	Reduce speeds near Bridgeport Village *(Downtown)*	○	●	○	○	▬	N/A	○
D7	Bike and pedestrian treatments near Bridgeport Village *(Downtown)*	▬	▬	▬	▬	▬	○	▬
Grahams Ferry Road								
A1	Reduce speeds, add guardrail and shoulders to section of Grahams Ferry (*Major Corridors*)	▬	●	●	N/A	▬	▬	▬
B8	Bike/ped Fill sidewalk gaps on ... Grahams Ferry ... (*Bike/Ped*)	●	●	●	N/A	●	▬	▬
Cipole Road								
C15	Upgrade Cipole Rd to standards with sidewalks and bike lanes (*Industrial*)	▬	▬	●	●	▬	▬	▬

Projects of Regional Significance

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Tonquin Trail								
C5	Build the Tonquin Trail (*Bike/Ped, also Neighborhood Livability D9)*	●	●	●	●	●	●	●
B18	Add a grade-separated crossing over 99W (*Bike/Ped)*	◒	●	○	○	◒	○	○
D10	Connect Tonquin trail with neighborhoods (*Neighborhood Livability*)	●	◒	◒	●	●	●	◒
Northern Arterial								
C2	Provide north-south connectivity over Tualatin River for vehicles (*Downtown, also Industrial C3 and Major Corridors C12)*	●	◒	◒	●	◒	◒	○
Other Road Extensions								
C5	Extend 65th Ave north (*Industrial, also Major Corridors C2 and Neighborhood Livability C7)*	●	●	◒	●	◒	◒	○
C1	Extend 124th to south (*Neighborhood Livability, also Industrial A5 and Major Corridors B21)*	●	◒	◒	●	◒	●	◒
A2	Provide bus transit service on 124th Street (*Transit)*	●	N/A	●	◒	◒	●	◒

In addition to the above, projects along Tualatin-Sherwood Road, Boones Ferry Road, crossing I-5 near Greenhill Road, and at the Nyberg Interchange may be considered of regional significance. These are listed earlier under ODOT or Washington County.

PRELIMINARY

Tualatin Transportation System Plan
Online Forum Report

Between July 1, 2012 and September 6, 2012, an interactive "Online Forum" was featured prominently on www.tualatintsp.org and promoted at community events as a way to gather feedback about potential transportation projects for the Tualatin Transportation System Plan (TSP). Similar to Google Maps, the Online Forum allowed users to zoom in and around a map of Tualatin, click on and learn about potential projects, and rate and/or comment on them. One hundred potential projects were included on the map, with visitors providing 1,428 total star ratings and 99 total comments. The Online Forum used a 5 star rating scale for users to indicate if they thought each potential project was a good idea or a bad idea.

The interactive map provided a unique opportunity for the public to conveniently share feedback to the TSP update process from their smartphone, from home, the library or place of business. Input received through this process will contribute to the projects included in the TSP. To view the map and the complete list of projects, ratings and comments, visit: http://www.tualatintsp.org/ideasmap. A full list of comments is also included as an appendix to this report.

Most Talked About Projects

The number of people who rated a project can be used as a way to identify the most talked about or most popular projects in the forum. One project rose to the top with 123 total ratings (split between two project descriptions[1], rated separately). This was the North-South Connectivity west of I-5. Average star rating was 1.2 and 1.6 stars respectively. The other projects receiving between 27 and 43 total ratings were rated between 2.4 to 4.9 stars.

The following is a summary of the most talked about projects:

- Same project; rated separately over the course of the forum's use
    - North South Connectivity, Extension East of Country Club and West of the Railroad Track. (64 ratings, 1.2 average stars)
    - Look for ways to provide north-south connectivity over Tualatin River for vehicles. (59 ratings, 1.6 average stars)
- Add traffic signal at 97th Ave and Tualatin-Sherwood Rd. (43 ratings, 2.4 average stars)
- Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connections. (33 ratings, 2.9 average stars)
- Build the Tonquin Trail. (32 ratings, 4.5 average stars)
- Extend 124th Ave to south. (31 ratings, 4.6 average stars)
- Provide coordinated signal timing and access management along major arterials. (27 ratings, 4.9 average stars)
- Build bridges for pedestrian and bicycle access over the Tualatin River. (27 ratings, 3.9 average stars)
- Add bicycle lanes on Boones Ferry Rd to Day Rd. (27 ratings, 3.8 average stars)

---

[1] With feedback from the Transportation Task Force, halfway through the Online Forum, the North South Connection description was updated from a general description to a more specific location description as part of a Refinement Area.

Least Talked About Projects
Although many projects on the forum were never discussed and received zero comments or ratings, the projects that received only a few ratings, tended to be positive, receiving between 2.8 and 5 stars.

The following is a summary of the least talked about projects:

- Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd. (3 ratings, 5 average stars)
- Look for opportunities to open downtown's connection to the riverfront. (3 ratings, 5 average stars)
- Add sidewalks and bicycle lanes on Norwood Rd. (4 ratings, 2.8 average stars)
- Eliminate free right turns - on Herman Rd at Teton Ave and Tualatin Rd. (4 ratings, 3.8 average stars)
- Improve Tonquin Rd between Oregon St and Waldo Way. (5 ratings, 3.2 average stars)
- Ensure that future roundabout designs can accommodate larger trucks. (5 ratings, 3.6 average stars)
- Upgrade Cipole Rd to standards with sidewalks and bike lanes. (5 ratings, 4.2 average stars)
- Add structured parking in the downtown core. (5 ratings, 4.4 average stars)

Lowest Ranked Projects
Six projects received less than two average stars. By choosing fewer stars, users felt that these projects were less desirable or acceptable. These lower ranked projects received at least six total ratings. Some, discussed earlier, received over 50 ratings.

The following is a summary of the lowest ranked projects:

- Same project; rated separately over the course of the forum's use:
  - North South Connectivity, Extension East of Country Club and West of the Railroad Track. (1.3 average stars, 56 ratings)
  - Look for ways to provide north-south connectivity over Tualatin River for vehicles. (1.6 average stars, 54 ratings
- Add traffic signal on Tualatin Rd at 108th Ave. (1.4 average stars, 8 ratings)
- Restrict right turn on red at Nyberg Interchange. (1.6 average stars, 16 ratings)
- Add traffic calming on Tualatin Road. (1.6 average stars, 9 ratings)
- Add a roundabout at Boones Ferry Rd and Norwood Rd. (1.8 average stars, 12 ratings)
- Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center. (1.8 average stars, 6 ratings)

Highest Ranked Projects
Four projects received a perfect rating of five stars. These projects didn't receive as many total ratings, ranging from three to eleven total ratings.

+ Coordinate signal timing on Boones Ferry Rd. (5 average stars, 11 ratings)
+ Coordinate freight receiving/ shipping times. (5 average stars, 9 ratings)
+ Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd. (5 average stars, 3 ratings)
+ Look for opportunities to open downtown's connection to the riverfront. (5 average stars, 3 ratings)

APPENDIX: All Online Forum Ratings and Verbatim Comments

Received between July 1, 2012 and September 6, 2012

Bike/Ped:

Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd. Average rating 5 based on 7 votes.

- No comments

Fill sidewalk gaps on Grahams Ferry, Boones Ferry, and Herman. Average rating 4.6 based on 21 votes.

- We could really use continuous sidewalks on Grahams Ferry. Also, a safe crosswalk on Grahams Ferry near Helenius Rd is really needed.
- With respect to Grahams Ferry Road, the Ibach CIO has secured a commitment from the City to begin construction on the completion of sidewalks on both sides of the road from Ibach Road to Helenius Road. This project should be complete in 2012.
- Right now, to walk or bicycle on Herman road between Tualatin Road and Teton is to put your life into the hands of those driving by. On the other hand, keeping that part of Herman Road narrow and unpleasant probably helps discourage traffic that would otherwise divert itself from Tualatin-Sherwood Road, thus keeping the traffic down a little.
- Sidewalks are crucial. Bike lanes are also very important on this well-traveled bicycle route.
- These types of improvements should be inventoried, assessed, and determine a cost to complete. Once the package is assembled a bond should be proposed to the voters for approval and then implemented.
- This is a no-brainer. Should have been done years ago.

Provide wayfinding signs for Safe Routes to School. Average rating of 4.6 based on 9 votes.

- Anything we can do to keep our kids safe is a good idea.
- This in conjunction with a city wide way finding program and one that is not intrusive (i.e. colored sidewalks through the various CIOs, small pedestrian sized signs, etc.) Near schools, the safe route would be a distinctive color/signage.

Repair sidewalk gap on south side of Borland. Average rating 4.5 based on 10 votes.

- Important feature for the safety of pedestrian use.
- A wide, safe sidewalk running the full length of Borland Rd is of critical importance to the many people who walk to The Tualatin Schoolhouse Food Pantry. Rolling Hills Church will be opening The Community Life Center in September '12 which will also serve those in our community who are in need of essential services.

Add bicycle facilities near the hospital, 95th Ave and Martinazzi. Average rating of 4.5 based on 14 votes.

- A multi-use path is the way to plan along this corridor.

Build the Tonquin Trail. Average rating of 4.5 based on 32 votes.

- Metro's Tonquin Trail Project should coincide along with MSTIP (Washington County's Major Street Improvement Plan). Promoting, educating and facilitating a regional transportation system to include an optional trail system creates economic success and an alternative towards a healthier life style. This 22 mile trail system will connect our cities, communities, neighborhoods, and businesses to positively grow, benefit and flourish from. Let's set the bar for anticipation and a network of support. We're very privileged to live in the rich beauty, culture and history that surrounds us, let's give emphasis and make it happen!
- Use the name "Ice Age Tonquin Trail" which identifies the area as a major ice age floods national geological area for mapping, economics, history, GIS, geology, signing, interpretives.
- We need bike trails to make it safe for bicyclists. I would use the trails and I'm 70 years old!

Connect Tonquin trail with neighborhoods. Average rating 4.5 based on 20 votes.

- Concerns with rail crossing to and from neighborhoods is viable. Ideas and solutions are needed to connect neighborhoods to the trail.
- Where ever feasible and cost effective
- Sooner rather than later. This will help reduce traffic through Tualatin.

Improve bicycle facility treatments in downtown core. Average rating 4.5 based on 8 votes.

- This shows a need to up-dating the park and recreation master plan (which is out of date), it is only one of a number of items which discuss walking, bicycle paths and other community recreation related needs where contemporary

urban design standards are missing or out dated to meet present and future requirements. Up-dating the present parks and Recreation Master Plan would address this and many other issues and establish priorities which have been brought up during TSP and Linking Tualatin workshop meetings.

- YES!!! I would not consider riding my bike in a bike lane downtown until changes are made, because I don't feel safe. Perhaps a "curb" or something to prevent drivers from coming into bike lanes except at intersections.

Add pedestrian crossing treatments at key locations on Tualatin-Sherwood and Nyberg. Average rating of 4.2 based on 6 votes.

- No comments

Allow wider sidewalks for strolling and outdoor cafes. Average rating of 4.2 based on 16 votes

- Especially downtown in what's now Kmart and the other buildings around it.
- What a wonderful idea!! Finally, the city is actually taking into consideration how narrow those sidewalks actually are, two strollers that are going in opposite directions can barely fit on it, a bike and pedestrian all use that same walk way (until the bike lanes are installed), not to mention elders and disabled people who have mobility devices. Shouldn't the engineers make sure that everyone that uses the sidewalk can actually USE it, and providing enough room so those people don't worry about injuring another?
- I consider this a normal or contemporary urban design as well as development practice where businesses are desirable of attracting customers and the public desires amenities. There is a nominal cost involved both for public as well as the private sector but acceptable where public spaces urban design standards are in place.
- This will be expensive, but in new development it should be required.

Add I-5 multi-use crossing - connect to planned and existing multi-use paths. Average rating of 4.1 based on 8 votes.

- It should be convenient to shop on both sides of I-5 as a pedestrian or bicyclist, but it is not!

Add benches for walkers throughout the city. Average rating of 4 based on 19 votes.

- Seating done strategically on trails and walkways in the design of erratic rock formations or out of newly designed recyclable materials provides a more natural solution for spots to rest. More importantly seating and benches should be considered at transit stops, to encourage more use and to address a population with limits due to age or health.
- Walking is the #1 trend for exercise within the aging population. We have very few if any benches on any of our walkways. This is extremely important for the aging population as many are require to rest at certain times. Within our shopping areas where people walk a lot we should have benches at least every 800 - 1000 ft (along with other street furniture), along our more urban walkways and areas where there is a concentration of people over 50 residing at least every 1000 to 1500 ft and finally along other walking paths and trails at least 1500 - 2500 ft. There are many recognized national park and recreation guidelines for providing street furniture and seating along walkways we should be incorporating within our pedestrian and bikeways master plan (part of the parks and recreation master plan which is out of date)
- I like this idea as it will help get more people out walking at a relatively less expense than roads or even trails.
- Whether privately or publicly funded, more benches are a good idea. Benches would be helpful to people of all ages and abilities, and I believe would also look welcoming.
- I don't think the city needs to pay for benches that will be used primarily by the more elderly population. I rarely see anyone on the benches we have now. Why not have some private groups come up with the funding for benches if it is important to them?
    - Your comment takes aim at seniors in, what I believe to be, an unfair assessment. I think you should take a look around Tualatin on a weekend / holiday / warm day and you'd see these benches in use. People do not usually spend a big length-of-time on a bench, so, there will be times no one is there. Just looking close at the existing benches and they will show their use through how worn down the wood is. Our benches get lots-of-use. One way to involve Private Groups / Organizations / Companies is to off-set the cost of the benches through sponsorship by-way of a fee being charged by the city for the actual sponsorship.

Improve visibility and safety near schools at crosswalks. Average rating 4 based on 24 votes.

- Let's keep our kids safe!

Better accommodate pedestrians on the bridges. Average rating of 3.9 based on 15 votes.

- A badly needed thing to do, especially on the Sagert Street Bridge.

Build bridges for pedestrian and bicycle access over the Tualatin River. Average rating of 3.9 based on 28 votes.

- Absolutely! Find a way to connect the Brown's Ferry trail to Cooks Park. Find a way to avoid the horrors of the I5 crossing and more bikers would commute and use WES.
- The probably place for a ped/bike bridge is at the Jurgens area. The expense may be prohibitive however. If at Jurgens this could link up with Cook Park and then the Tonquin Trail.

Add bicycle and pedestrian facilities on 105th Ave, Blake St, and 108th Ave. Average rating of 3.8 based on 16 votes.

- See my comment under this topic's Roadway Improvements heading.

Multi-use path between Borland and Nyberg. Average rating 3.8 based on 6 votes.

- 65th will become the east side's Boone's Ferry and providing a solid connection to the Tualatin River Trail will be greatly needed.

Add bicycle lanes on Boones Ferry Rd to Day Rd. Average rating of 3.8 based on 27 votes.

- That roadway needs street lights as well. Driving the narrow, 1-lane curvy road on dark rainy nights can be treacherous.
- I have seen many bikes on this road and it is very dangerous for the bikers and the cars trying to pass. It really needs to be done.
- Thank you and much needed as it is really the only north south corridor for cyclists. I cycle commute every day on it. The brush and berries on the road side are over grown and forcing us out into the car lane at points. Any chance of a cut back soon?

Create bicycle boulevard system connecting major areas. Average rating 3.8 based on 18 votes.

- Pedestrian/bicycle facilities element should first be up-dated in the Parks and Recreation Master Plan (which is out of date), including design standards and with a priority implementation program which then should be as John suggests with project s funded under a local bond measure or measures.
- This should be the first project funded under a local bond measure. Getting vehicles parked at home is the best solution to our traffic congestion within the city and also will provide better neighborhood livability and connectedness. This project would attract so many great things and Tualatin could set the bar for pedestrian/bicycle facilities in the region.

Connect to Tualatin Path. Average rating for 3.7 based on 16 votes.

- This needs to be done right. Any new development along the river needs to be very aware of the expectations of the community.

Improve bicycle and pedestrian treatments at railroad crossings. Average rating 3 based on 7 votes.

- No comments

Add sidewalks and bicycle lanes on Norwood Rd. Average rating of 2.8 based on 4 votes.

- No comments
- A better network of pedestrian and bicycle pathways will help protect the safety of our citizens.
- Great idea!
- Great idea. Let's get started
- Connecting Sherwood to I-5 will keep a lot of traffic on the periphery of Tualatin
- Yes do this as soon as possible. However, plan a trail route either under or over 99W.
- Do this!

Corridors/Intersections:

Synchronize turn signals to/from Boones Ferry to Tualatin-Sherwood; coordinate with the train signal. Average rating 4.9 based on 12 votes

- I agree that this is an important consideration.

Coordinate signal timing on Boones Ferry Rd. Average rating 4.8 based on 14 votes.

- Good idea

Add a dedicated right turn lane on Teton at Tualatin-Sherwood. Average rating 4.7 based on 10 votes.

- No comments

Consistent use of yellow turn signals at traffic signals. Average rating 4.7 based on 15 votes.

- Especially dumb and annoying is the right turn arrow from westbound Boones Ferry to northbound Tualatin Road. When it turns yellow, it's followed by all lights turning green, instead of a red arrow as one would expect. This leads drivers to slow down anticipating a stop – then suddenly they need to accelerate again! The crosswalk across Tualatin Road is closed. If it ever opens, I can understand needing to stop right turns before allowing them through. Until then, I ignore the right turn arrow when it turns yellow, because I know the lights will turn green. I get frustrated when drivers in front of me unfamiliar with the signal slow down, understandably expecting they'll have to stop, and then not realizing that all the lights have turned green.
- Only where it works safely. Not all intersections can utilize the flashing yellow.

Extend 65th Ave to the north. Average rating 4.5 based on 11 votes.

- Drivers in east Tualatin badly need to be able to choose to get north to Bridgeport Village and shops near 65th and McEwan Rd via I-5 or an extended 65th.

Add right turn lane on Tualatin-Sherwood at 124th. Average rating 4.5 based on 11 votes.

- No comments

Add bus pullouts on Boones Ferry Rd. Average rating 4.4 based on 14 votes.

- No comments

Extend northbound left turn and create a southbound right turn lane on Boones Ferry at Tualatin-Sherwood to reduce backup from WES train. Average rating 4.4 based on 10 votes.

- No comments

Widen Tualatin-Sherwood Rd. Average rating 4.3 based on 19 votes.

- There are better projects competing for limited money, and I feel any widening should be limited to west of Teton, that is widening Tualatin-Sherwood from 2 to 4 lanes (or 3 to 5) Downtown projects are more important.
- Priority one in my estimation (five stars!). With continued construction of commercial buildings along TS it is only going to get worse. TS should absolutely be four lanes to accommodate East/West traffic, even in the event of a bypass highway listed below.
- Traffic on TS road certainly needs to be alleviated. I'm not sure this is the right solution and would like to see some impact studies done to project overall effects on the city center and neighborhoods adjacent to TS road.
- TS Road could stand to be widened, but the bigger picture should be on a westside bypass highway that would connect the entire westside region in the same way as 205 does for the east. Widening TS Road may only provide more delays in a regional transportation project that should be moved forward quickly.
- I would give this 10 stars if possible. This, in conjunction with completing 124th south and directing trucks onto Herman would go a LONG way towards decreasing congestions in Tualatin.

Signal at Sagert and Martinazzi. Average rating 4.3 based on 19 votes.

- I would like to see a round-about here, like those in Sherwood and on Borland.
- I drive through this intersection at least twice a day. It is badly needed and I would support the change.
- It needs it. Everyone who can is skipping Nyberg due to the congestion. Reducing wait time and confusion here would help.
- Synchronize turn signals to/from Boones Ferry to Tualatin-Sherwood; coordinate with the train signal....

Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd. Average rating 3.9 based on 13 votes.

- How about neither!
- I have seen large trucks on Tualatin Road, and it is not appropriate. They should be using Tualatin-Sherwood Road, which is not as close to residential neighborhoods.
- Tualatin Road needs one signal added, probably at Jurgens. Then Herman Road should not be improved to encourage truck traffic onto Tualatin Road at the intersection of Herman and Tualatin Rd. It seems to me one effective way to keep truck traffic off Tualatin Road is to improve Teton between Herman and T/S Road. If this were done, then is would be easier for truck traffic to either take 124th or Teton-thus avoiding coming east on Herman and then onto TR. Most often then they turn onto 90th-with the intersection not improved to handle semis.
- I suggest linking options concerning Herman with the improvement of Teton.

65th Avenue Refinement Area. Average rating 3.8 based on 9 votes.

- This would increase traffic on SW 65th and McEwan Roads. The intersection as McEwan and Boones Ferry is already overcrowded with many car accidents.
- This connection is critical to alleviate congestion on I-5 and the Nyberg interchange. The bridge would need to consider all modes of transportation and safety. Having the crossing would allow pedestrians from east Tualatin to get to Bridgeport and other destinations. The crossing would allow for a multi-use path connection for the region (Tualatin to Lake Oswego) and thus encourage biking/walking. Finally, the east side of Tualatin will eventually develop and expand to 65th; a new N/S connection is needed. Traffic may increase in the area, but the distance traveled would be so much less.
- As long as pedestrians and bikes have a secure and safe access to crossing this would a nice access point across bridge. But, if it becomes a traffic cluster like the Nyberg I5 without pedestrians and cyclists safety in mind than nothing has been accomplished and instead it will add another hazard for cyclists and pedestrians to navigate.
- This would allow local car/truck traffic to avoid I-5, decreasing congestion. It would also provide a much needed alternative route for cyclists and pedestrians, who have very limited routes for crossing the Tualatin River. This would also help improve circulation in the northeast part of Tualatin.
- What does it mean, alternatively, realign intersections at Sagert Street and 65th/Borland into one intersection? How would you do that?
- Will the new bridge have a bike lane, walking area, or sidewalks?

Improve sight distance at I-5 and Nyberg Rd interchange. Average rating 3.7 based on 7 votes.

- No comments

Realign Sagert /Borland to one intersection. Average rating 3.7 based on 11 votes.

- No comments

Make two right turn lanes from I-5 north onto Nyberg Rd. Average rating 2.1 based on 7 votes.

- No comments

Roundabout at Nyberg and 65th intersection. Average rating 2.1 based on 11 votes.

- There is a signal at Nyberg and 65th already, right? The intersection is complicated because of the angle of the road that goes to Brown Ferry Park. A roundabout would take up too much space and be confusing to folks new to the situation. It is not a simple intersection of east-west road with north-south road. A driveway to businesses is involved (7-11, vet if I remember rightly).

Add traffic signal on Tualatin Rd at 108th Ave. Average rating 1.8 based on 9 votes.

- We need a traffic signal at Jurgens and Teton, not 108th.
- We need a signal system at Teton and Jurgens (not at 108th) on Tualatin Road. Teton is dangerous. School buses on Jurgens have a difficult time turning left onto Tualatin Road.
- There is no need for a light at this location- the traffic volume here does not justify is as it is at the Teton intersection.
- Seems like overkill. I live nearby and rarely see cars trying to turn out of 108th. Maybe briefly during weekday peak hours when employees are coming to and leaving the industrial area, but outside of those times it is pretty low use. So a signal would likely create a notable inconvenience for Tualatin Rd traffic (of which there is a lot) just to benefit a handful of users.

Restrict right turn on red at Nyberg Interchange. Average rating 1.7 based on 18 votes.

- No comments

Look for ways to provide north-south connectivity over Tualatin River for vehicles. Average rating 1.6 based on 62 votes.

- The rating star system is NOT working. I want NO stars on this one. Tigard apparently in their TSP does not address this other than a vague statement about Hall Street. Any location across the Tualatin River in the Riverpark CIO would destroy neighborhoods and if Hall is extended, destroy the Community Park. This is a bad, bad idea should not even be considered.
- No stars for me on this one - it's a bad idea and as other posters have indicated, it would only increase traffic, pollute our air, screw up our neighborhoods, and slice up our town .... just take a look at some of the neighborhoods in Woodburn around Hwy 5 - I'm sure they regret whatever decisions led their current state.
- We have said, no,no,no. How many times do we have to say it. I live on this road and it already has too much traffic so forget the hall street Tualatin road thing. I will be out of town on this date, but let this opinion be heard.
- If I could give this project 0 stars, I would. This would add a ridiculous amount of congestion to an already overburdened Durham Rd. which is mostly residential. I often take neighborhood kids on bike rides over the Kiakuts Bridge, which was a brilliant development btw, and adding a bridge for vehicles would destroy the little bit of nature

we have left here to enjoy in Tualatin and Tigard. Drop this idea please. It really is terrible. Expanding Boones Ferry is much more preferable.

- The bridge doesn't have to be at Hall Street. Explore other areas - even east of I5.
- I do not want this project.
- I opposed building a connector from SW Boones Ferry to Hall Street.
- I would probably prefer to drive farther or through more congestion than accept the changes that would come with a new road crossing. Ped/bike crossings should be far less impactful and still improve connectivity for those willing to travel on bike or foot

North South Connectivity, Extension East of Country Club and West of the Railroad Track. The average rating for this project is 1.2 based on 69 votes

- It is absolutely incredible that this option is even being considered. In a time when we need MORE parks and wild spaces, consideration is being given to a project that would reduce and bisect existing parks and wetlands, add untold amounts of vehicle noise, congestion and disruption to one of the few peaceful areas (thankfully WES operates only during rush hours) that we have left?! Use the existing Boones Ferry connector; it would be far cheaper to upgrade and widen Boones Ferry, including the bridge over the Tualatin River than it would be to build an entire new road. And how about finishing the North-South connector at 124th and seeing how that satisfies the current and future needs before destroying one of the largest contiguous natural areas in our area
- Ridiculous. Will bring TONS of traffic into our town, making it even more difficult to get around. Pollution and noise in the park? Might as well call it blight now and be done with it!!
- This road is a terrible idea - we need to take traffic away from our park, away from our downtown core. I wish I could give this a negative 5 stars - get rid of it
- This is a bad place for a road. It would mess with the Cook Park Wetlands, Durham Park, Tualatin Community Park, the Tualatin River Trail, and the Fanno Creek Trail.
- I do not agree with this idea, It seems to only bring greater traffic to the down town core and near our parks. We must protect our parks and Boones Ferry already causes such a headache I can only imagane a second connector dead ending at the same intersection could cause a headache beyond imagine.
- For these reasons I do not agree with a North South connection in this particular area.
    - There are 2 North South Connections between Tualatin and Tigard forgotten by this project of the newly completed 124th and Cipole
    - It will bring industrial traffic further East causing wider spread issues
    - Old growth timbers line the West side of proposed connection which would surely be lost
    - Flood land to the East home to migrating birds would be encroached upon
    - Increased congestion and surely traffic would be drawn closer to the park
    - This would surely divide the current connection Durham and Tualatin have to Cook park
    - North of this connection is a nature reserve that would surely be devastated by the new roadway
    - Greater noise and air pollution to reserves, golf courses, parks, trails, homes you name it
    - Greater traffic at an already overly complicated spider web of entrances, exits, rail crossings and intersections
    - Ultimately resulting in more traffic turning onto and off of Tualatin Sherwood Road causing greater congestion

Downtown:

Redesign pedestrian crossings, consider flashing lights. Average rating 4.7 based on 9 votes.

- The idea is good, but flashing lights seem unlikely to make drivers stop. Those who refuse to stop will continue to refuse to stop, without more policing and ticketing.
- This is important to me, since I live right there in the Villa II townhouses. I've seen numerous accidents in 16 years, near misses with pedestrians, and a recent bicycle accident that could have been avoided. Flashing lights would be helpful, what would be more helpful is route the thru traffic around this area-with a bridge over the Tualatin River. This piece of Boones Ferry, once owned by the State, was not designed for the traffic it has now. The people who

voted and pushed the bridge plan down two years ago to save their parks do not live in this immediate area and are not impacted by the level of traffic and noise. They use the park facilities allot less than they use this road!

Build trail along river from Boones Ferry to downtown, extend to greenway. Average rating 4.5 based on 10 votes.

- This would be wonderful. Any way to get people moving on their bikes or walking is healthy and safe, and keeps them out of cars.
- Alternate options for commuting/traveling through city is extremely important to achieve an economic outlook for an improved, richer, more dynamic, sustainable city.
- Providing a strong bike and ped connection through Tualatin will help alleviate local traffic.

Redesign Fred Meyer to Kmart intersection (including pedestrian crossing). Average rating 4.4 based on 22 votes

- OH YES, PLEASE! As a pedestrian who wants to cross between Fred Meyer and Kmart, it is crazy to walk all the way to the corner first.
- A good thing if redesign does NOT mean a prettier vast expanse of pavement for fast, noisy traffic. No more turn lanes! It would be a good thing to designate more area for walkers: wider sidewalks and crosswalks, more medians and islands, different paving in crosswalks, and narrower lanes. Traffic shouldn't speed towards I-5 an east Tualatin until east of the intersection.
- This intersection is a huge safety hazard -- not only to pedestrians, but also to drivers. My daughter and I were nearly hit in my car earlier this summer as I tried to turn left one evening from Fred Meyer onto Nyberg Road west-bound. A young kid driver pulled out of the south-bound lane leaving KMart (the lane that is currently dedicated to both left turns and driving straight ahead into Fred Meyer). He was a few cars back in that lane, and I assume he got impatient waiting for the cars in front of him because he floored it as he moved into the right-turn only lane. Apparently he did not see that I was already into my turn and crossing that lane he was moving into. His turn was totally illegal, as he was trying to go straight from the right-turn only lane. Thank goodness I saw him as he entered the south-bound right-turn lane, as I was able to brake quickly and provide enough room for him to stop and then swerve around us. The only reason I had time to brake was that I always watch that intersection for the possibility that an idiot like him will pull that exact maneuver. If I hadn't reacted quickly, he would have hit my passenger front side or my passenger door -- both of which were near where my 15-year-old daughter was sitting. Ironically, that was very much on her mind as she began driver's ed training at TuHS a few weeks later.
- A protected left turn from KMart parking lot onto Nyberg is desperately needed!

Replace/widen Boones Ferry Road Bridge over Tualatin River. Average rating 4.3 based on 14 votes.

- No comment

Bike and pedestrian treatments near Bridgeport Village. Average rating 4.2 based on 9 votes

- No comments

Look for opportunities to open downtown's connection to the riverfront. Average rating 4.2 based on 5 votes.

- No comments

Optimize intersections to reduce conflicts along Boones Ferry and Tualatin Sherwood Roads. Average rating 4.1 based on 7 votes.

- No comments

Widen Boones Ferry Rd. Average rating 4.1 based on 13 votes.

- The only thing this would do is make Boones Ferry as wide, ugly, noisy, and congested as Tualatin Sherwood Road and help to eliminate what's left of downtown.

Improve downtown core street connectivity. Average rating 4 based on 10 votes.

- Downtown circulation has always been a problem, and it continues today. Sometimes cars don't see me as a pedestrian because they are trying to navigate the streets.
- I see this has little ability to be implemented per the project team scores and might be addressed by other ideas - but I must add that we have lived in Tualatin for three years and I am just barely figuring out how to navigate the downtown area. It's so confusing figuring out where to park to attend events on the commons, or how to navigate between the library area to other nearby businesses. It doesn't really feel like a proper city center.

Add structured parking in the downtown core. Average rating 3.9 based on 7 votes.

- Currently, several of the public parking lots are full during business hours. It is pretty easy to see we will need more parking. If a structured parking garage is built with public funds and on public land, it should have a reliable revenue source to ensure maintenance expenses are covered.
- Allowing for a private structured parking garage could be helpful, however it would need to be done very tastefully. A public structure would probably not be feasible without some sort of additional tax to 1) construct it; and 2) maintain it.

Upgrade Nyberg interchange for bicyclist safety. Average rating 3.7 based on 7 votes.

- No comments

Encourage multimodal circulation and transit-oriented redevelopment. Average rating 3.7 based on 13 votes.

- YES, YES YES!!! Multimodal development would encourage people to use mass transit, thereby saving the roads and environment and money. It would also encourage a wider variety of businesses in the core downtown area.

Add roundabout at Boones Ferry and Lower Boones Ferry Road. Average rating 3.5 based on 13 votes.

- No comments

Rethink access between Tualatin Road and Tualatin Community Park. Average rating 2.9 based on 15 votes.

- This should be a priority study area for the city both from vehicle access and through traffic as well as pedestrian and bikeway access and convenience. The city is currently underway in establishing facilities within Community Park as a multi-generational recreation facility which will only increase the accessibility problems which exist today. With the recently completed improvements to the Juanita Pohl Center which serves as the city's recreation center for the 50+ population (our fastest growing sector) it will become an even further problem as the aging population has greater difficulty in coping with park accessibility problems.
- ABSOLUTELY CRITICAL!!!!

Create grid system near Kmart upon redevelopment with connection to Seneca. Average rating 2.3 based on 14 votes.

- No comments

Industrial/Freight:

Provide coordinated signal timing and access management along major arterials. Average rating 4.9 based on 27 votes.

- No comments

Coordinate freight receiving/ shipping times. Average rating 4.9 based on 13 votes.

- Good idea - trucks and rush hour traffic are not a good mix

Add rail station with easy offload and access for industry in the west part of town. Average rating 4.3 based on 16 votes.

- No comments

Consider removing trucks/adding truck info signs along 108th/105th Aves. Average rating 4.1 based on 14 votes.

- This will really help the neighborhoods. More can be done in other neighborhoods as well.
- Removing trucks from Tualatin road between Boones Ferry and 95th hasn't worked - I don't know why this should.
- The Ibach CIO has secured a commitment from the City to post signage restricting usage of this route to trucks no larger than "three-axle, single unit," per TMC 8-3-142. Moreover, the City has also responded to the CIO's request to limit usage of this route by Allied Waste only to its vehicles making pick-ups (i.e. not to use route as short-cut into South Tualatin) - a request to which Allied Waste has assented.

Add a signal or roundabout at Sagert/ Martinazzi. Average rating 4.1 based on 14 votes.

- Good idea - would eliminate the confusion and those stop-sign-jumpers who are apparently in a big hurry to get home.

Improve cross-section on Herman Rd. Average rating 4 based on 9 votes.

- If Herman is improved, bigger trucks will use it ... and then we end up with more truck traffic going thru town to get to Hwy 5, or traffic up Tualatin Road to get to Hwy 99. Neither is acceptable - kids wait for school buses on Tualatin Road right near that Herman Road/Tualatin Road intersection.
- Well, once more the rating stars do not work. I would like this to be 0 stars, not three. The unimproved section of Herman just before it merges into Tualatin Rd should not be improved to the extent truck traffic is encouraged to use Tualatin Road. Sidewalks and bike lanes do need to be added.

Upgrade Cipole Rd to standards with sidewalks and bike lanes. Average rating 4 based on 7 votes.

- No comments

Provide a loop bus route serving local residents. Average rating 3.9 based on 19 votes.

- GREAT IDEA!!!!
- This local system could fix half of the transit problems listed. Find a way to fund this program and utilize Tri-Met for the regional connections.

Ensure that future roundabout designs can accommodate larger trucks. Average rating 3.3 based on 7 votes.

- Let's find other solutions for larger trucks - they don't belong in our neighborhoods, which is likely where roundabouts would be situated.

Improve Tonquin Rd between Oregon St and Waldo Way. Average rating 3.3 based on 6 votes.

- No comments

Create an east/west connection across I-5 (near Greenhill Rd). Average rating 3.1 based on 12 votes.

- The proposed idea makes sense if the under/overpass actually connects to I-5 with a northbound on-ramp and a southbound off-ramp to allow drivers to avoid going out of their way by going south to or north from Elligsen Road or driving through downtown Tualatin.
- "No" to this unfavorable proposal. It erodes nice land, adding more roads for future businesses. Access across I-5 is already just south less than half a mile away. Money should be better spent on other projects using existing roads, not building more roads.

Add a signal along Tualatin Rd to allow residential and business access. Average rating 2.9 based on 18 votes

- For turning left onto Tualatin Rd from Jurgens, visibility could be drastically improved by removing the first 10 to 20 feet of hedge, or by keeping it at a lower level. It's difficult to see the oncoming cars from the left (East).
- A light would certainly help the problem of folks that speed on Tualatin Road. Trying to exit from the neighborhoods onto Tualatin Road is a dicey situation at times - I'm surprised we don't see more accidents. And I do agree that improving the sight line in some areas is crucial.
- During rush-hour, it seems like a light at Teton would only make matters worse, as traffic would back up eastward blocking the Jurgens intersection.
- There is more traffic at the Teton/Tualatin Road intersection that impacts both residents and business, and there have also been a number of accidents at this location. A light is needed here for both safety and traffic flow improvement.
- Best at Jurgens

Provide incentives to telecommute. Average rating 2.6 based on 14 votes.

- With the right kind of sensitive planning and incentives to telecommute or take mass transit, Tualatin could become an example for other communities.

Add traffic signal at 97th Ave and Tualatin-Sherwood Rd. Average rating 2.4 based on 43 votes.

- Agree businesses need this light very badly. So do their customers! The key thing will be to coordinate it carefully with the light at Teton. Seems the only way this really works is if the timing can be engineered so as to stop a wave of east-bound traffic at the Teton light (not allowing it to reach 97th) while simultaneously stopping a wave of west-bound traffic at 97th (not allowing it to reach Teton). The idea here is to keep the stretch between 97 and Teton free for those vehicles turning onto T-S Road from 97th (i.e., no backups in this stretch). And that helps all the traffic trying to turn onto T-S Road from Teton too.
- If the light is only triggered for left hand turns onto Tualatin-Sherwood from 97th, it will improve safety. We need it.
- There are a huge amount of signals on tualatin-sherwood road at present and they are poorly coordinated as it is. Will adding another signal really address congestion?
- Businesses need this light to safely make left hand turns onto Tualatin-Sherwood Road

Add traffic calming on Tualatin Road. Average rating 1.5 based on 10 votes

- This doesn't seem appropriate at all. Tualatin Rd is an arterial. Traffic calming would be in direct conflict with many of the intended functions of this road. How do the emergency service providers feel about this? As a resident off of this road, I don't see this as helping me. It would be incredibly annoying to have to drive through this constantly.

Neighborhood Livability:

Extend 124th Ave to south. Average rating 4.7 based on 32 votes

- Since the West Side By-Pass is not on the horizon we need to do something to help alleviate the industrial traffic off of TS Road. Plan 124th so it could someday be an interchange for the by-pass.
- Let's move truck traffic away from T/S Road, and away from our City core.
- I think the forest next to the proposed extension should be made a park. And what about the drop-off into the quarry? If they build a road, I hope they don't put a view-destroying fence up. I say no new roads>
- Every year the traffic through the city center increases laden with trucks and industrial traffic. This would certainly protect the livability of our city.
- This is vital to keep truck traffic out of residential areas, reducing noise, fumes and increasing livability.
- I DON'T like seeing trucks parked in the middle of Tualatin Road, as if it's an OK parking space.
- Makes it dangerous turning out of residential areas
- Absolutely yes. As soon as possible

Provide a mutli-use path along the river. Average rating 4.3 based on 17 votes

- One of the few areas in which the city has complete control is in parks and recreation. The park and recreation master plan needs updating and should include as one of the main focus areas a river front park system from the golf course to Browns Ferry Park at minimum length - this would include multi-use trails as well as other park features - there are many examples both in Oregon as in the rest of the country as to what this could be and would mean to the city.
- This should only be considered after the key targeted employment area determined. It may or may not support the targeted industries we wish to attract.
    - This may be true for the west end of town, but this is critical for the east side of Tualatin to connect safely with the downtown area.

Add multi-use path as part of Tualatin Trail. Average rating 4.2 based on 13 votes

- Connect to a local multi-use path as well, let's think big and plan for it.

Add signal or roundabout at Sagert and Martinazzi. Average rating 4.2 based on 11 votes.

- This intersection works very well as it is for cars, but is daunting if you're a pedestrian or bicyclist. However, I wouldn't change it until there is a sidewalk over I-5 that would provide more pedestrians.
- I used to live nearby this intersection and it was usually a challenge to know when it was my turn to enter the intersection. I do not know if many accidents occurred there -- what are the statistics?

Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin. Average rating 4.1 based on 18 votes

- No comments

Balance needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school. Average rating 3.8 based on 9 votes.

- No comments

Eliminate free right turns - on Herman Rd at Teton Ave and Tualatin Rd. Average rating 3.8 based on 4 votes.

- Eliminating free right turns on Herman Rd at Teton Ave: ok.
- Eliminating free right turns on Herman Rd at Tualatin Rd: bad.
- bad idea

Reduce speed, possibly add trail through wooded area (105th Ave., Blake St., and 108th Ave.) Average rating is 3.8 based on 16 votes

- The Ibach CIO has secured a commitment from the City to begin construction of various safety improvements to the "S" curve, including a pedestrian/bicyclist safety light system, a stop sign for westbound traffic at Blake and 108th and bump outs to reduce overall speed through the "S" curve. While these are short-term solutions, the best long term solution is elimination/straightening of the "S" curve or a pedestrian and bicycle path through the woods with ingress and egress at both Ibach Park and Willow Street.
- This is a fabulous idea!

Add pedestrian islands on Boones Ferry, near Byrom ES and Tualatin HS. Average rating 3.6 based on 11 votes.

- No comments

Provide focused pedestrian crossing improvements along Tualatin Road. Average rating 3.6 based on 10 votes

- This should also include Tualatin Road from the golf course to lower Boones Ferry Road downtown
- Don't we already have several focused pedestrian crossing treatments on Tualatin Rd? There may not be one right at Jurgens, but there is one just to the east that may be serving the same purpose. Drivers are pretty good about stopping when you are waiting to cross at these locations.

Reroute school buses away from Tualatin Community Park and railroad crossings. Average rating 3.1 based on 9 votes

- No comments

Adjust signal timing to give priority to Tualatin Road Traffic at 90th Ave. Average rating 2.9 based on 15 votes

- Keeping Tualatin Road slower and more local is an important priority.

Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center. Average rating 2.4 based on 9 votes.

- This stretch of road is already too wide, fast, and noisy. The strip malls on the south side are ugly, and Nyberg Woods squats on top a giant ugly wall with only big driveways in and out. Widening Nyberg with this turn lane will only make the whole situation worse.
- More important to deal with the 'merging' lane across the road and help eliminate aggressive, unsafe driving. Too much road rage from that merging action

Add a roundabout at Boones Ferry Rd and Norwood Rd. Average rating 1.7 based on 13 votes.

- No comments

Transit:

Look for potential park-and-ride locations in west Tualatin. Average rating 4.6 based on 16 votes.

- We need a park and ride at 99W and 124th/Tualatin Road. Tri-Met needs to add EXPRESS bus service that stops in Sherwood on 99W near Tualatin-Sherwood Road and at this new park and ride. There is enough demand to justify it and it would help reduce traffic going through Tualatin to I-5.

General – need extended service for all transit. Average rating 4.3 based on 20 votes.

- PLEASE lobby for additional WES hours, and for public information to let people know how to use it. I have talked to people in Tualatin who do not know what it is or how to use it. Also, sometimes I have been waiting for WES and people come to buy a ticket but don't have a debit card, so I end up using my card and they reimburse me with cash, but that won't work many times for students or immigrants or others without a debit card.
- It would be really nice to be able to take the WES/Trimet to and from the airport from the southwestern suburbs, especially on weekends.
- Need bus service out on Borland Rd for the 3 days/week when the Food Pantry is open.
- We need some sort of transit service for the employees that work in the businesses west of downtown and between Tualatin-Sherwood road and Tualatin road. Lots of businesses, lots of employees, but zero transit service. Reliable transportation for employees to and from work might even attract more businesses.
- If I knew that WES was reliable in terms of service hours, I would consider this option and probably use it more often. As it turns out, I do not contribute to the origin/destination statistics due to the low hours of operation.

Extend bus service to east Tualatin. Average rating 3.9 based on 15 votes.

- No comments

Provide bus transit service on Tualatin Road between downtown and 99W. Average rating 3.8 based on 12 votes.

- No comments

Add parking capacity at Tualatin Park-and-Ride - Potential structure. Average rating 3.8 based on 22 votes

- As it is now there's a queue of people waiting to get on each bus that arrives and some of those buses are full. Greater parking capacity without matching capacity on the 96 won't help much. Add a structure only with the 100% commitment from TriMet that they would add additional buses to the 96.
- With the cost of an added structure, hopefully TriMet would also add busses that use this stop. Particularly the #96 that go to downtown Portland
- Please more buses connecting Lake Oswego and Tualatin and down macadam to Portland, what a beautiful route! This would really save congestion-we need more times than just rush hour commute buses - and really, where are the bike paths???? Are we all too old or too rich to be interested in green practices and healthy choices? What about families and learning about the rivers?

- Please connect to PORTLAND TRIMET #96 and add more times and buses NIKE PATHS AND ROUTES PLEASE!
- This is a great idea if we add more express bus service. The park and ride draws from throughout the area.
- This could be a win-win for the park and ride along with the much needed parking for Bridgeport Village shopping during the holidays. Tri-Met would add more service if the capacity is there. If you don't supply parking, then the facility will reach its capacity and no additional buses would be needed. Must expand this popular and very visible park and ride facility.

Explore a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service. Average rating 3.8 based on 23 votes

- That's a great idea and would keep people out of their cars, which saves roads and gas and pollution.
- Having a Tualatin Trolley that could not only serve these retail areas that would attract visitors, but one that might even work for weekday businesses, and provide service to the city during special events would give Tualatin a more unique attraction in the region.
- Excellent idea! This will tie-in with the new development replacing the Kmart shopping center.

Add a Lane on Tualatin-Sherwood Road between Martinazzi and I-5 Average rating 3.7 based on 9 votes.

- This section of Tualatin-Sherwood road is already too wide, ugly, and noisy, and the vast majority of the time outside rush hour has speeding traffic. An extra lane will only aggravate the problem and directly conflict with any improvements for cyclists and walkers. The only lane that might help is east of the Fred Meyer driveway, to add a second lane to get on I-5 southbound.
- Heading east on Tualatin-Sherwood Road toward the I-5 entrance -- Even if the new lane just goes from Martinazzi to the Fred Meyer entrance and aligns with the existing on southbound on lane and ramp that would really help. If it is possible to add a second southbound lane, all the better. This is an area of real congestion.

Look for potential park-and-ride locations in south Tualatin. Average rating 3.6 based on 14 votes.

- Agree with Minda re: bike lane on Grahams Ferry Rd. We're so close to being able to make some nice loops in the area but this treacherous area kills it.
- I'd agree that it would be great to have a Park and Ride and more frequent bus options in this area. I also would like safer and continual bike lane on SW Graham Ferry Rd to SW Ibach Rd to SW Boones Ferry Rd. Currently walkers and bikers need to cross the street at a blind area of the road near LDS church. Not safe. Also, there should be speed signs as soon as a car enters Tualatin on SW Graham Ferry Rd - not after the Helenius Rd. intersection where people/bikes could be crossing at that flashing yellow light which most vehicles ignore. And the 45 mph speed sign should be past Tualatin limits not before it.

Provide bus transit service on Avery Street. Average rating 3.3 based on 10 votes.

- Was thrilled when the WES stop was added in town, but without local bus/shuttle service on Avery it takes just as long to get to the station as it might be to drive. I think more people would utilize the bus service if they didn't have to go to Boones Ferry or Tualatin/Sherwood Road to catch one.

Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections. Average rating 2.9 based on 34 votes.

- Providing a true "transit" center or hub makes sense. Planned properly, this area could work out well. Future parking could be accommodated by a parking structure. If MAX could be underground in this area then you could tie a MAX station into this as well. Pedestrians and bikes could easily get here once a local Tualatin multi-use pathways are developed that would connect the entire city.
- The 96 bus aside, the WES is a start of better transit connections to Tigard, Beaverton, and thereabouts. The proposed idea is what we need to lessen car trips in town, particularly for those who work but don't live in town. Personally, anything that improves access to the WES Station can draw more riders that might keep or improve service, and anything that might help me get to and from the airport more easily without driving and paying an arm and a leg for parking is a good thing.
- Agreed. Extending the WES hours into mid-day, or weekends, would be helpful.
- What we really need a schedule that will accommodate commuters connecting to Max: more frequent, throughout the day, evening and weekend runs
- Besides just the central focus how about making it a true solution 7 days a week and extend the hours.

- Why are we NOT CONNECTED to PORTLAND - more people more business!!!!! Fewer gas emissions.....just because older richer people stay home in Lake Oswego, or drive their fancy cars, this will not provide a neighborhood future!!
- When WES was being built there was much concern that parking for the businesses (Haggen/etc) would be impacted in negative way. The parking does seem crowded to me now...are there objective ways to measure the current impact and then estimate the impact of this proposal?

Provide bus transit service on Herman Road. Average rating 2.8 based on 12 votes.

- No comments

Provide high capacity transit service on Tualatin-Sherwood Road. Average rating 2.8 based on 13 votes.

- Those of us who live near downtown Tualatin without a car find it very difficult to shop at businesses like Target in Sherwood.
- Very necessary
- I am not sure but I believe HCT had very few stops and HCT most likely serves employees. So if the idea is a high speed bus from Sherwood to WES in Tualatin, then my vote would be a conditional maybe. I do not see how HCT would reduce congestion on T/S Road as it is often either truck traffic or pass through auto traffic going to I-5. Also, if this were implemented, then another problem is present (if there were no or very few stops along T/S) which is how then to get workers to their places of employment once they are at WES.

Provide bus transit service on 124th Street. Average rating 2.7 based on 10 votes.

- No comments

Verbatim Comments Received Via Email to Project Staff:

- For the public record, I oppose including the proposed "Hall Street Extension" project in the update of the Tualatin Transportation System Plan update for many reasons. The most important ones include:
    - 1. The area along the railroad tracks on the Tigard side of The Tualatin River is a sensitive natural area for wildlife. I walk/ run from Tualatin Community Park to Durham and then to Cook Park several times per week with my dog. I have seen eagles, deer, geese and other water fowl on these excursions. The terrain is partially wetlands. A few years ago, there was an "additional" pond created in exactly where this roadway would go through. The disruption in the ecosystem of this area would be devastating to this natural area.
    - 2. The pedestrian pathways that parallel this proposed pathway and connect all three parks mentioned above are enjoyed by thousands of people daily from Tigard, Tualatin, Durham and from other communities as well. Bicyclists, runners, mothers and fathers pushing their kids in strollers are drawn to this area on both sides of the Tualatin area to enjoy the beauty of nature, the quiet tranquility of listening only to the sounds of nature instead of traffic, and to able to breathe fresh air. All of this would be lost forever for the sake of moving traffic. Our community would pay a heavy price for the sake of moving more vehicles across the River. Which brings me to my next point.
    - 3. Tualatin is already known as a "drive through community" . Those of us who live here don't want another roadway bringing in cars and heavy trucks into our community. It is dangerous enough for the kids who walk to TC Park now and have to deal with our current traffic. This roadway would only bring more traffic from many other communities into "our" neighborhood and the pollution that goes along with it.
    - 4. I urge you, in the spirit of transparency, to take public comment on this issue during tonight's City Council meeting. I also urge you, as representatives of the citizens of Tualatin, to stand up for us and protect our city and neighborhoods. Tualatin residents should not have to pay such a heavy price by losing some of the things we treasure most- things that will be lost forever. Please vote NOT to advance this project.

- Consideration Area: How would this solution to the Tual. Transportation Plan affect traffic locally Re: the Hybrid two lane road connecting to Hall Blvd. In ADDITION TO all the concerns and objections already raised---air pollution, noise pollution destruction of newly protected wet lands and destruction of the restful livability provided by the 3 connected parks. The result I never hear mentioned or discussed is what affect the 800-900 vehicles a day in each direction would have:

a) After they cross the expensive bridge over the Tualatin River and then come to the intersection of 85th Ave., Durham Road, and Hall Blvd.

b) The most important result is that all 800-900 vehicles would go directly through two school zones---Durham Elementary to the east and Tigard High School to the west.

c) Not only would there be extreme congestion and increased safety hazards for the children being dropped off and the school buses trying to maneuver to their drop off areas but all the 800-900 vehicles using this route would need to SLOW TO 20 MILES PER HOUR as is required in all school zones, and surely, the resulting back up would stretch all the way back to Tualatin Road and Boones Ferry areas.

d) For this and all the many other reasons already voiced this part of the Hybrid North/South connectivity proposal is a non-workable extremely ill-conceived proposal and would definitely affect traffic in the Tualatin area negatively. It should be dropped from the Tualatin Transportation plan.

- I am writing to express my disapproval of the following transportation projects:
  - Proposed Bridge-Hall Connecter
  - Proposed SW Boones Ferry Connector

  As a Tualatin resident I am against any transportation project that is going to impact our parks. How can you run Hall Blvd. through wetlands? Tualatin Community Park-Cook Park is a nice area and will suffer greatly if the street is pushed through. Not to mention the amount of traffic that will now flow into an area with one lane in each direction. Parks are supposed to be peaceful places. The Hall connection to Boones Ferry has the potential to carry up to 1,000-1,200 vehicles in each direction during peak rush hours. That's terrible, considering it's difficult now to leave the North Tualatin neighborhoods and head east on Tualatin road. There is no other avenue out of this area that is bounded by the river on the North. I don't think it's our job to relieve traffic on I-5 and Hwy 217. I am 100% against both of these projects.

- The proposal for Hall Street Extension to go south between Cook Park and Tualatin Community Park looks so good on a map. It is terrible for the humans using the park, however. The Environmental/policy considerations include"the potential impact (likely temporary) to the Tualatin River and adjacent natural resources" completely leaves out humans. WHY? Is not car exhaust a detriment to public health? And so why place so many cars near a park where people are trying to relax, enjoy some "fresh air" and exercise? This violates the spirit, if not the letter, of the law/ordinance against transportation projects in the Tualatin Community Park without a public vote.

- Hall St. to Tualatin Park...ARE YOU KIDDING ME?!! That has to be the **worst idea** I have heard in my 22 years in Tualatin. I will fight this proposal. Don't destroy what has just been created as a terrific addition to our community.

- Just a brief email to inform you that we are strongly opposed to the extension as it is proposed. This plan uses Tualatin as a pass-through for regional traffic, with all the negative factors that involves, which you are all aware of through prior citizen's testimony and stated concerns. It should not be approved.

- Please do not extend the road. This is one of the few dedicated areas where bikes and runners and walkers can enjoy the tranquility of the river and wetlands without the intrusive noise and pollution of vehicles. This area is a haven from the built environment and gives those of us who commute by bike our own area to cross the river. I think recreation use of the trail system will be reduced if people will have to ride alongside noisy cars and cross back and forth. Also studies have shown the adding more capacity for cars only encourages their use and eventually the level of congestion returns. Please encourage a future where mass transit is more the norm.

- Please do not build a new bridge across the Tualatin River nor put a new road next to Tualatin Community Park and through the Cook Park Wetlands. While the current Tualatin plan calls for a two-lane bridge, the Tigard plan calls for a much larger $60 million project. Less damaging alternatives exist for improving traffic flow in the area including replacement of the bridge on Boones Ferry Road.

- I as a member of the community and user of Cook Park would like to request that you remove the bridge from the Transportation plan. The truth is that the wetlands are more important that a quick fix to a problem with transportation, which in comparison to other parts of the country is not even really a problem. The traffic through Tigard, Tualatin, and Lake Oswego is minimal unless you are on a major highway or freeway and let's face it- a bridge through the park isn't going to change that the wetlands that we have through Tigard, Tualatin, and Lake Oswego, are jewels, precious treasures. Not something to be squandered for the sake of something as common as a road. I am asking that you help lead our collective cities into the future and look for a more progressive and environmentally sound way to deal with our population/transportation problem. Our park is neither the cause nor the solution of this problem. I would love for the City of Tualatin to show the rest of South West Portland what true ingenuity and environmental responsibility looks like. And besides that, our collective towns do not have the money to build or maintain a bridge anyway. I would personally feel like part of what makes this area nice place to live has been destroyed. Please please please, do the right thing. Kill the bridge idea. Look forward. Not back.

- For the project that you have titled "this is a potential Tualatin Development Code change to allow wider sidewalks.' What a wonderful idea!! Finally, the city is actually taking into consideration how narrow those sidewalks actually are, two strollers that are going in opposite directions can barely fit on it, a bike and pedestrian all use that same walk way (until the bike lanes are installed), not to mention elders and disabled people who have mobility devices. Shouldn't the engineers make sure that everyone that uses the sidewalk can actually USE it, and providing enough room so those people don't worry about injuring another?

- Please remove the proposed new bridge across the Tualatin River from the Transportation System Plan. This would put a new road next to Tualatin Community Park and through the Cook Park Wetlands. This is a beautiful and important place to enjoy nature and view wildlife. Recently a significant link in the Fanno Creek Trail was added along with the Ki-A-Kuts pedestrian/bike bridge over the river. Clean Water Services (CWS) has invested in a successful habitat restoration effort in this area. Native grasses once common to the Willamette Valley, but now scarce, have returned to the site. We are certain that there are less damaging alternatives for improving traffic flow in the area including replacement of the bridge on Boones Ferry Road. Please work with us and the community to find an acceptable alternative that will save the Cook Park Wetlands.

- Please remove the plans for a new bridge across the Tualatin River from the Tualatin Transportation System Plan. The bridge and road would negatively impact the Cook Park Wetlands. I urge you to consider alternatives for improving traffic flow in the area, including replacement of the bridge on Boones Ferry Road.

- NO! No new bridge over the Tualatin River to "ease" connectivity in the North/South direction! Adding a bridge over the Tualatin River for N/S connectivity to Tigard is a TERRIBLE idea, especially since the new road would bisect one of the largest contiguous natural areas around. It won't ease congestion anywhere; it will, however, draw TONS MORE traffic right through our downtown core. It already takes too long to transit the city what with the traffic lights strung light Christmas lights along Boones Ferry downtown. Not to mention the additional traffic that the new Nyberg Family project (another shopping center) at KMart is going to bring. Improve existing roads: widen Boones Ferry including the bridge; complete 124th since it's already in the plans. That would be far cheaper than developing an entire new road complete with bridge. Although adding gridlock in a north/south direction might just do the trick; in conjunction with the existing east/west gridlock on Tualatin-Sherwood Road it will bring traffic to a complete standstill downtown. Genius!

- I would like you to know that I and my family and so many other people have been enjoying the peacefulness of the Cook, Durham, and Tualatin Park trails, where there is no road! More importantly, this area being free of automobile traffic is beneficial to the wildlife that travels along the Tualatin River. The train does not affect the animals so much, as it is not continuously running. A road through the same area would severely impact the animals and birds that use the area for their home, because, as you know, so many animals get hit by cars on the road. There is so little forest left for them, please don't take away the little they have left!

- Thanks for passing along the information. Improved bike and pedestrian safety is a primary objective for our City. To be clear, the City is not proposing that Boones Ferry Road become 5-lanes between Tualatin-Sherwood Road and Norwood

Road. However, in the Metro Regional Transportation Plan, Washington County Transportation System Plan, and Tualatin's 2001 Transportation Plan, Boones Ferry Road is scheduled to be a 5-lane road in the future. In the City's process of updating our Transportation System Plan (TSP), we've heard many times that residents don't want the road to be 5-lanes. At the same time, we've heard complaints about traffic congestion. Therefore, we are calling the project into question. As you will notice in the meeting packet (page 13) for the Task Force, one option is to widen the road to 5-lanes between Tualatin-Sherwood Road. Another option is to keep the road 3-lanes and improve the signal timing along Boones Ferry Road. Again, we have not made a recommendation at this point. The purpose of the Task Force meeting is to outline a couple of options and allow our community members to forward projects to a larger community "Transportation Summit" on September 20th. Feel free to come and provide comments at the August 27th meeting.

- I am have conflicts both Wednesday & Thursday and so I am unable to attend either of the meetings being held to discuss transportation concerns impacting Tualatin. However, I would like to provide some input. I do not have a strong opinion regarding the options being considered for Basalt Creek but I do have a strong opinion regarding Boones Ferry Road. I believe it should be maintained as 3-lanes anywhere north of wherever the Basalt Creek road connects with Boones Ferry. I understand Boones Ferry is a significant arterial for the city but it runs (south of Tualatin-Sherwood) through primarily residential properties. It should not become an alternative to north-south traffic being routed on 124th or even I-5. I am confident that the vast majority of south Tualatin residents would agree that we do not need five lanes and that having five lanes will only encourage pass-through traffic, endangering pedestrian and bike traffic and reducing the quality of life of the many residents adjacent to Boones Ferry.

- Please remove the plan for a new bridge across the Tualatin River that would put a new road next to Tualatin Community Park and through the Cook Park Wetlands. There has been a lot of effort to reclaim the wetlands, and it is working! The Wetlands should be protected. There are better alternatives - for instance replacing the bridge on Boones ferry road.

- Sorry I won't be here for meeting on hall street access. I thought we voiced our opinions on that before. How many times do we have to say "no"? I live on Tualatin road and there is already too much traffic and most exceed the speed limit. I say no,no,no,.

- use smart lights at intersections

- I was helping a visually impaired person cross the street. She couldn't read the sign on the south side of Seneca, crossing toward Haydens, saying the crosswalk is closed. She didn't know the button for audio was a recessed area on the larger button because she initially hit the button with the palm of her hand and couldn't feel where to press for audio. The audio doesn't start immediately when the light changes which cuts off two seconds of crossing time. Either an earlier warning that the light is changing or more time would help.

- I have an older, visually impaired friend who is short. I have not been able to identify a safe crossing for Tualatin Sherwood Rd. I suggest one street be identified for extra safety measures, i.e. by Haydns Restaurant where fewer cars turn. Perhaps more time could be allowed, a safety island, or flags/signs for visibility which could be carried from one side to the other. This street has 23 seconds to cross but the audio direction doesn't start immediately which takes away 2 seconds. That may not be enough time for the elderly or women pushing strollers.

- Bridge across Tualatin River from 65th. Bad idea from the start: bring all the traffic and noise into a neighborhood? Ambulance and fire sirens and speed/traffic? Displace (take) four residences? Impact on wildlife in this area. 65th and Childs has a bus stop for children who use it as a hub. There is also a sewer pumping station there. This is a flawed premise from the beginning to bring part of I5 into our quiet community. Unthinkable.

- I live in Fox Hill and am not in favor of a vehicle bridge over 65th. I do not want to see additional traffic close to Browns Ferry Park and the walking paths. We've got a nice pedestrian environment going, I would hate to see it spoiled with a car bridge and more traffic. What I really would like is a foot/bicycle bridge over the river in that general area. We are sort of land-locked on the east side here as far as walking or riding bikes to other areas, and a foot/bike bridge could help ease some car traffic by giving us an alternative way to get to the Lake Grove area. Thank you.

- Regarding the 65th ave bridge across the Tualatin river: NO, NO, NO!!! Rivergrove was not consulted. It is NOT a good idea -- location is definitely not a good place. The surrounding area cannot handle the traffic; we do not have services to support it. The streets there are residential, not arterial. Additional traffic would overload the streets and definitely is not in keeping with the nature of the area. It would cut our city in half. It would displace several citizens. I along with most of Rivergrove completely oppose it. Thank you

- Not for a motor vehicle bridge across the Tualatin near 65th but I'd love to see a pedestrian/bike bridge that ties the two sides of the river together!

- I live on the north bank of the Tualatin River, a short distance as the crow flies from Meridian Park Hospital. But when my wife lost consciousness, it took the paramedics ten minutes to transport her to the hospital because they had to take the circuitous route north into Lake Grove and onto I-5 to get across the river. Senior citizens need this bridge.

- Sorry I won't be here for meeting on hall street access. I thought we voiced our opinions on that before. How many times do we have to say "no". I live on Tualatin road and there is already too much traffic and most exceed the speed limit. I say no,no,no,

- The section of SW Avery Street between Boones Ferry west to the industrial area has seen an extensive increase in commuter traffic over the past five years. Recommend the speed limit on Avery between Boones Ferry and Teton be reduced to 25 MPH and NOT considered for expansion

- The STOP for Pedestrians floppy sign in the middle of 95th prior to the Sagert intersection misleads drivers. I've noticed many drivers stop because they see a STOP sign on the vertical banner sign. The sign should remain but the STOP sign painted on it should be removed or replaced with a YIELD indicator. I've seen four near-accident incidents because of drivers on Sagert expecting drivers on 95th to stop at that crosswalk.

- In the early morning (5:00 to 7:00 am), there is often semi-truck trailer traffic that departs from the industrial park exit onto 95th and then uses the residential street of SW Sagert to go to Boones Ferry Road. I have seen semis with full 50' trailers driving down Sagert in the early morning. Northern Van Lines trucks seem to do this the most. This section of SW Sagert should be marked as NO TRUCK TRAFFIC because it is residential.

- Stop freight traffic movement on SW 95th between Avery and Sagert, and freight traffic on SW Avery from Boones Ferry to SW Kawanda Court. There has been an increase in semi-truck trailer traffic on both of these residential street sections over the past four years. Often, semis with full trailers will park in the middle of 95th at 5:30 am with their engines running. It is disturbing to homeowners. The semis need to stick to access to the industrial park from Teton or using 95th off of Tualatin-Sherwood Road.

- There are bushes in the NE corner of the intersection crossing when walking on the East-West crosswalk. These bushes block drivers view when coming westbound and turning northbound onto 95th. I have been almost hit twice by morning and lunchtime traffic that haven't seen me when walking across the crosswalk. Recommend the bushes be removed or cut down to 1 foot height (for reference - these bushes are directly west of the Natural Gas valve fenced-in enclosures.

- As a resident of Rivergrove I am opposed to a bridge connecting Tualatin to Rivergrove. The roads and neighborhoods in this area do not have the capacity to accept further traffic, which should be going through the main artery into Lake Oswego that is Lower Boones Ferry.

- I am a resident living near the corner of 65th and Childs Road where the proposed bridge connection to Nyberg Road would be built. This is such a bad idea on so many levels. This would change a residential neighborhood, heavily inhabited by families and children, into a busy thoroughfare when there is already I-5 connecting the areas you mention (Nyberg Rd businesses, hospital, etc.) 1/2 mile to the west. Adding this so-called short cut doesn't make sense especially because it is basically equi-distant - only about 2 miles from Boones Ferry Road to Nyberg Road using I-5. And the cost?????? At this time in our economy, what a waste of money not to mention the environmental impact on the Tualatin River. The several environmental groups I've notified are not happy and plan to make their voices known. Ask yourselves in earnest, would

you want a busy highway and bridge running right by your house, subjecting your neighborhood to trucks, busses, ambulance and their obvious increase of air and noise pollution. I'm sure in your hearts you'd answer NO!

TualatinTSP_TRG06151110541335PDX 422992.PS.C1.HWn6/15/2011 kk

City of Tualatin

Transportation System Plan Update

Presentation to
Tualatin Transportation Task Force
November 29, 2011

Presentation Objectives

1. What is a Transportation System Plan (TSP)
   - ✓ Why do one?
   - ✓ What do they need to include?
   - ✓ Why do one now?
2. What does Tualatin's TSP look like?
   - ✓ Who develops the TSP?
   - ✓ What is our timeline?

What is a TSP?

- Identifies transportation improvements needed to address current (2012) and future (2035) needs of residents, businesses, and visitors to Tualatin
- Will recommend improvements to all modes of transportation in Tualatin
- Includes infrastructure investments and policy recommendations

Why do a TSP?

- A TSP is a resource for staff, policy makers, and the public to:
  - ✓ Identify future transportation facilities
  - ✓ Direct funding resources to transportation projects
  - ✓ Support anticipated development impacting the community
- Serves as the transportation element of a local comprehensive plan

Why do a TSP?

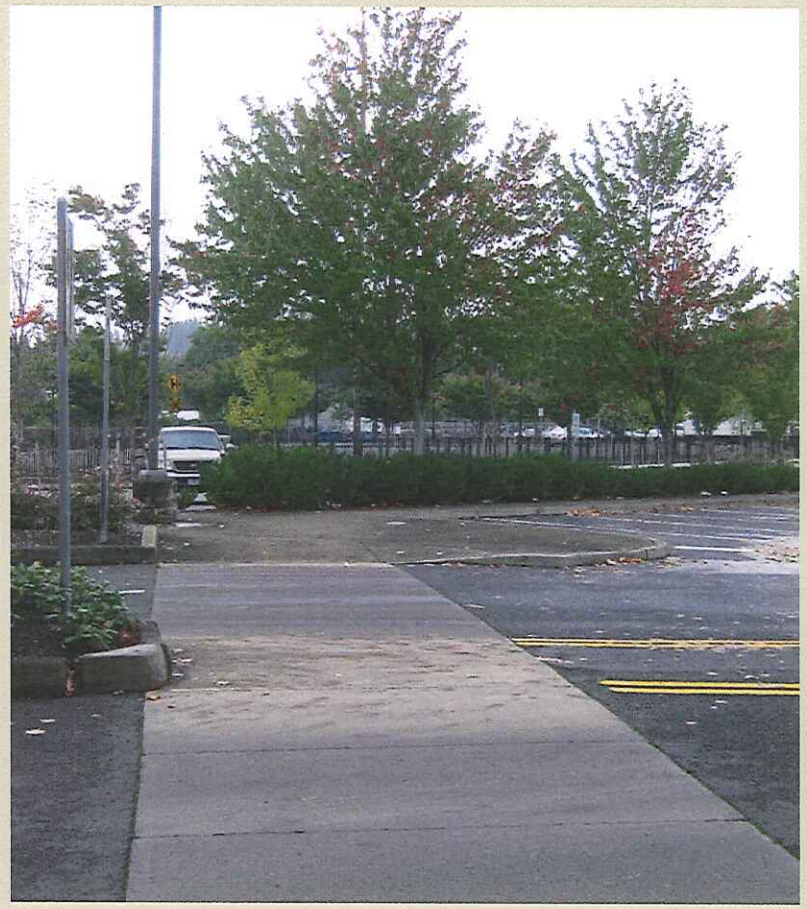
- Provides long range direction for all modes
- Ensures transportation improvements meet future land use needs
- Ensures transportation options for all users
- Provides a link to state funding

What Must a TSP Include?

- Be consistent with State TSP, Metro's RTP, and County TSP
- Contain the following elements:
  - Roadway
  - Bicycle and pedestrian
  - Public transportation
  - Air, rail, water, and pipeline
  - Determination and explanation of needs
  - Policies and regulations to implement the TSP
  - Transportation Financing Program

Why Update Tualatin's TSP Now?

- Tualatin's last TSP was completed in 2001
- Metro requires that we update our TSP within two years of their Regional Transportation Plan
- As Tualatin and the region changes, transportation goals must adapt to the ways that people want to get around.



What Must a TSP Include?

- Be consistent with State TSP, Metro's RTP, and County TSP
- Contain the following:
  - Roadway element
  - Bicycle and pedestrian element
  - Public transportation element
  - Air, rail, water, and pipeline element
  - Determination and explanation of needs
  - Policies and regulations to implement the TSP
  - Transportation Financing Program

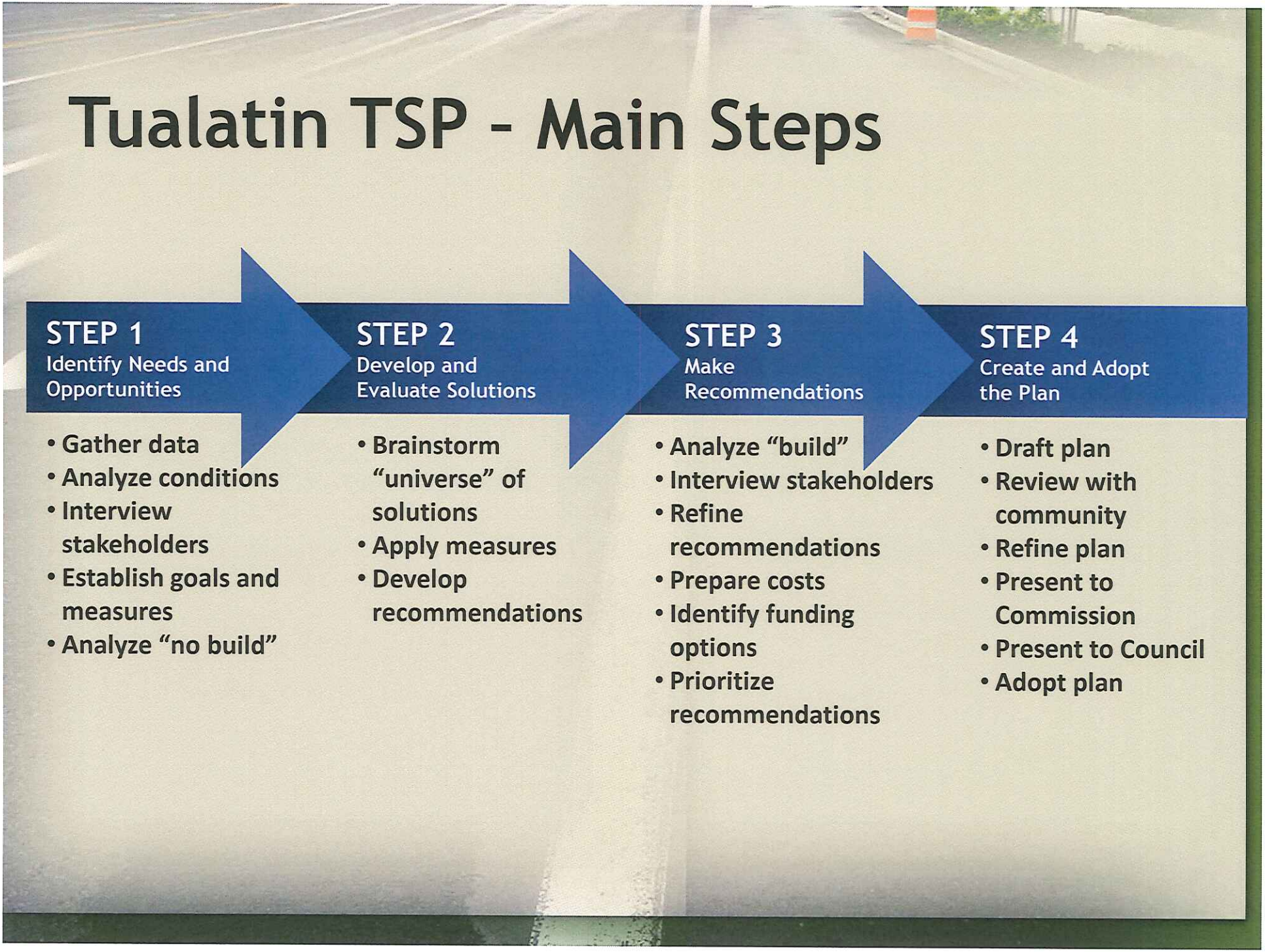
The Tualatin TSP

- Phase I: Understanding Community Concerns
- Phase 2: Deliberation and Discussion
- Phase 3: Options and Recommendations

Who is Involved in Developing the Tualatin TSP?

- City Council
- TPAC
- Task Force
- Working Groups
- City staff
- Consultant Team
  - CH2M HILL
  - JLA
  - DKS
  - Angelo Planning

Tualatin TSP - Main Steps



STEP 1
Identify Needs and Opportunities

- Gather data
- Analyze conditions
- Interview stakeholders
- Establish goals and measures
- Analyze "no build"

STEP 2
Develop and Evaluate Solutions

- Brainstorm "universe" of solutions
- Apply measures
- Develop recommendations

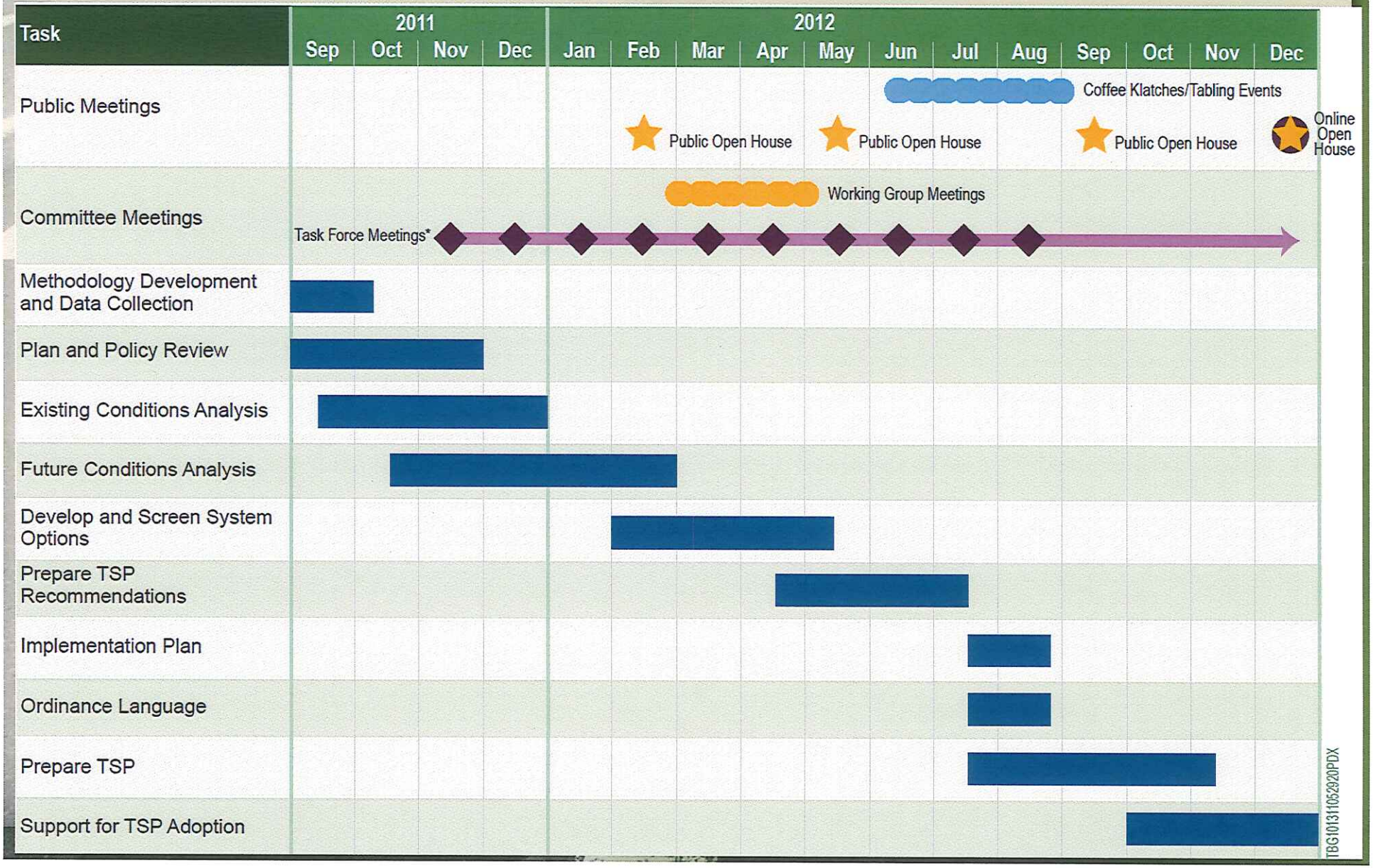
STEP 3
Make Recommendations

- Analyze "build"
- Interview stakeholders
- Refine recommendations
- Prepare costs
- Identify funding options
- Prioritize recommendations

STEP 4
Create and Adopt the Plan

- Draft plan
- Review with community
- Refine plan
- Present to Commission
- Present to Council
- Adopt plan

Tualatin TSP Schedule



City of Tualatin

Virtual Tour of Existing Conditions

Presentation to
Tualatin Transportation Task Force
December 15, 2011

What existing conditions we studied

- Land use
- Roadway system and conditions
- Traffic operations (congestion, etc.)
- Safety
- Bicycle System
- Pedestrian System
- Public Transit
- Freight rail, pipeline, waterway, airport

Why do we study existing conditions?

- Understand the current state of the transportation system in Tualatin
  - Opportunities
  - Deficiencies
- Baseline for analysis
- Required by state TSP guidelines

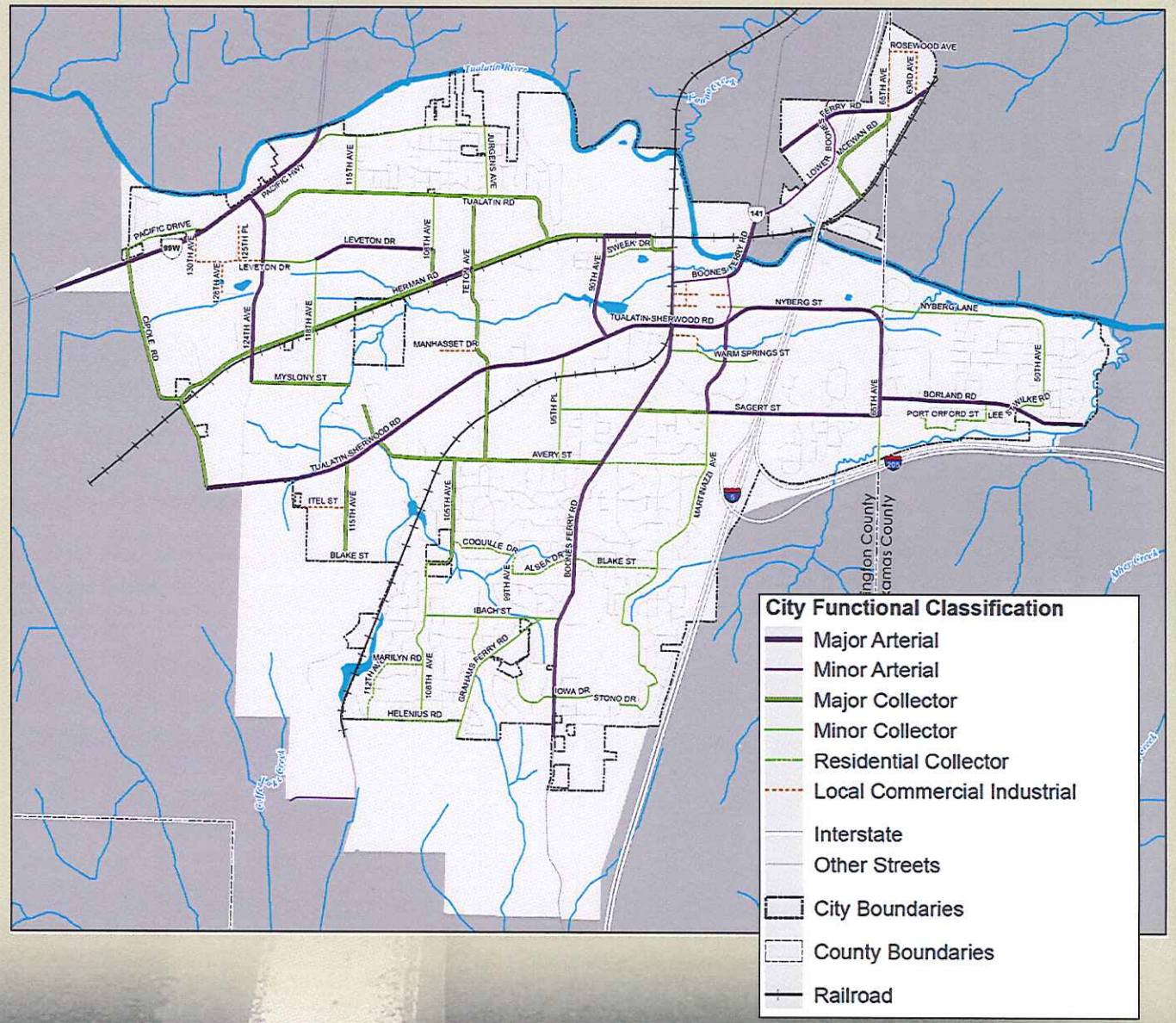
Land use

Land uses affect the transportation system

- Residential
- Employment
  - Manufacturing
  - Office
- Commercial

Roadway System and Conditions

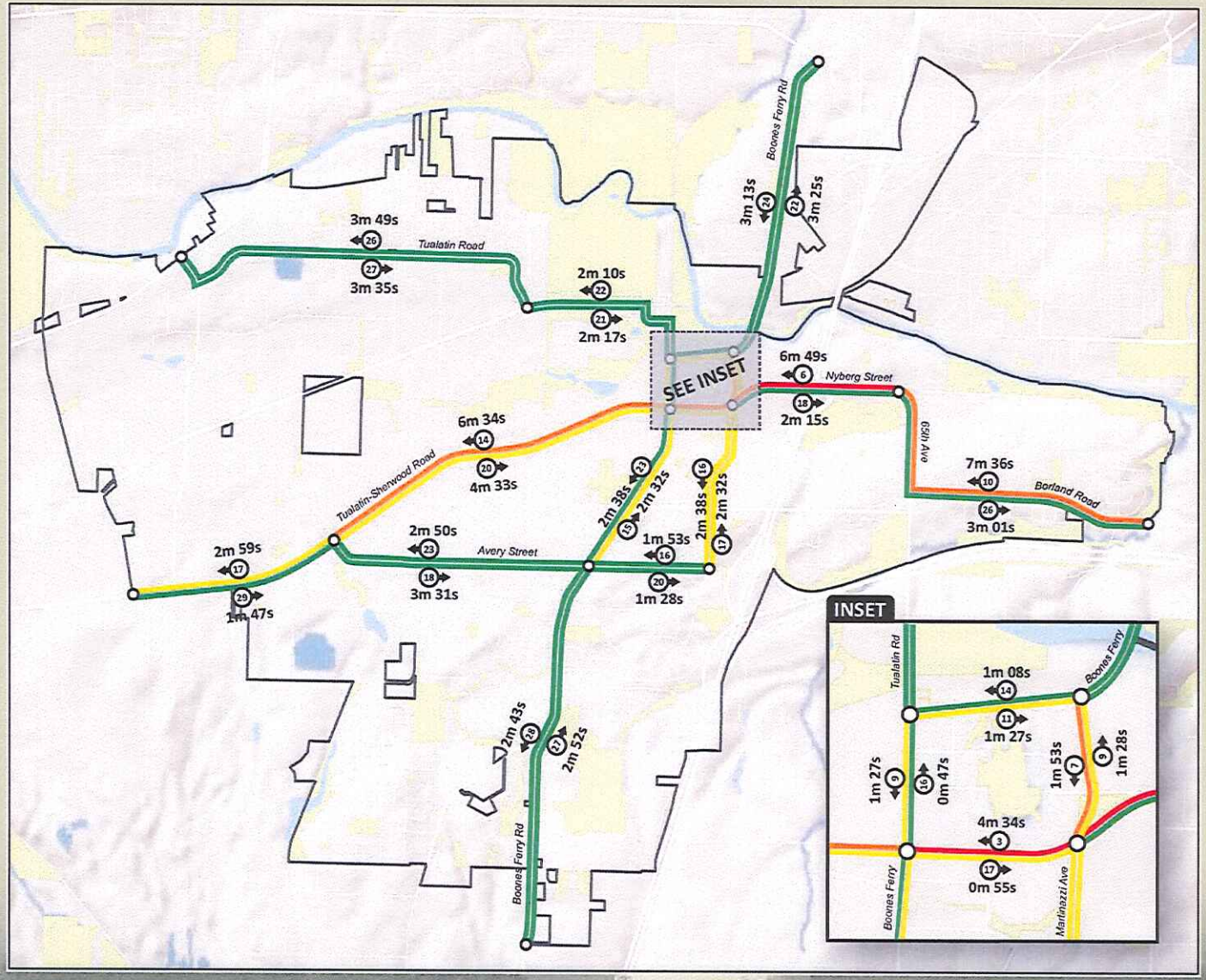
- Roadway designations
- Compare to standards
- Intersection configuration



Traffic Operations

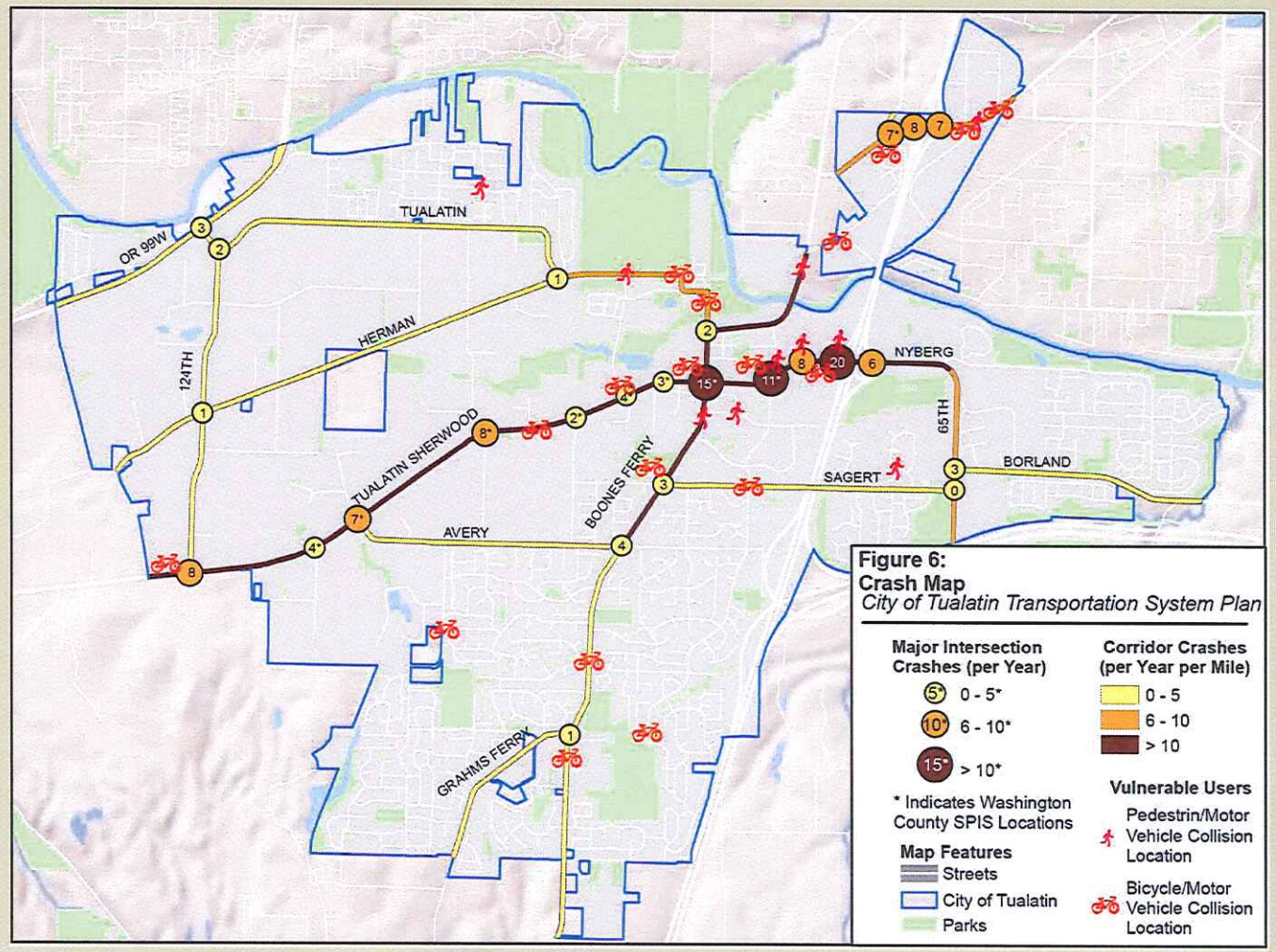
- Congested intersections and road segments
- Rush hour
- Truck percentages
- Travel speeds

Travel time in Tualatin



Safety

- Crash locations
- Areas with multiple crashes



Safety Priority Index Sites (SPIS) compare crash rate to state or county averages

Bicycle Facilities

- Bicycling is an alternate to the vehicle
- Accommodates those who cannot or do not want to drive

Bicycle Needs

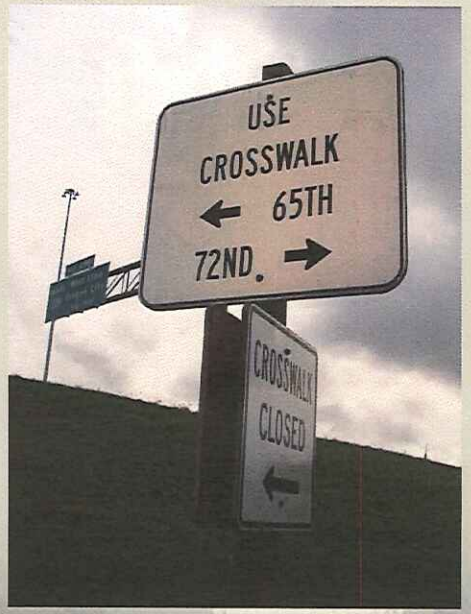
- Difficult left turns
- Narrow bike lanes
- Areas with low bike visibility
- Obstacles in bike lanes
- Gaps in the network

Pedestrian Facilities

- Everyone is a pedestrian
- Alternative for those who cannot or do not want to drive

Pedestrian Needs

- Sidewalk gaps
- Barriers on sidewalks
- Interconnected network of multi-use paths
- Safety



Public Transit

- 6 TriMet lines
- 1 SMART line
- 4 Park and Rides
- Commuter Rail
- Ridership - average daily passengers getting on and off:

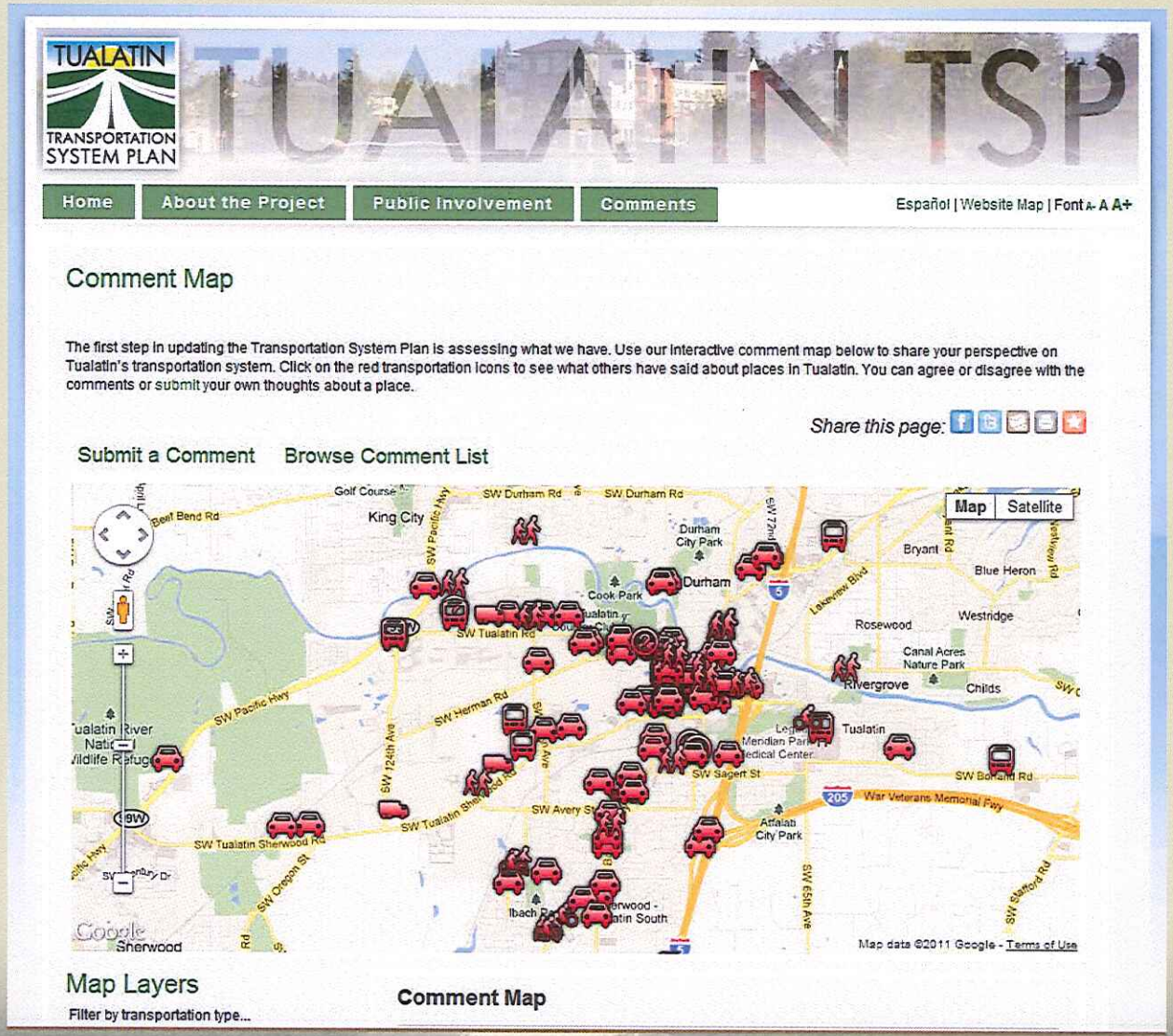
-Line 96: 1190
-Line 76: 1080
-WES: 440
-Line 12: 130
-Lines 37 and 38: 50
-Line 36: 40

Freight Rail and Pipeline

Could potentially impact other transportation

- 2 freight rail lines
- 1 natural gas pipeline within the city
- 1 gasoline pipeline in the SW Concept Plan area

What we heard from you



City of Tualatin

Goals and Objectives

Tualatin TSP and Linking Tualatin

Presentation to
Tualatin Transportation Task Force
January 19, 2012

TualatinTSP_TBG061511054135PDX 422992.FS.C1.HWn6/15/2011 kk

Tualatin TSP Goals

Goal Category	Goal
Access	Maintain and enhance the transportation system to reduce transit times, provide travel time reliability, and provide a functional and smooth transportation system
Safety	Improve safety for all users, all modes, all ages, and all abilities within the City of Tualatin
Vibrant Community	Allow for a variety of alternatives transportation choices for citizens of and visitors to Tualatin to support a high quality of life and the livability of the community

Tualatin TSP Goals (Continued)

Goal Category	Goal
Support Local Economy	Support local employment, local businesses and a prosperous community
Health/ Environment	Provide options for active transportation to improve the health of citizens in Tualatin and ensure transportation does not adversely impact public health or the environment

Tualatin TSP Goals (Continued)

Goal Category	Goal
Equity	Consider the distribution of benefits and impacts from transportation alternatives, and work towards fair access to transportation facilities for all users, all ages, and all abilities
Ability to be built	Promote alternatives that are able to be implemented because they have community and political support and are likely to be funded.

Linking Tualatin Goals

Goal Category	Goal
Community	Provide meaningful opportunities for citizens to be involved in the Linking Tualatin planning process, particularly those most directly affected by the outcomes.
Economy	Enhance transit connections for local employers and employees to strengthen Tualatin's economy.
Land Use	Develop land use plans for focus areas that support future use of transit as part of a multi-modal, convenient, safe, and well-connected transportation system.

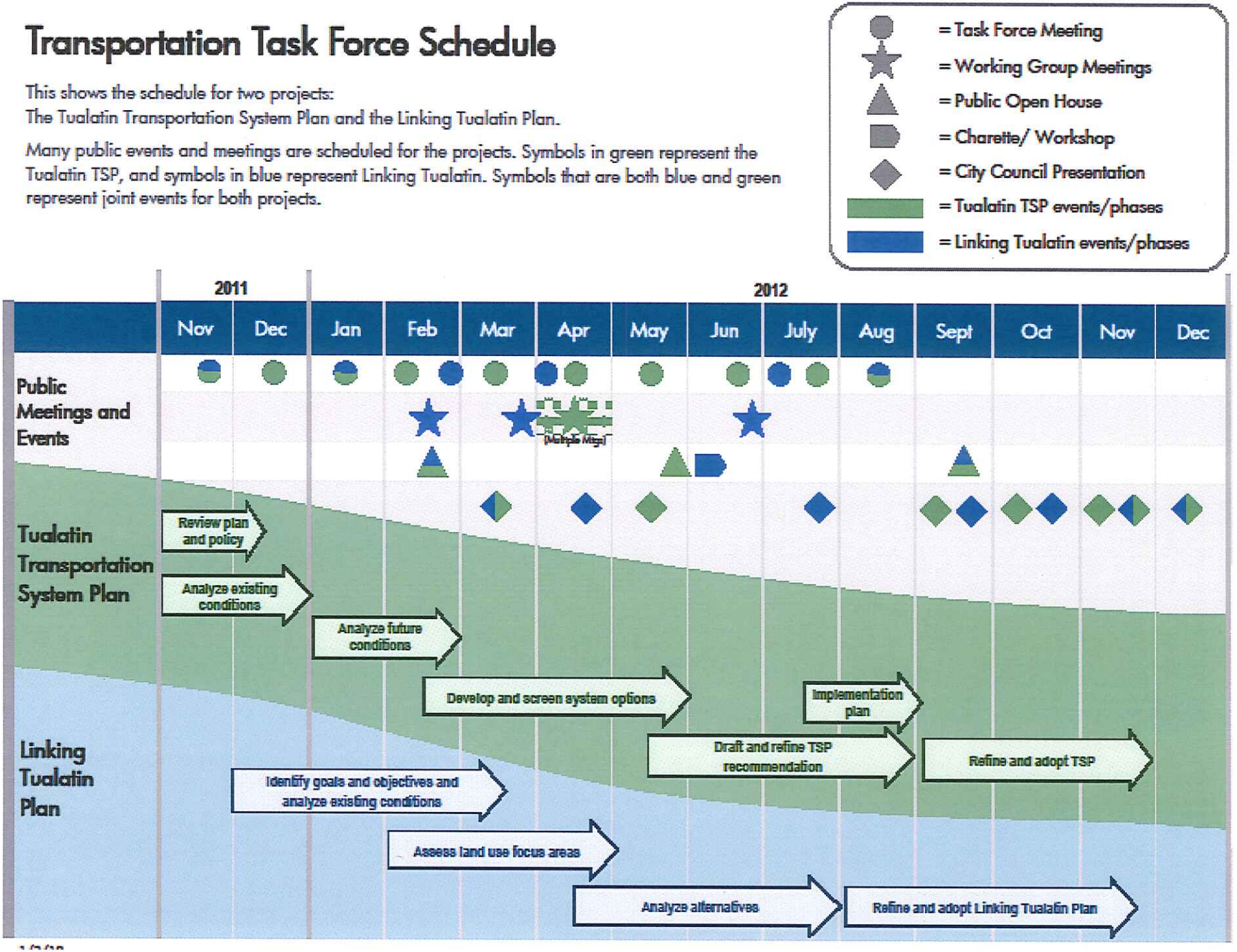
Linking Tualatin Goals

Goal Category	Goal
Transportation Choice and Mobility	Provide a full range of safe, efficient transportation options within transit focus areas, particularly linkages between transit and other modes of transportation, including bicycling, walking and driving.
Consistency and Coordination	Coordinate with regional partners to leverage regional resources, while building on and furthering local planning and other community objectives.
Implementation	Develop common sense, cost-effective and efficient tools and strategies to ensure implementation of project recommendations.

Transportation Task Force Schedule

This shows the schedule for two projects:
The Tualatin Transportation System Plan and the Linking Tualatin Plan.

Many public events and meetings are scheduled for the projects. Symbols in green represent the Tualatin TSP, and symbols in blue represent Linking Tualatin. Symbols that are both blue and green represent joint events for both projects.



Understanding Future Conditions

TUALATIN TRANSPORTATION SYSTEM PLAN

What is a Future Conditions Analysis?

The future conditions analysis for a transportation system plan helps identify future needs, opportunities, and constraints for circulation and transportation system connections for all transportation modes.

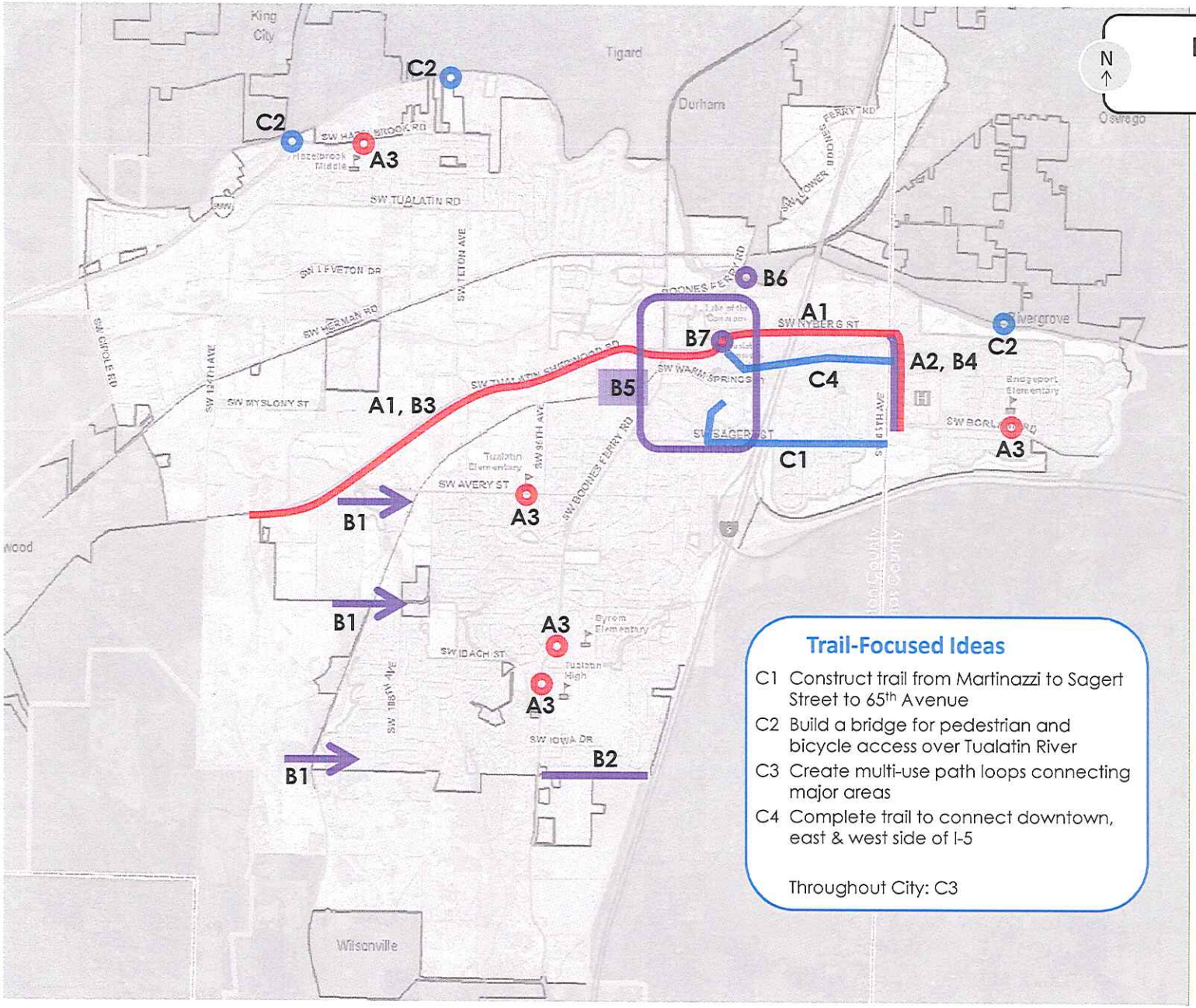
The analysis starts with an examination of existing conditions. Community values and opinions on the various modes of travel are gathered to help inform the vision of the future for transportation in the community, and a technical analysis of future population and employment growth assumptions are combined with anticipated future development to provide a picture of future travel demand.

Typically, future conditions are forecasted for a planning horizon of 20 years and relate primarily to motor vehicles, however, conditions and connections for other modes (such as pedestrian, bicycle, and transit) are also included. Considering these other modes in addition to motor vehicles helps create a balanced transportation system that serves the entire community.

Why is a Future Conditions Analysis Important?

Future conditions analyses help identify areas that are underserved by the existing transportation network or areas that could be improved by better connections or enhanced environments for a particular mode. Another important element of the analysis is determining potential infrastructure improvements necessary to create a balanced multi-modal system that serves the community.

The TSP process will establish a transportation vision for the future, determine the priority of improvements, and identify funding sources based on the future conditions analysis and the areas identified for improvement.



N

Bicycle and Pedestrian Working Group

Safety-Focused Ideas

- A1 Add pedestrian-focused crossing treatments (such as HAWK treatments) at key crossings of Tualatin-Sherwood Road and Nyberg Street
- A2 Separate walking/bike area with plantings or barriers on 65th Avenue between Borland Road and Nyberg Lane
- A3 Focused safety improvements near schools at crossings

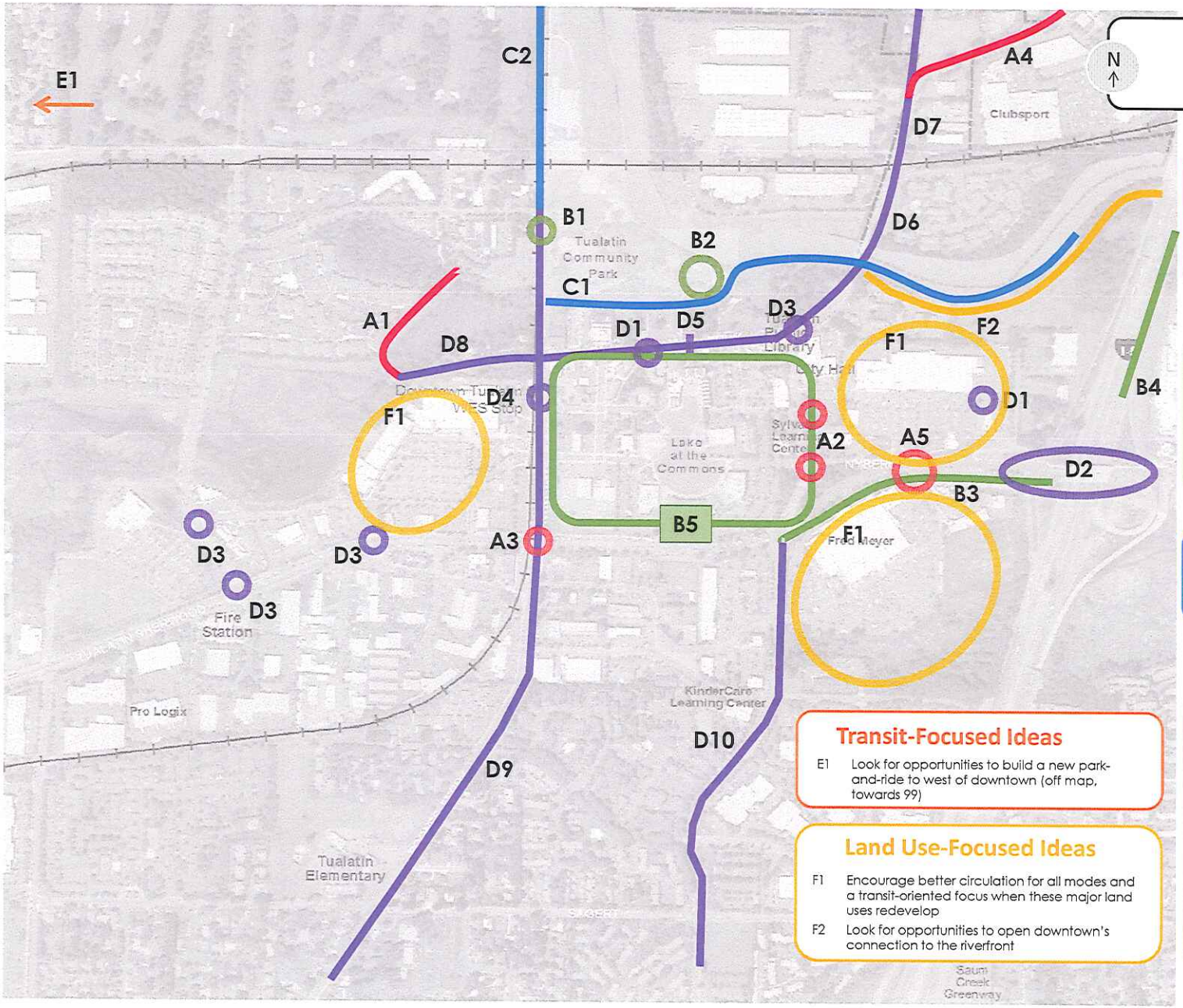
Facility-Focused Ideas

- B1 Connect Tonquin trail with neighborhoods to the east
- B2 Add sidewalks and bicycle lanes on Norwood Road
- B3 More focused improvements on Tualatin-Sherwood Road to make it more bicycle and pedestrian friendly
- B4 Add bicycle lane on 65th Avenue on one side near the hospital
- B5 Focused bicycle facility improvements in heart of downtown, including Martinazzi, Avenue, Boones Ferry Road, and Tualatin-Sherwood Road
- B6 Better accommodate pedestrians on the bridge
- B7 Build a raised intersection at Seneca and Nyberg (crossing Boones Ferry Road)

Trail-Focused Ideas

- C1 Construct trail from Martinazzi to Sagert Street to 65th Avenue
- C2 Build a bridge for pedestrian and bicycle access over Tualatin River
- C3 Create multi-use path loops connecting major areas
- C4 Complete trail to connect downtown, east & west side of I-5

Throughout City: C3



Downtown Working Group

Safety-Focused Ideas

- A1 Upgrade bridge surface and improve illumination along path
- A2 Consider raised intersections for pedestrians
- A3 Grade separated railroad crossing on Tualatin-Sherwood Road
- A4 Slower speeds near Bridgeport
- A5 Redesign Fred Meyer to Kmart intersection

Congestion-Focused Ideas

- B1 Reconfigure park entrance to right in/right out
- B2 Provide secondary exit from park, and provide additional parking
- B3 Add an eastbound lane on Tualatin-Sherwood Road from Martinazzi to I-5
- B4 Add capacity to I-5 northbound (between Tualatin and OR 217)
- B5 Create a one-way circulator loop around downtown

Connectivity-Focused Ideas

- C1 Build a trail that extends from Boones Ferry to the downtown core along river and extend to the greenway
- C2 Extend Boones Ferry Road to 85th /Hall

Bicycle/Pedestrian-Focused Ideas

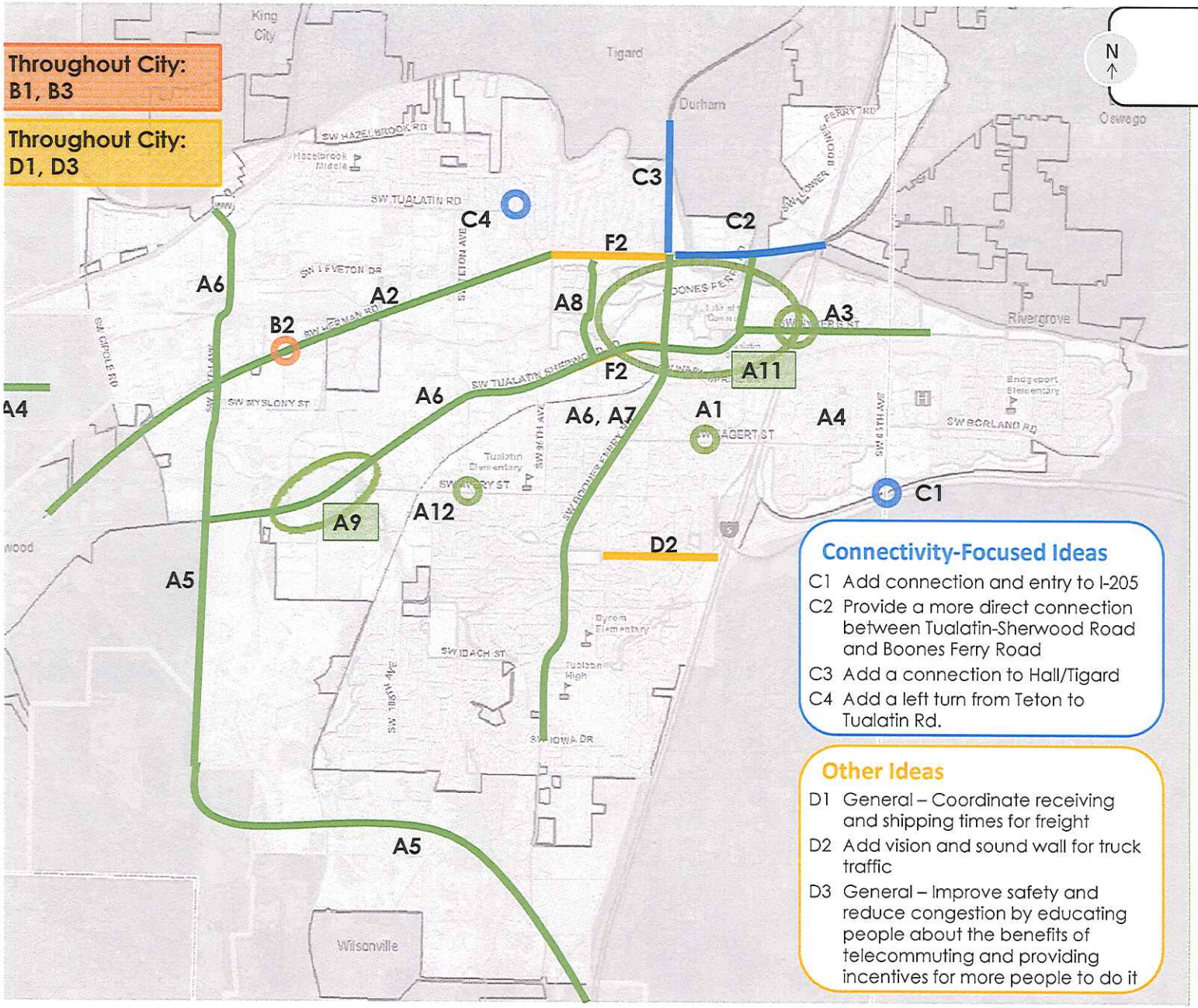
- D1 Redesign pedestrian crossing
- D2 Upgrade Nyberg interchange to improve the crossing experience for bicyclists
- D3 Improve pedestrian crossings
- D4 Add pedestrian crossing
- D5 Consider a pedestrian skybridge that connects downtown retail businesses
- D6 Improve sidewalks and bicycle lane
- D7 Bike and pedestrian improvements near Bridgeport Village
- D8 Open crosswalk at Boones Ferry Road to existing boardwalk
- D9 Provide "Share the Road" signage and/or other visual cues to motorists to accommodate bicycles
- D10 Add bicycle lane or "Share the Road" signs

Transit-Focused Ideas

- E1 Look for opportunities to build a new park-and-ride to west of downtown (off map, towards 99)

Land Use-Focused Ideas

- F1 Encourage better circulation for all modes and a transit-oriented focus when these major land uses redevelop
- F2 Look for opportunities to open downtown's connection to the riverfront



Industrial and Freight Working Group

Congestion-Focused Ideas

- A1 Signal, roundabout, or all-way stop at Sagert/ Martinazzi
- A2 Divert truck traffic from Tualatin-Sherwood Road to Herman Road
- A3 Reconsider the Nyberg interchange – consider an urban interchange, and an undercrossing along Nyberg to avoid signal and conflicts
- A4 Reconsider the connection between 99W and Tualatin-Sherwood Road (NOTE: This idea is in Sherwood)
- A5 Extend 124th and connect to I-5
- A6 Provide coordinated signal timing and access management along major arterials (Tualatin-Sherwood Road, Boones Ferry Road, and 124th Avenue)
- A7 Widen Boones Ferry through town from bridge to light at top of hill
- A8 Close 90th to 18 wheel trucks
- A9 Improvements to help mobility of through traffic
- A11 Create a loop road around central downtown with a turn radius that works for trucks
- A12 Improve turn radius at Avery and Teton

Connectivity-Focused Ideas

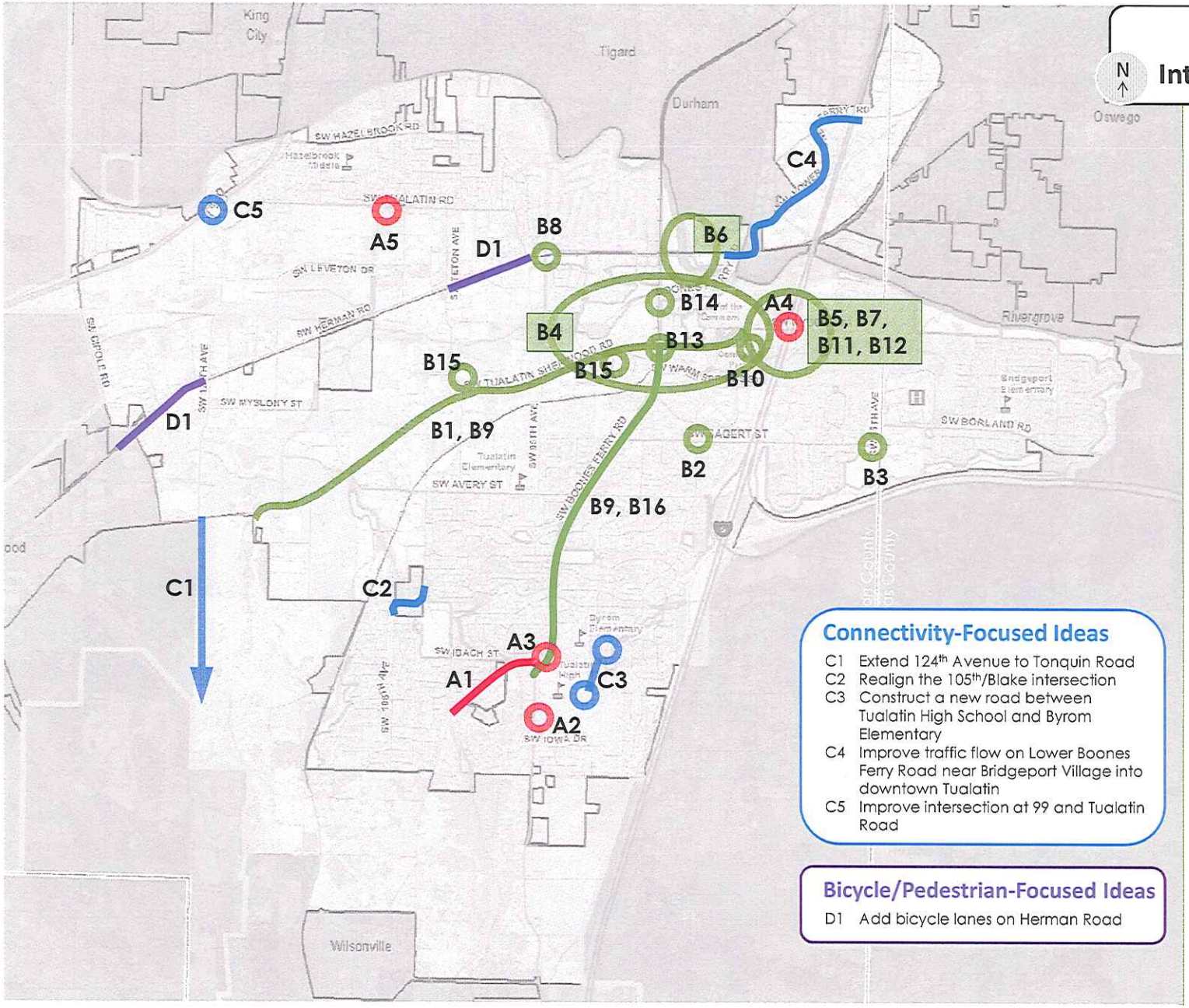
- C1 Add connection and entry to I-205
- C2 Provide a more direct connection between Tualatin-Sherwood Road and Boones Ferry Road
- C3 Add a connection to Hall/Tigard
- C4 Add a left turn from Teton to Tualatin Rd.

Other Ideas

- D1 General – Coordinate receiving and shipping times for freight
- D2 Add vision and sound wall for truck traffic
- D3 General – Improve safety and reduce congestion by educating people about the benefits of telecommuting and providing incentives for more people to do it

Transit-Focused Ideas

- B1 Add Saturday, Sunday and late evening transit shuttle service
- B2 Add rail station with easy offload and access for industry
- B3 Provide a local loop bus



Major Corridors and Intersections Working Group

N

Safety-Focused Ideas

- A1 Lower speeds, add guardrail and shoulders to this section of Grahams Ferry Road
- A2 Add traffic signal at Tualatin High School
- A3 Consistent speed zones for both Tualatin High School and Byrom Elementary School
- A4 Raise elevation of SB off-ramp to allow better view of traffic on Nyberg Road
- A5 Add traffic signal on Tualatin Road

Congestion-Focused Ideas

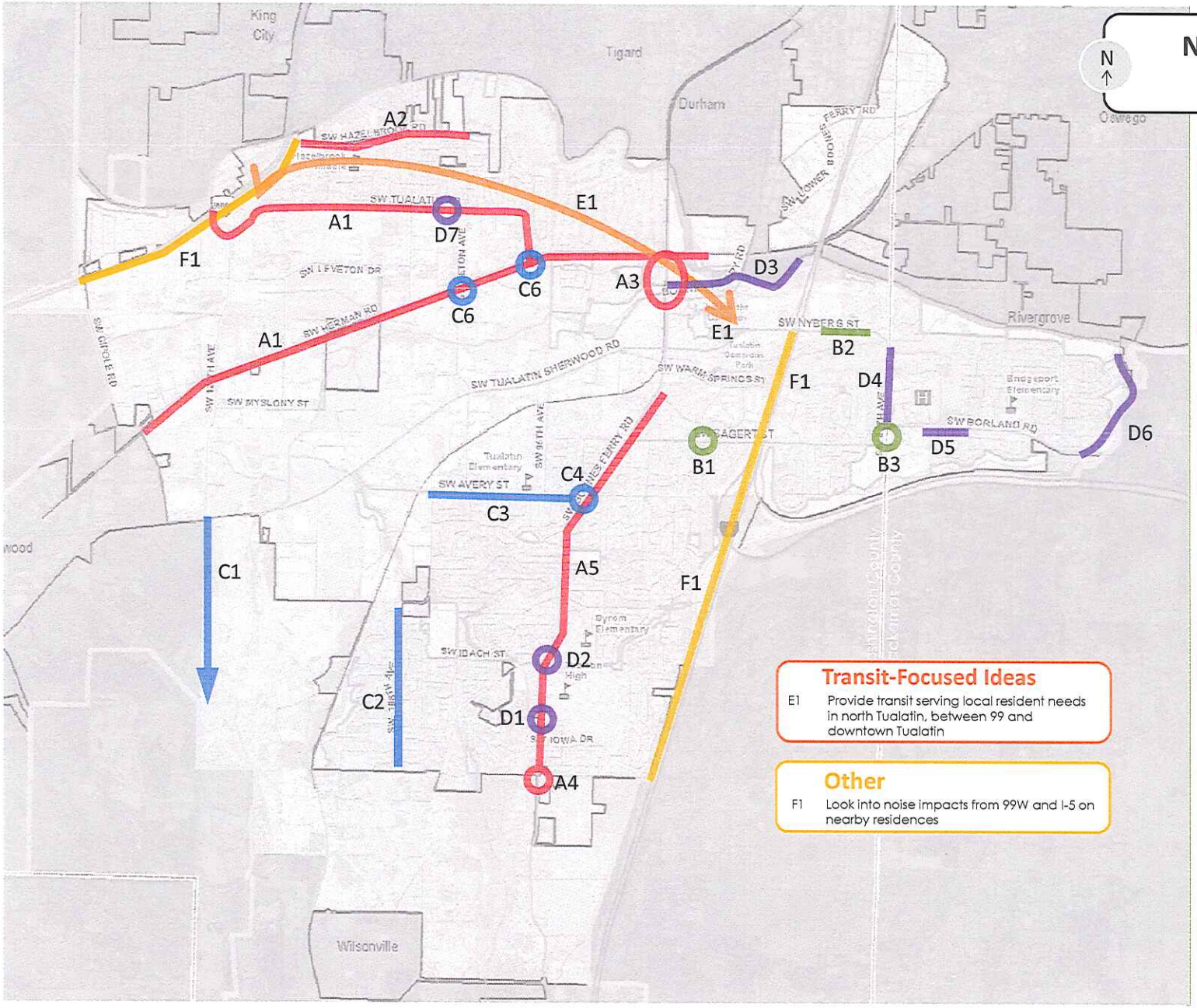
- B1 Widen Tualatin Sherwood Road
- B2 Signal, roundabout, or all-way stop at Sagert/ Martinazzi
- B3 Realign Sagert/Borland intersection
- B4 Consider a traffic loop in downtown (one way, right turn only)
- B5 Don't allow right turn on red at Nyberg Interchange
- B6 Rethink access in vicinity of Tualatin Community Park
- B7 Consider removing ramp signals at Nyberg interchange
- B8 Prohibit left turns out of 108th or remove trees in SW corner
- B9 Coordinate signal timing on Boones Ferry and Tualatin Sherwood Roads
- B10 Redesign the intersection at the Fred Meyer (from Nyberg Road)
- B11 Consider redesigning the Nyberg interchange into a full cloverleaf
- B12 Make 2 right lanes okay to make right turn from I-5 North onto Nyberg
- B13 Extend length of the NB left turn lane and the SB right turn lane on Boones Ferry/Tualatin Sherwood Road to reduce backup from WES train
- B14 Reconfigure Boones Ferry Road at Tualatin Road
- B15 Add a 4-way stop by 90th at Kaiser
- B16 Add bus pullouts on Boones Ferry Road

Connectivity-Focused Ideas

- C1 Extend 124th Avenue to Tonquin Road
- C2 Realign the 105th/Blake intersection
- C3 Construct a new road between Tualatin High School and Byrom Elementary
- C4 Improve traffic flow on Lower Boones Ferry Road near Bridgeport Village into downtown Tualatin
- C5 Improve intersection at 99 and Tualatin Road

Bicycle/Pedestrian-Focused Ideas

- D1 Add bicycle lanes on Herman Road



Neighborhood Livability Working Group

Safety-Focused Ideas

- A1 Explore treatments that discourage through and truck traffic along Tualatin Road while encouraging through and truck traffic along Herman Road
- A2 Improve lighting on Hazelbrook Road
- A3 Reroute school buses away from Tualatin Community Park and two railroad crossings
- A4 Add a roundabout at Boones Ferry Road and Norwood
- A5 Explore ways to make Boones Ferry Road more pedestrian-friendly, including the creation of one consistent speed limit

Congestion-Focused Ideas

- B1 Signal, roundabout, or all-way stop at Sagert/ Martinazzi
- B2 Add a dedicated right turn into Nyberg Woods
- B3 Realign Sagert/Borland intersection (potential roundabout)

Connectivity-Focused Ideas

- C1 Connect 124th Avenue to Tonquin Road
- C2 Balance the needs of neighborhood with local truck movement along 108th Avenue. Beautify 108th with improvements. Consider disallowing trucks
- C3 Balance the needs of neighborhood with local truck movement along Avery Street
- C4 Force all trips to stop before taking a right turn onto Boones Ferry Road

Bicycle/Pedestrian-Focused Ideas

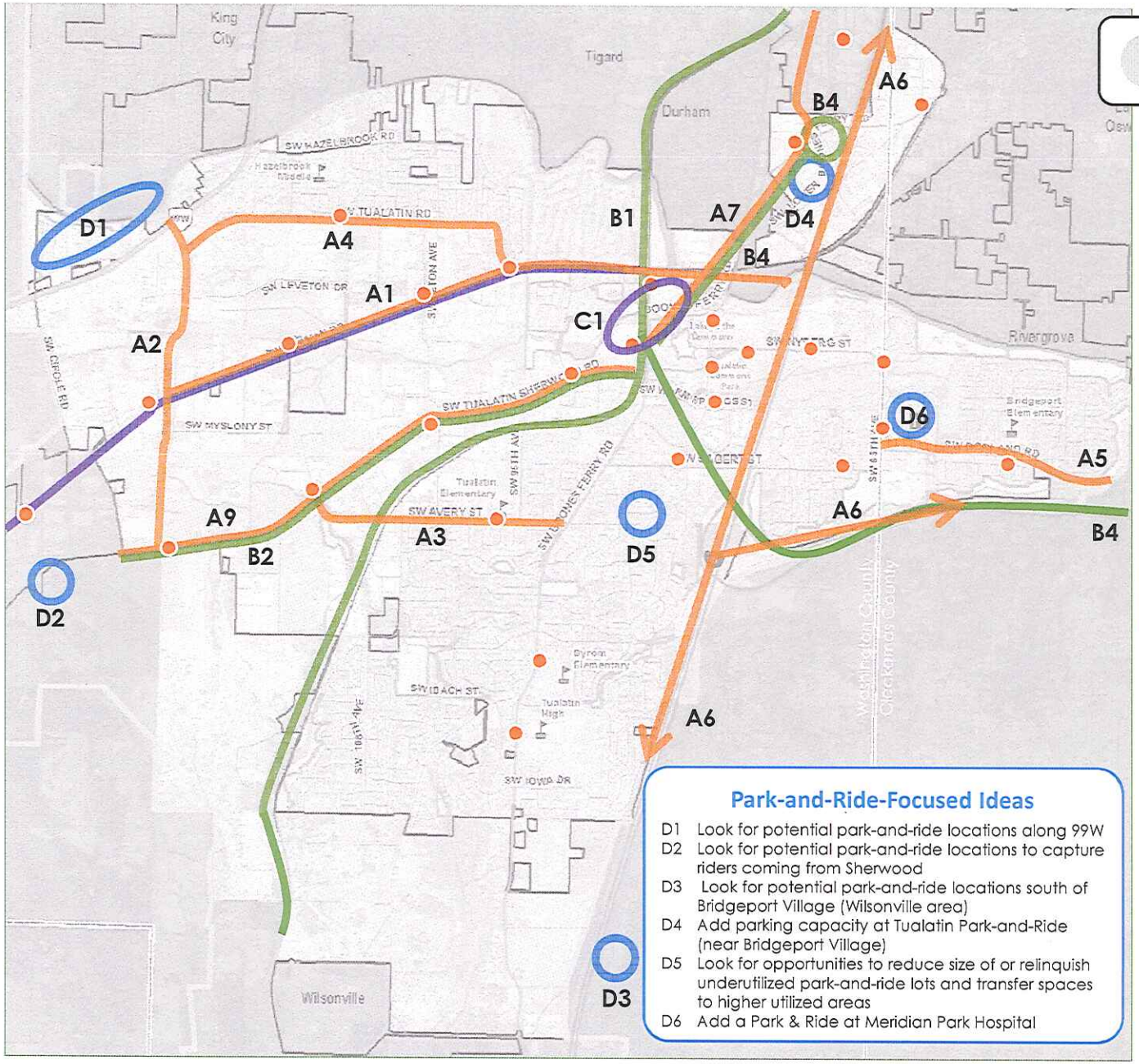
- D1 Consider a pedestrian overcrossing on Boones Ferry Road
- D2 Consider pedestrian islands on Boones Ferry Road, near Byrom Elementary and Tualatin High schools
- D3 Provide a mutli-use path along the river
- D4 Connect sidewalk on east side of 65th Avenue
- D5 Repair gap in sidewalk on the south side of Borland Road
- D6 Add multi-use path as part of Tualatin Trail
- D7 Provide focused pedestrian crossing improvements

Transit-Focused Ideas

- E1 Provide transit serving local resident needs in north Tualatin, between 99 and downtown Tualatin

Other

- F1 Look into noise impacts from 99W and I-5 on nearby residences



Transit Working Group

Results of Meeting #2

Bus Service-Focused Ideas

- A1 Provide bus transit service on Herman Road
- A2 Provide bus transit service on 124th Street
- A3 Provide bus transit service on Avery Street
- A4 Provide bus transit service on Tualatin Road between downtown and 99
- A5 Extend #76 bus to Wankers via Food Pantry (might be every other bus or every third bus)
- A6 Provide express bus service between Tualatin and downtown Portland, Airport, Clackamas, and Salem
- A7 Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
- A8 Provide a loop bus route around the city
- A9 Add bus line from Yamhill Transit District to WES
- A10 Create an on-call shuttle for industrial and manufacturing workers during the day
- A11 General – use SMART model for local buses
- A12 General – need extended service for all transit
- A13 General – use more energy efficient buses
- A14 Coordinate bus schedules with WES schedule

● Denotes potential bus stop locations that would serve major employers and activity centers in Tualatin

Throughout City: A8, A10, A11, A12, A13, A14

Rail Service-Focused Ideas

- B1 Eliminate freight rail trips during rush hours, to avoid interrupting bus and WES service
- B2 Provide rail or high capacity bus transit service on Tualatin-Sherwood Road (towards Sherwood)
- B3 Increase transit frequency (especially WES)
- B4 Extend MAX from Bridgeport Village to Clackamas with an elevated pedestrian bridge to connect station and park-and-ride with shopping
- B5 Decrease stop spacing on higher-volume routes

Throughout City: B3, B5

Land Use-Focused Ideas

- C1 Improve the WES station with a vision of its being a central focus of downtown Tualatin and its main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Park-and-Ride-Focused Ideas

- D1 Look for potential park-and-ride locations along 99W
- D2 Look for potential park-and-ride locations to capture riders coming from Sherwood
- D3 Look for potential park-and-ride locations south of Bridgeport Village (Wilsonville area)
- D4 Add parking capacity at Tualatin Park-and-Ride (near Bridgeport Village)
- D5 Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots and transfer spaces to higher utilized areas
- D6 Add a Park & Ride at Meridian Park Hospital

City of Tualatin

Project Screening Results

Tualatin TSP

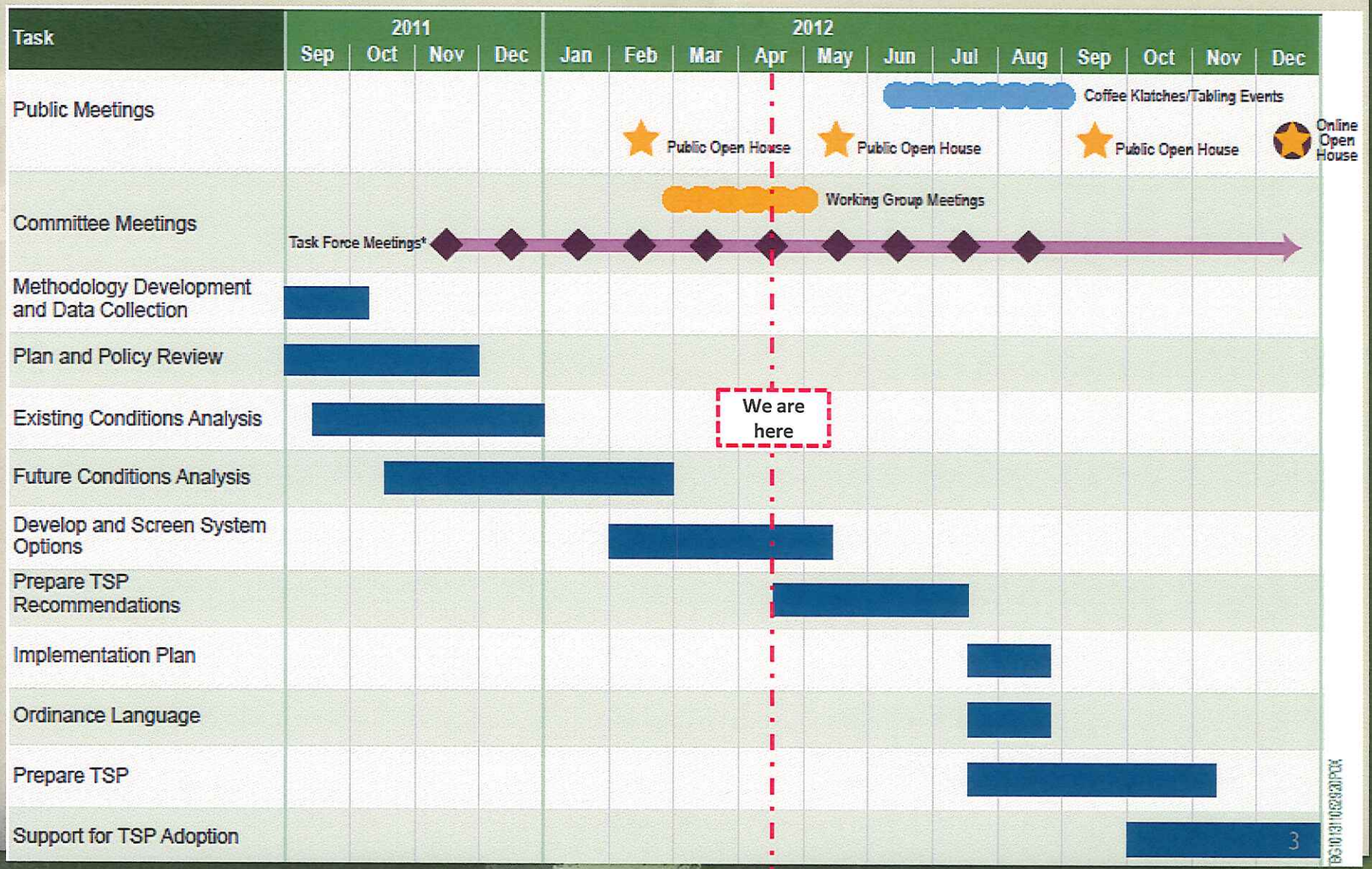
Presentation to
Tualatin Transportation Task Force
April 19, 2012

TualatinTSP_TBG061511054135PDX 422992.PS.C1.HWn6/15/2011 kk

Presentation Outline

- **What is the Screening Process?**
- **Screening Results**
  - Bicycle and Pedestrian
  - Downtown
  - Neighborhood Livability
  - Major Corridors and Intersections
  - Transit
  - Industrial and Freight
- **Next Steps**

Tualatin's TSP Timeline



What Progress Have we Made?

- Remember March's theme?
  - "Generating a long list of potential project ideas"
- By April 1, the City collected a total of **248** preliminary project ideas from:
  - The first round of working groups (Feb/March)
  - The first TSP open house (Feb)
  - Online comment map and website
  - You! At March 15th Task Force Workshop
  - Ideas from various small group discussions (CIO meetings, Allied Waste, Chamber of Commerce gathering, city staff)

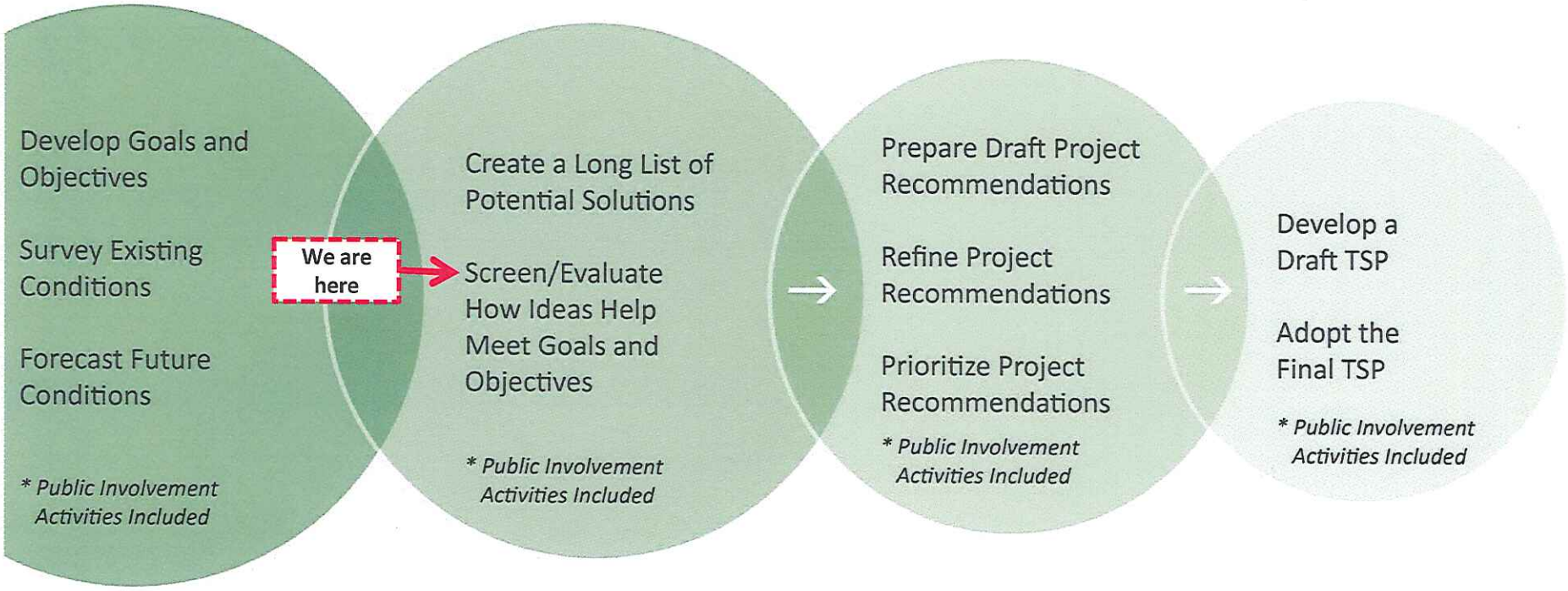
From Long List, We Screen…

- Screening helps us:

1. Form a feasible set of project ideas to move into evaluation

2. Organize project ideas into different "bins"
   - Project ideas to be evaluated for the TSP
   - Project ideas to be forwarded to others:
     - Other agencies
     - Other departments within the City of Tualatin
   - Projects that do not address a need and/or are not feasible to construct

Tualatin's TSP Process



What is a Feasible Idea?

- Our screening questions:

1. Is the project **transportation related**, and does it address a known transportation deficiency or opportunity?
2. Is it within the City? Is it **within the city's control** to implement?
3. Is it **technically feasible** to build this project?*
4. Is the idea **cost prohibitive**? Are there more cost effective ways of addressing the same need?

* We used basic engineering design requirements to assess technical feasibility. Projects were removed only if they were nowhere close to meeting design requirements or were thought to make the identified need *worse* than forecasted under the no build analysis.

The Screening Process

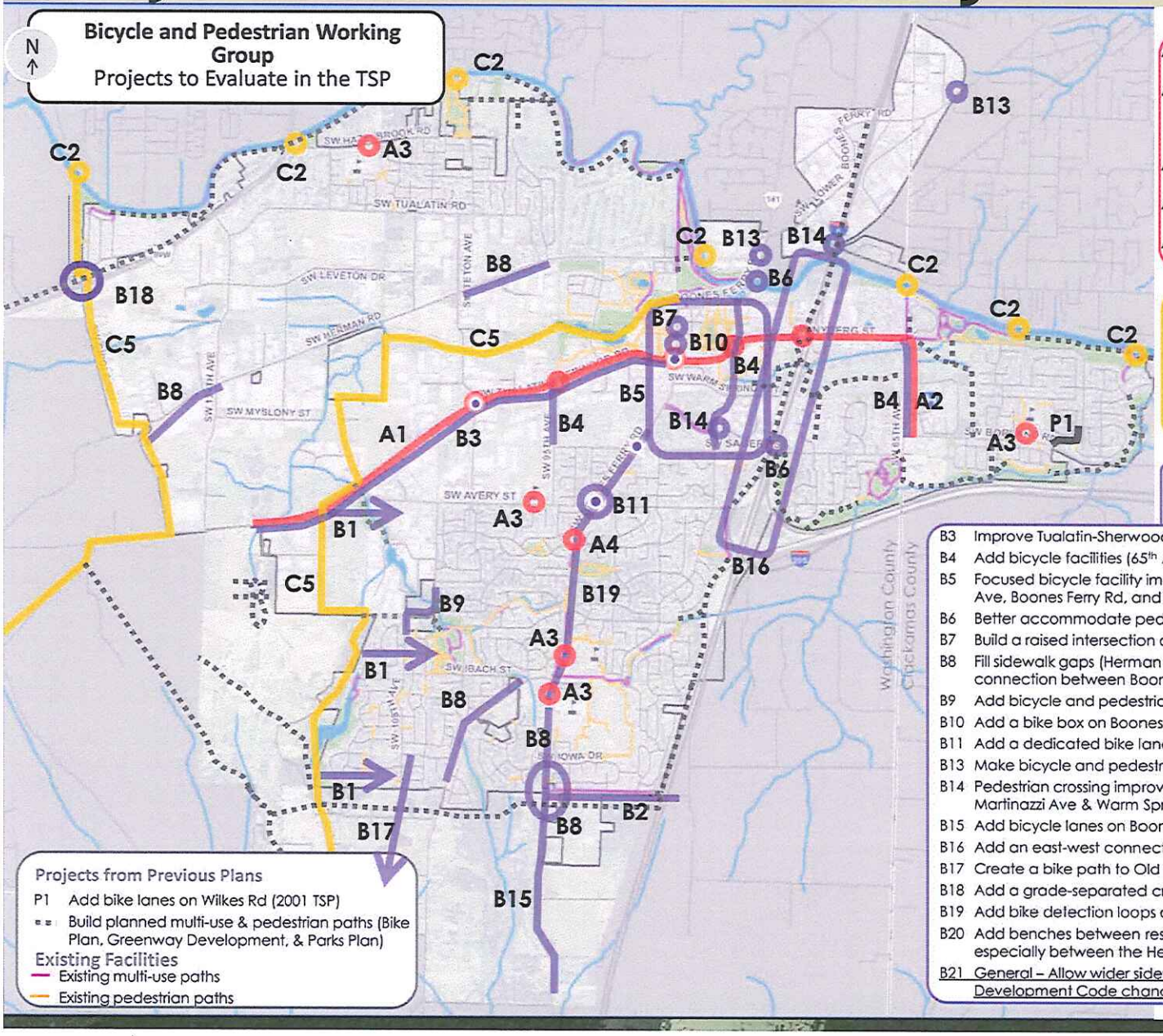
- Second round of working group meetings (March/April)
- Participants were asked to provide input on feasibility of project ideas
  - Red – not feasible
  - Yellow – not sure and/or have questions
  - Green – feasible – move forward into evaluation
- Comments recorded for all red cards
- Engineering team used working group notes to assess feasibility of project ideas

Screening Results

By Working Group Topic Area

Bicycle/Pedestrian

Bicycle and Pedestrian - Projects to Evaluate



Projects from Previous Plans

- P1 Add bike lanes on Wilkes Rd (2001 TSP)
- Build planned multi-use & pedestrian paths (Bike Plan, Greenway Development, & Parks Plan)

Existing Facilities

- Existing multi-use paths
- Existing pedestrian paths

Safety-Focused Ideas

- A1 Add pedestrian-focused crossing improvements at key crossings of Tualatin-Sherwood Rd & Nyberg St
- A2 Separate walking/bike area with plantings or barriers on 65th Ave between Borland Rd and Nyberg Ln including adding bicycle/pedestrian facilities on the bridge at 65th Ave
- A3 Improve visibility and safety near schools at crosswalks
- A4 Improve visibility at crosswalk at Siletz Dr & Boones Ferry Rd
- A6 General - Add wayfinding signs for Safe Routes to School

Trail-Focused Ideas

- C2 Build bridges for pedestrian and bicycle access over the Tualatin River
- C4 Create a system of bicycle boulevards (Bikeways on lower –volume streets) connecting all major areas including residential areas (Not on map)
- C5 Tonquin Trail

Facility-Focused Ideas

- B1 Connect Tonquin trail with neighborhoods
- B2 Add sidewalks & bicycle lanes on Norwood Rd
- B3 Improve Tualatin-Sherwood Rd to make it more bicycle and pedestrian friendly
- B4 Add bicycle facilities (65th Ave near the hospital, 95th Ave and Martinazzi Ave)
- B5 Focused bicycle facility improvements in heart of downtown, including Martinazzi Ave, Boones Ferry Rd, and Tualatin-Sherwood Rd
- B6 Better accommodate pedestrians on the bridges
- B7 Build a raised intersection at Seneca and Nyberg (crossing Boones Ferry Rd)
- B8 Fill sidewalk gaps (Herman Rd, Grahams Ferry Rd, Boones Ferry Rd, and the connection between Boones Ferry Rd and Norwood Rd)
- B9 Add bicycle and pedestrian facilities on 105th Ave, Blake St, 108th Ave
- B10 Add a bike box on Boones Ferry Rd near the Sweek House
- B11 Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd
- B13 Make bicycle and pedestrian facility improvements at railroad crossings
- B14 Pedestrian crossing improvements (Tualatin View Apartments, Boones Ferry Rd; Martinazzi Ave & Warm Springs St)
- B15 Add bicycle lanes on Boones Ferry Rd to Day Rd
- B16 Add an east-west connection across I-5
- B17 Create a bike path to Old Town Sherwood as this area develops
- B18 Add a grade-separated crossing over 99W
- B19 Add bike detection loops at major intersections (indicated by ●)
- B20 Add benches between residential and commercial areas throughout the city, especially between the Heritage Center and Haggens (not on map)
- B21 General – Allow wider sidewalks for strolling and outdoor cafes. (Potential Tualatin Development Code change)

Bicycle and Pedestrian - Ideas Screened Out

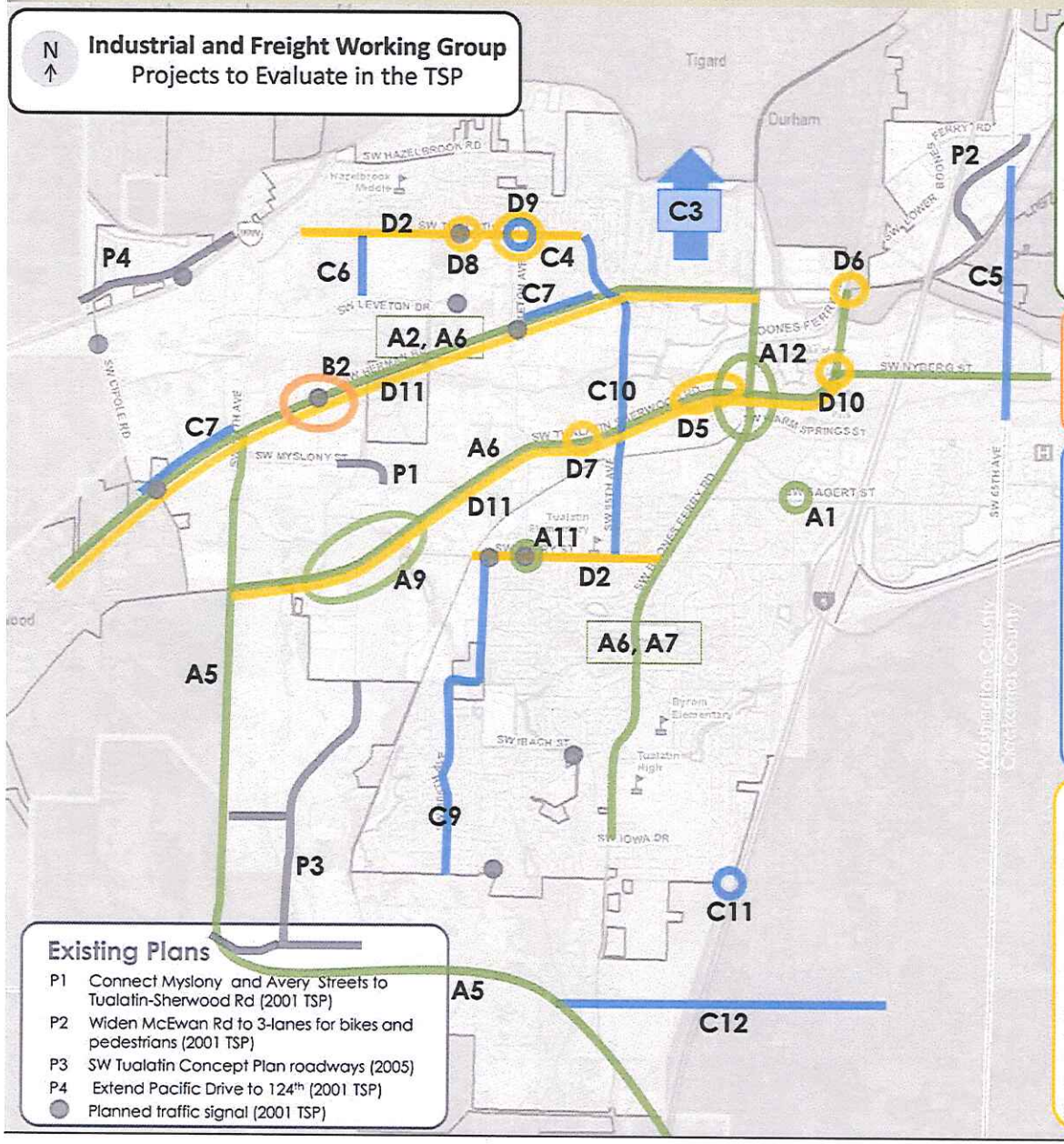
ID	Project	Based on what screening question?	Action to be taken
A5	Improve lighting at Jurgens Rd and Hazelbrook Rd	1 (transportation related, addressing an identified need)	Forward to engineering
B1	Add a pedestrian overcrossing between the Community park and Tualatin Commons	1 (transportation related), 4 (cost)	Consider upon future development
C3	Add a pedestrian shortcut between Hazelbrook Rd and 99W	1 (addressing an identified need)	Consider if a future development occurs at this location

Bicycle/Pedestrian

Discussion

Industrial and Freight

Industrial and Freight - Projects to Evaluate



Congestion-Focused Ideas

- A1 Add a signal or roundabout at Sagert St and Martinazzi Ave
- A2 Divert truck traffic from Tualatin Rd to Herman Rd
- A5 Extend 124th Ave and connect to I-5 south of Tualatin
- A6 Provide coordinated signal timing and access management along major arterials. ~~Restrict trucks to right lane.~~ Widen travel lanes.
- A7 ~~Widen Boones Ferry Rd. Remove right turn light at Tualatin-Sherwood Rd.~~ Remove right turn light in the northbound direction on Boones Ferry Rd.
- A9 Improvements to help mobility of through-traffic (Tualatin-Sherwood Rd)
- A11 Improve turn radius at Avery St and Teton Ave, look at congestion
- A12 Synchronize turn signals to/from Boones Ferry Rd to Tualatin-Sherwood Rd; coordinate with the train signal

Transit-Focused Ideas

- B1 *General* - Add Saturday, Sunday, late evening transit shuttle
- B2 Add rail station with easy offload and access for industry
- B3 *General* - Provide local loop bus

Connectivity-Focused Ideas

- C3 ~~North-south connection to Hall Blvd~~ Look for ways to provide north-south connectivity over Tualatin River for vehicles
- C4 Add a left turn from Teton Ave to Tualatin Rd
- C5 Extend 65th Ave north
- C6 Improve 115th Ave
- C7 Improve cross-section on Herman Rd
- C9 Balance the needs of neighborhood with local truck movement along 108th/105th Aves. Consider removing trucks/adding truck info signs.
- C10 Extend 95th Ave north to Tualatin Rd
- C11 Add an interchange on I-5 at Norwood Rd
- C12 Create an east/west connection across I-5 (near Greenhill Rd)

Other Ideas

- D1 General – Coordinate freight receiving/shipping times
- D2 Add vision & sound walls; reduce cut-through traffic.
- D3 General – Improve safety and reduce congestion by education and incentivizing telecommuting
- D5 Add a lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Add traffic camera for red light violations.
- D6 Improve signs to direct traffic to correct street
- D7 Add traffic signal at 97th Ave and Tualatin-Sherwood Rd
- D8 Improve visibility, restrict left turns from 108th Ave onto Tualatin Rd
- D9 Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd
- D10 Improve Tualatin-Sherwood Rd/Martinazzi Ave signal timing/add a red light camera
- D11 Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd
- D12 General - Make "Truck Route" signs larger

Existing Plans

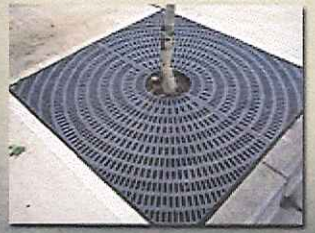
- P1 Connect Myslony and Avery Streets to Tualatin-Sherwood Rd (2001 TSP)
- P2 Widen McEwan Rd to 3-lanes for bikes and pedestrians (2001 TSP)
- P3 SW Tualatin Concept Plan roadways (2005)
- P4 Extend Pacific Drive to 124th (2001 TSP)
- Planned traffic signal (2001 TSP)

Industrial and Freight - Ideas Screened Out

ID	Project Idea	Based on what screening question?	Action to be taken
A3	Provide an undercrossing for Nyberg through traffic under I-5 to avoid signal/conflicts. Create an urban interchange	2 (ability to implement), 4 (cost)	None
A4	Reconsider the connection between 99W and Tualatin-Sherwood Rd (note: in Sherwood)	2 (ability to implement)	Forward to City of Sherwood
A8	Close 90th Ave to 18-wheel trucks	1 (addressing a transportation problem)	Reassess during review of functional classification plan
A10	Create a loop road around central downtown, with a turn radius that works for trucks	1 (addressing a transportation problem), 4 (cost)	None
B3	General – Provide bus from Clackamas MAX stop to WES for employees	1 (addressing a transportation problem)	Forward to TriMet

Industrial and Freight - Ideas Screened Out (cont'd)

ID	Project Idea	Based on what screening question?	Action to be taken
C1	Add connection and entry to I-205	3 (technical feasibility)	None
C2	Provide direct connection between Herman Rd & Boones Ferry Rd. Consider a tunnel	2 (ability to implement), 4 (cost)	None
C1	Add interchange at Norwood Road	3 (technical feasibility)	None
D4	Move industrial area to the SW area, change to multi-family residential, or buffer existing neighborhood better from industrial area	1 (transportation-related)	Forward to Planning

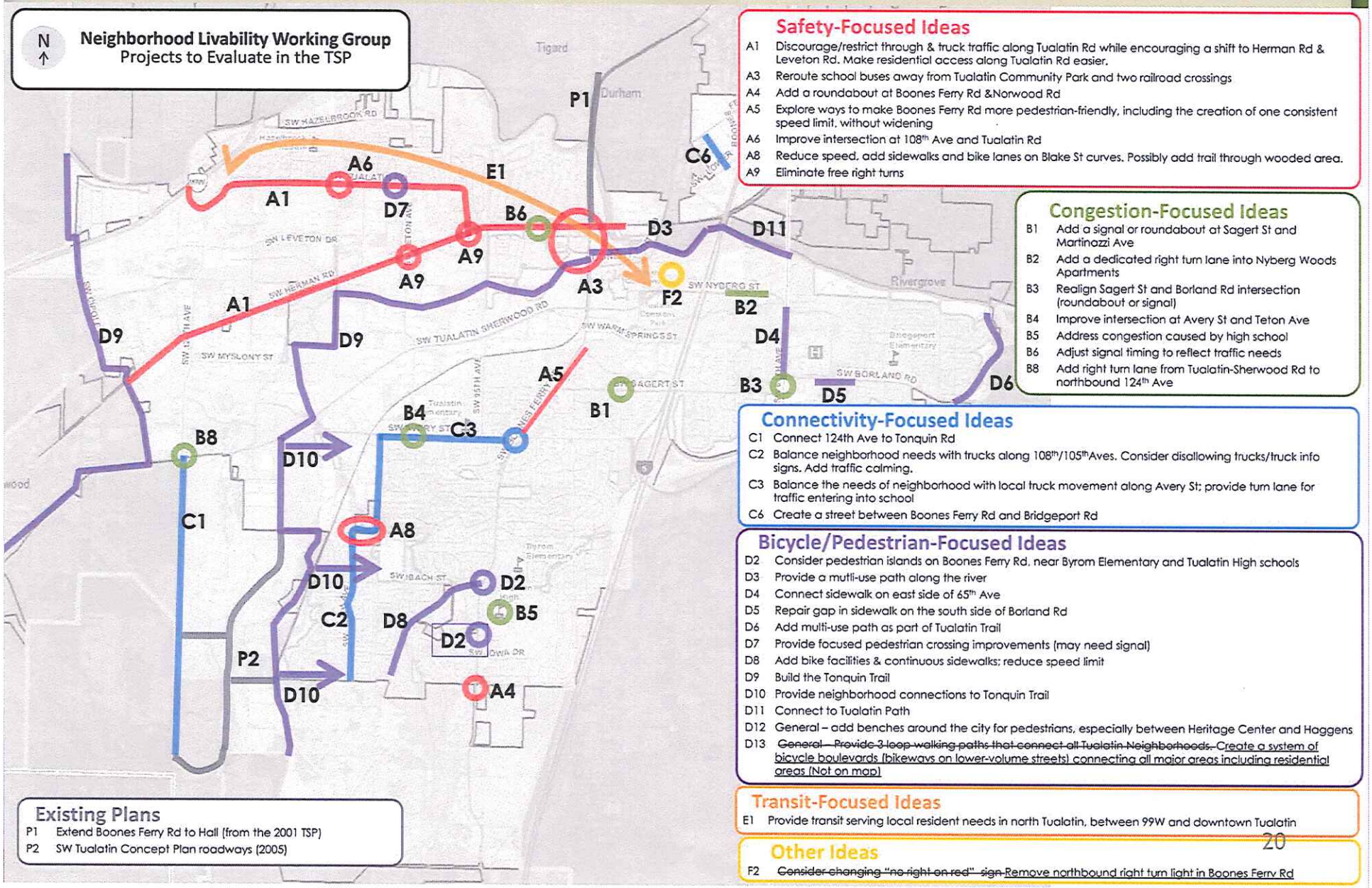


Industrial and Freight

Discussion

Neighborhood Livability

Neighborhoods - Projects to Evaluate



Safety-Focused Ideas

- A1 Discourage/restrict through & truck traffic along Tualatin Rd while encouraging a shift to Herman Rd & Leveton Rd. Make residential access along Tualatin Rd easier.
- A3 Reroute school buses away from Tualatin Community Park and two railroad crossings
- A4 Add a roundabout at Boones Ferry Rd &Norwood Rd
- A5 Explore ways to make Boones Ferry Rd more pedestrian-friendly, including the creation of one consistent speed limit, without widening
- A6 Improve intersection at 108th Ave and Tualatin Rd
- A8 Reduce speed, add sidewalks and bike lanes on Blake St curves. Possibly add trail through wooded area.
- A9 Eliminate free right turns

Congestion-Focused Ideas

- B1 Add a signal or roundabout at Sagert St and Martinozzi Ave
- B2 Add a dedicated right turn lane into Nyberg Woods Apartments
- B3 Realign Sagert St and Borland Rd intersection (roundabout or signal)
- B4 Improve intersection at Avery St and Teton Ave
- B5 Address congestion caused by high school
- B6 Adjust signal timing to reflect traffic needs
- B8 Add right turn lane from Tualatin-Sherwood Rd to northbound 124th Ave

Connectivity-Focused Ideas

- C1 Connect 124th Ave to Tonquin Rd
- C2 Balance neighborhood needs with trucks along 108th/105thAves. Consider disallowing trucks/truck info signs. Add traffic calming.
- C3 Balance the needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school
- C6 Create a street between Boones Ferry Rd and Bridgeport Rd

Bicycle/Pedestrian-Focused Ideas

- D2 Consider pedestrian islands on Boones Ferry Rd. near Byrom Elementary and Tualatin High schools
- D3 Provide a mutli-use path along the river
- D4 Connect sidewalk on east side of 65th Ave
- D5 Repair gap in sidewalk on the south side of Borland Rd
- D6 Add multi-use path as part of Tualatin Trail
- D7 Provide focused pedestrian crossing improvements (may need signal)
- D8 Add bike facilities & continuous sidewalks; reduce speed limit
- D9 Build the Tonquin Trail
- D10 Provide neighborhood connections to Tonquin Trail
- D11 Connect to Tualatin Path
- D12 General – add benches around the city for pedestrians, especially between Heritage Center and Haggens
- D13 ~~General – Provide 3 loop walking paths that connect all Tualatin Neighborhoods.~~ Create a system of bicycle boulevards (bikeways on lower-volume streets) connecting all major areas including residential areas (Not on map)

Transit-Focused Ideas

- E1 Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin

Other Ideas

- F2 ~~Consider changing "no right on red" sign~~ Remove northbound right turn light in Boones Ferry Rd

Existing Plans

- P1 Extend Boones Ferry Rd to Hall (from the 2001 TSP)
- P2 SW Tualatin Concept Plan roadways (2005)

Neighborhood Livability - Ideas Screened Out

ID	Project	Based on what screening question?	Action to be taken
A2	Improve lighting on Hazelbrook Rd	1 (transportation-related)	Forward to Engineering
A7	Improve sight distance and reduce speeds at Boones Ferry Rd and Arapaho Rd	1 (does not address a transportation problem)	Forward to Engineering
A10	Require a stop before vehicles turn right onto Boones Ferry Rd between Mohawk St and Greenhill Lane	3 (technical feasibility)	None
B7	Add two right turns onto I-5 northbound from Nyberg St	2 (ability to implement)	Forward to ODOT
C4	Add I-5 Interchange with Norwood Rd	3 (technical feasibility)	None
C5	Limit Siletz to exit only at Boones Ferry Rd and 105th Ave to minimize cut-through traffic.	1 (not included in TSP analysis)	Revisit upon completion of Boones Ferry Road analysis and recommendations
D1	Consider a pedestrian overcrossing on Boones Ferry Rd	4 (cost)	Assess more effective, lower cost solutions to pedestrian safety

Neighborhood Livability - Ideas Screened Out (Cont.)

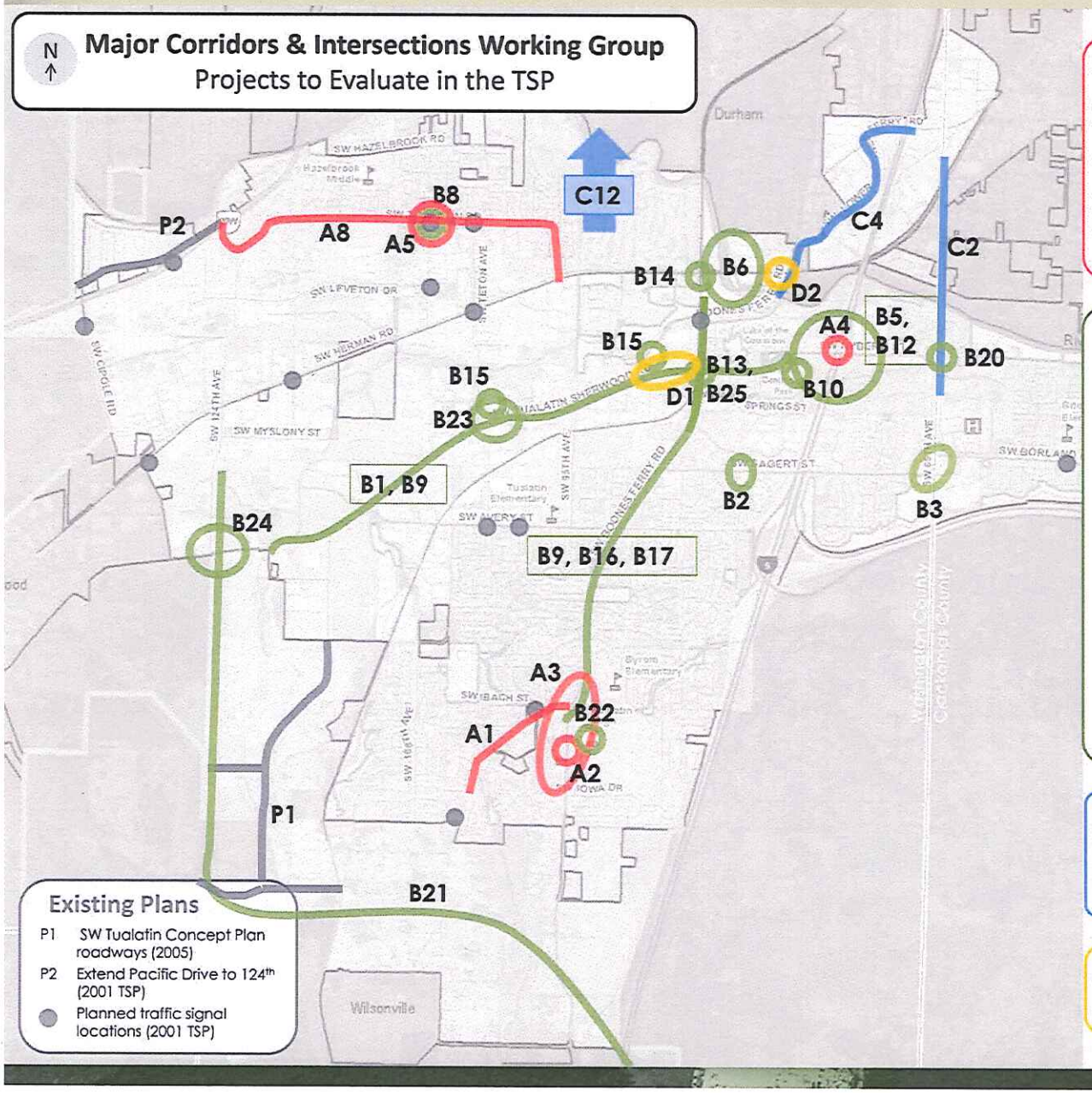
ID	Project	Based on what screening question?	Action to be taken
F1	Consider ways to lessen noise from 99W and I-5 on nearby residences	1 (transportation related)	Forward to Engineering
F3	Intersection of Ibach/Grahams Ferry is confusing; rename road or better signs; need better lighting	1 (transportation related, addressing a transportation problem)	Forward to Engineering
F4	General – Add gateway signs to announce CIOs	1 (transportation related)	Forward to CIOs
F5	Move industrial area to the SW area (no direct truck route), change to multifamily residential, or buffer existing neighborhood better from industrial area	1 (transportation related)	Forward to Planning
F6	Create small, neighborhood commercial for residents to walk to	1 (transportation related)	Forward to Planning

Neighborhood Livability

Discussion

Major Corridors and Intersections

Major Corridors - Projects to Evaluate



Safety-Focused Ideas

- A1 Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd
- A2 Add traffic signal at Tualatin High School
- A3 Consistent speed zones for both Tualatin High School & Byrom Elementary School
- A4 ~~Raise the southbound off ramp to allow a better view of traffic on~~ Improve the sight distance at the I-5 Nyberg Rd interchange
- A5 Add traffic signal on Tualatin Rd at 108th Ave or on Teton Ave
- A6 *General* – consistent use of yellow turn signals on all traffic signals
- A8 Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd. Make residential access easier.

Congestion-Focused Ideas

- B1 Widen Tualatin-Sherwood Rd
- B2 Signal or roundabout at Sagert St and Martinazzi Ave
- B3 Realign Sagert St/Borland Rd intersection
- B5 Restrict right turn on red at Nyberg Interchange
- B6 Rethink access in vicinity of Tualatin Community Park
- B8 Prohibit left turns out of 108th Ave or remove trees in the southwest corner
- B9 Coordinate signal timing on Boones Ferry Rd and Tualatin-Sherwood Rd; widen Boones Ferry Rd
- B10 Redesign the intersection at the Fred Meyer (from Nyberg Rd)
- B12 Make two right turn lanes from I-5 north onto Nyberg Rd
- B13 Extend the northbound left turn lane and create a southbound right turn lane on Boones Ferry Rd at Tualatin-Sherwood Rd to reduce backup from WES train; add red light cameras
- B14 Reconfigure Boones Ferry Rd at Tualatin Rd
- B15 Add a 4-way stop by 90th Ave at Kaiser
- B16 Add bus pullouts on Boones Ferry Rd
- B17 Widen Boones Ferry Rd
- B20 Roundabout at Nyberg Rd/65th Ave; keep Nyberg Rd 2 lanes
- B21 Extend 124th Ave and connect to I-5 and Tonquin Rd
- B22 Address congestion caused by high school
- B23 Add a dedicated right turn lane on Teton Ave at Tualatin-Sherwood Rd
- B24 Add right turn lane on Tualatin-Sherwood Rd at 124th Ave

Connectivity-Focused Ideas

- C2 Extend 65th Ave north
- C4 Improve traffic flow on Lower Boones Ferry Rd near Bridgeport Village into downtown Tualatin
- C12 ~~Extend Boones Ferry Rd to Hall Blvd~~ Look for ways to provide north-south connectivity over Tualatin River for vehicles

Other Ideas

- D1 Add lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Install traffic camera for signal violations.
- D2 Better signs needed to direct traffic to correct street

Major Corridors - Ideas Screened Out

ID	Project	Based on what screening question?	Action to be taken
A7	Improve sight distance and reduce speeds at Boones Ferry Rd and Arapaho Rd	1 (does not address a transportation problem)	Forward to Engineering
B4	Consider a traffic loop in downtown (one way, right turn only)	1 (addressing a transportation problem), 4 (cost)	Look at other options to address downtown circulation
B7	Consider removing ramp signals at Nyberg interchange	1 (does not address a transportation problem), 2 (Ability to Implement)	Look at other options to address congestion at Nyberg interchange
B1	Consider redesigning the Nyberg interchange into a full cloverleaf	2 (ability to implement), 4 (cost)	Look at other options to address congestion at Nyberg interchange
B1	Add a southbound left turn and right turn lane to Nyberg interchange	1 (does not address a transportation problem), 4 (cost)	Look at other options to address congestion at Nyberg interchange
B1	Restrict trucks to right lane, widen travel lanes	2 (ability to implement)	None

Major Corridors - Ideas Screened Out (cont'd)

ID	Project	Based on what screening question?	Action to be taken
B25	Limit access and grade separate the intersection of Tualatin-Sherwood Rd and Boones Ferry Rd	1 (addressing a transportation problem), 4 (cost)	None
C3	Construct a new road between Tualatin High School and Byrom Elementary School	1 (does not address a transportation problem)	Look at other options to address school congestion
C5	Improve intersection at 99W and Tualatin Rd	1 (does not address a transportation problem)	None
C6	Extend Tualatin Rd to Lower Boones Ferry Rd	3 (technical feasibility)	None
C8	Add on/off ramps from I-5 to Norwood Rd	3 (technical feasibility)	None
C9	Widen Sagert St to 2 lanes each way with pedestrian median	1 (does not address a transportation problem)	None

Major Corridors - Ideas Screened Out (cont'd)

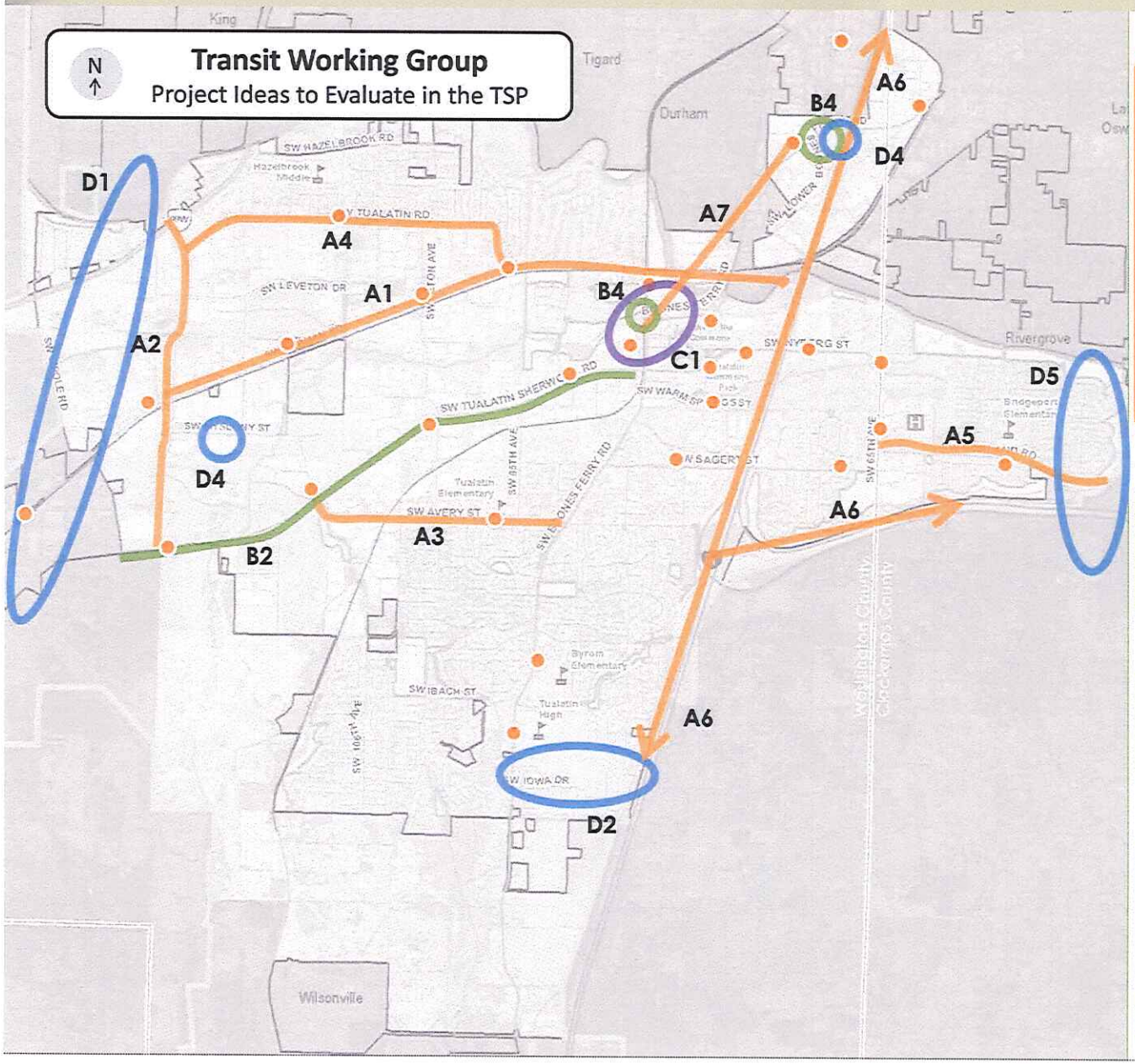
ID	Project	Based on what screening question?	Action to be taken
C10	Extend Helenius Road (Grahams Ferry Rd to Norwood Rd)	3 (technical feasibility)	None
C11	Create street grid in Bridgeport	1 (does not address a transportation problem), 2 (ability to implement)	None
D3	Tualatin-Sherwood Rd/Martinazzi Ave – Adjust signal timing, add a red light camera	2 (ability to implement)	Forward to Washington County – potential project already underway
D4	Adjust signal Timing	2 (ability to implement)	Forward to Washington County – potential project already underway

Major Corridors and Intersections

Discussion

Transit

Transit - Projects to Evaluate



Bus Service-Focused Ideas

- A1 Provide bus transit service on Herman Road
- A2 Provide bus transit service on 124th Street
- A3 Provide bus transit service on Avery Street
- A4 Provide bus transit service on Tualatin Road between downtown and 99W
- A5 Extend bus service to east Tualatin
- A6 Improve bus service between Tualatin and Salem
- A7 Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
- A8 Provide a loop bus route around the city*
- A10 Expand existing on-call shuttle and charge fares*
- A12 General – need extended service hours for all transit*
- A13 General – use more energy efficient buses*
- A14 Coordinate bus schedules with WES schedule*
- A16 Add stops on higher-volume routes*

● Potential bus stop locations connecting major employers and activity centers

*not shown on map

Rail Service-Focused Ideas

- B2 Provide rail or high capacity bus transit service on Tualatin-Sherwood Road (towards Sherwood)
- B4 Build elevated pedestrian bridge to connect park-and-ride with shopping at Bridgeport Village
- B10 General – Add more spaces for bicycles on WES trains*

Land Use-Focused Ideas

- C1 Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Park-and-Ride-Focused Ideas

- D1 Look for potential park-and-ride locations in west Tualatin
- D2 Look for potential park-and-ride locations in south Tualatin
- D3 Add parking capacity at Tualatin Park-and-Ride (near Bridgeport Village)
- D4 Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots
- D5 Add a park-and-ride location in east Tualatin

Transit - Ideas Screened Out

ID	Project	Screening Question	Moving forward into evaluation?
A9	Add bus line from Yamhill Transit District to WES	2 (Ability to Implement)	Forward to Yamhill Transit District and TriMet
A11	General –leave TriMet service area	3 (Technical Feasibility)	Assess ability to improve transit service in Tualatin first, and then reconsider the need for this idea
A15	Provide transit service to Lake Oswego	1 (Addressing a need)	None
B1	Eliminate freight rail trips during rush hours, to avoid interrupting bus and WES service	2 (Ability to implement)	Participate in future regional discussions around increasing WES frequency (B3)
B3	Increase WES frequency	2 (Ability to implement)	Participate in future regional discussions around increasing WES frequency
B5	Extend WES to Salem	2 (Ability to implement)	Participate in future regional discussions on this topic

Transit - Ideas Screened Out (Cont.)

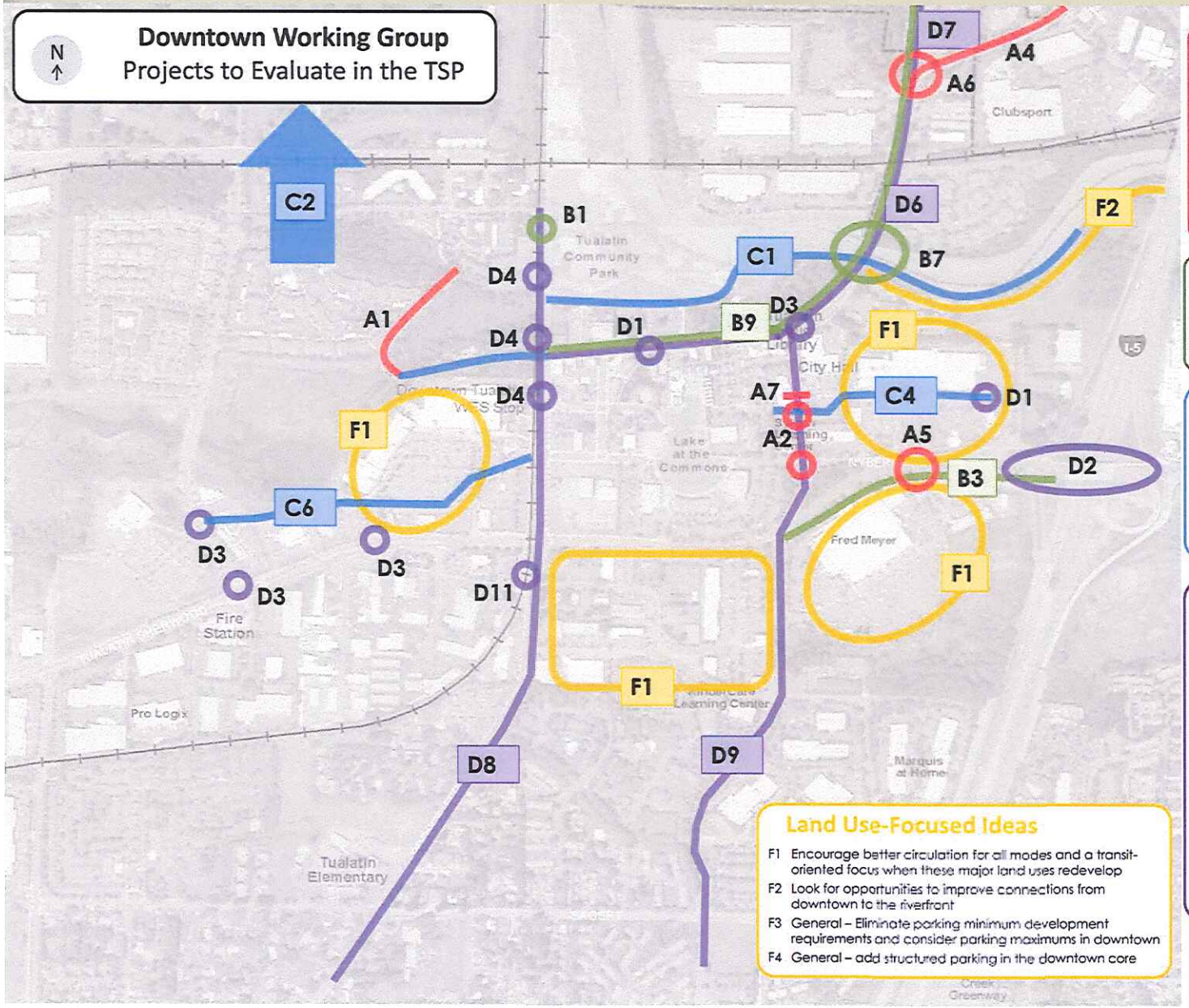
ID	Project	Screening Question	Moving forward into evaluation?
B6	Oregon Passenger Rail between Portland and Eugene	2 (Ability to implement)	Participate in future regional discussions on this topic
B7	SW corridor High Capacity Transit	2 (Ability to implement)	Participate in ongoing regional discussions on this topic
B8	Add a WES Station in south Tualatin	1 (Addressing a need)	Reconsider upon future buildout of Basalt Creek area
B9	General – Add more spaces for bicycles on WES trains	2 (Ability to implement)	Forward to TriMet
B11	Follow the existing rail line with High Capacity Transit	2 (Ability to implement)	Forward to Metro for ongoing SW Corridor and other regional transit discussions

Transit

Discussion

Downtown

Downtown - Projects to Evaluate



Land Use-Focused Ideas

- F1 Encourage better circulation for all modes and a transit-oriented focus when these major land uses redevelop
- F2 Look for opportunities to improve connections from downtown to the riverfront
- F3 General – Eliminate parking minimum development requirements and consider parking maximums in downtown
- F4 General – add structured parking in the downtown core

Safety-Focused Ideas

- A1 Upgrade bridge surface and improve illumination along path near Hedges Creek
- A2 Consider raised intersections for pedestrians at Seneca St and Nyberg St
- A4 Reduce speeds near Bridgeport Village
- A5 Redesign Fred Meyer & Kmart intersection – upgrade the pedestrian connection
- A6 Add a roundabout at Lower Boones Ferry Rd and Boones Ferry Rd
- A7 Add a pedestrian island on Martinazzi Ave north of Seneca St

Congestion-Focused Ideas

- B1 Improve circulation into and out of the park
- B3 Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi Ave to I-5
- B7 Replace/widen bridge on Boones Ferry Rd
- B9 Widen Boones Ferry Rd to 5 lanes

Connectivity-Focused Ideas

- C1 Build a trail from Boones Ferry Rd to the downtown core along the river to the Tualatin River Greenway
- C2 Look for ways to provide north-south connectivity over Tualatin River for vehicles
- C4 Create a grid system near the Kmart, connect to Seneca St
- C5 General–improve street connectivity in downtown
- C6 Create a public road between Boones Ferry Rd and SW 90th Ave

Bicycle/Pedestrian-Focused Ideas

- D1 Redesign pedestrian crossing, consider flashing lights
- D2 Upgrade Nyberg interchange to improve the crossing experience for bicyclists
- D3 Optimize intersections to reduce conflicts between cars and pedestrians (Tualatin-Sherwood Rd & Martinazzi Ave and Boones Ferry Rd)
- D4 Add pedestrian crossings along Boones Ferry Rd
- D6 Improve sidewalks and bicycle lanes Boones Ferry Rd
- D7 Improve bicycle and pedestrian facilities near Bridgeport Village
- D8 Provide "Share the Road" signage and/or other visual cues to motorists to accommodate bicycles on Boones Ferry Rd
- D9 Add bicycle lane or "Share the Road" signs on Martinazzi Ave
- D10 General – coordinate traffic signal timing to accommodate pedestrians in downtown
- D11 Focused pedestrian crossings

Downtown - Ideas Screened Out

ID	Project	Based on what screening question?	Action to be taken
A3	Add a grade separated railroad crossing on Tualatin-Sherwood Rd	1 (addressing a transportation problem), 4 (cost)	None
B2	Provide secondary exit from park, and provide additional parking	3 (technical feasibility)	Look at other options to improve circulation at park
B4	Add a travel lane on I-5 northbound (between Tualatin and OR 217)	2 (ability to implement)	Forward to ODOT
B5	Create a one-way circulator loop roadway around downtown	1 (addressing a transportation problem), 4 (cost)	Look at other options to address downtown circulation
B6	Reduce ambient noise along Boones Ferry Rd in downtown	1 (transportation-related)	None

Downtown - Projects to Screen (Cont.)

ID	Project	Based on what screening question?	Action to be taken
B8	Add HOV lanes on Tualatin-Sherwood Rd	2 (ability to implement), 3 (technical feasibility)	None
C3	Connect Nyberg Rd through the Commons	1 (addressing a transportation need)	Look at other options to address downtown circulation
C7	Extend Lower Boones Ferry Rd across Tualatin River	3 (technical feasibility)	None
D5	Create a pedestrian skybridge that connects downtown retail businesses and the park	1 (transportation-related), 4 (cost)	Consider upon future development

Downtown

Discussion

In Summary

- We started with 248 project ideas
- Of the 60 ideas proposed to be screened out…
  - 19 to be forwarded to other agencies or City departments
  - 6 to be reconsidered again in the future
  - 6 will be considered as part of regional conversations
  - 4 will be woven into other project ideas being evaluated

Next Steps

No.	Action	Timing
1.	Discuss results of TTF screening process with City Council	April 23
2.	Evaluate feasible project ideas	Late April through mid May
3.	Discuss evaluation results with Task Force	May 24
4.	Hold 3rd round of working groups to develop preliminary recommendations	June 4 – June 14
5.	Discuss preliminary recommendations with Task Force	June 21
6.	Public outreach on preliminary recommendations	Late June through August

Next Steps

STEP 1
Identify Needs and Opportunities

Develop Goals and Objectives

Survey Existing Conditions

Forecast Future Conditions

** Public Involvement Activities Included*

Our Next Meeting will Focus on Evaluation Results

STEP 2
Develop and Evaluate Solutions

Our June Meeting will Focus on Preliminary Recommendations

Create a Long List of Potential Solutions

Screen/Evaluate How Ideas Help Meet Goals and Objectives

** Public Involvement Activities Included*

STEP 3
Make Recommendations

Prepare Draft Project Recommendations

Refine Project Recommendations

Prioritize Project Recommendations

** Public Involvement Activities Included*

STEP 4
Create and Adopt the Plan

Develop a Draft TSP

Adopt the Final TSP

** Public Involvement Activities Included*

Thank You

Tualatin Transportation System Plan, Preliminary Evaluation Results

PREPARED FOR: Tualatin Transportation Task Force

COPY TO: Kaaren Hofmann, City of Tualatin
Alice Rouyer, City of Tualatin
Dayna Webb, City of Tualatin

PREPARED BY: Terra Lingley, CH2M HILL
Theresa Carr, CH2M HILL
Darren Hippenstiel, CH2M HILL
Kate Lyman, CH2M HILL
Alan Snook, DKS Associates

DATE: February 14, 2013

This memorandum summarizes the preliminary evaluation results of the Tualatin Transportation System Plan (TSP)'s feasible project ideas. It presents both the methodology used to perform the evaluation and the evaluation summary at a project goal level. Maps identifying the location of each project idea and next steps are also included.

The TSP's technical team reviewed each of the projects identified as feasible against a set of evaluation criteria. The evaluation criteria, nested into each project objective, and further nested within each project goal category, are quantitative or qualitative measures that help the team identify how well the project idea is at meeting the TSP's goals and objectives. These goals and objectives were created by the Transportation Task Force (TTF) and reviewed by the community, and accepted by City Council. There are seven goal categories:

1. Access/Mobility
2. Safety
3. Vibrant Community
4. Economy
5. Health/Environment
6. Equity
7. Ability to be Implemented

Ratings

Each project was evaluated against all evaluation criteria by one or more members of the project team, and reviewed by the project management team as a group. The scale used for the evaluation is as follows:

Evaluation Results Rating Scale

Rating	Description
●	The project idea addresses the criterion and/or makes substantial improvements in the criteria category
◒	The project idea partially addresses the criterion and/or makes some improvements in the criteria category
○	The project idea does not support the intent of and/or negatively impacts the criteria category
N/A	The project idea neither meets nor does not meet intent of criterion. The project idea has no effect, or criterion does not apply

The results of the preliminary evaluation are included by Working Group topic, which are:

- Bicycle and Pedestrian
- Downtown
- Industrial and Freight
- Major Corridors and Intersections
- Neighborhood Livability
- Transit

Scores for each individual project idea are included at the end of this memo. Cells highlighted in yellow indicate that the team recommends further analysis of this concept as part of a larger corridor or interchange assessment. Many project ideas spanned more than one topic area. Although concepts were reviewed only once, the evaluation results are reported under each Working Group topic area.

How will this Information be Used?

The focus of the May 24th TTF meeting will be to review the preliminary evaluation results. These will also be used as a basis for the third round of Working Group meetings, held in the first half of June. This next round of Working Group meetings will discuss the evaluations, discuss how well project ideas address identified needs and deficiencies, and prepare preliminary recommendations for the TSP. These project ideas will be organized into three categories:

1. What projects completely make sense and should become part of the TSP?
2. What projects do not make sense, and should not become a part of the TSP?
3. What projects need to be considered more, either in relation to different alternatives to address one problem, or in the context of how a corridor or segment operates as a whole.

The June 21 TTF meeting will review the developments from this third round of Working Group meetings, and preliminary recommendations will be forwarded to the community as a whole for review over the summer months. At this time the third category of ideas will be refined in more detail, with additional traffic or engineering analysis, and discussed with staff, reviewing agencies, and the community.

TualatinTSP_TBG06151105413SPDX 422992.PS.C1.HWn6/15/2011 kk

City of Tualatin

Preliminary Evaluation Results

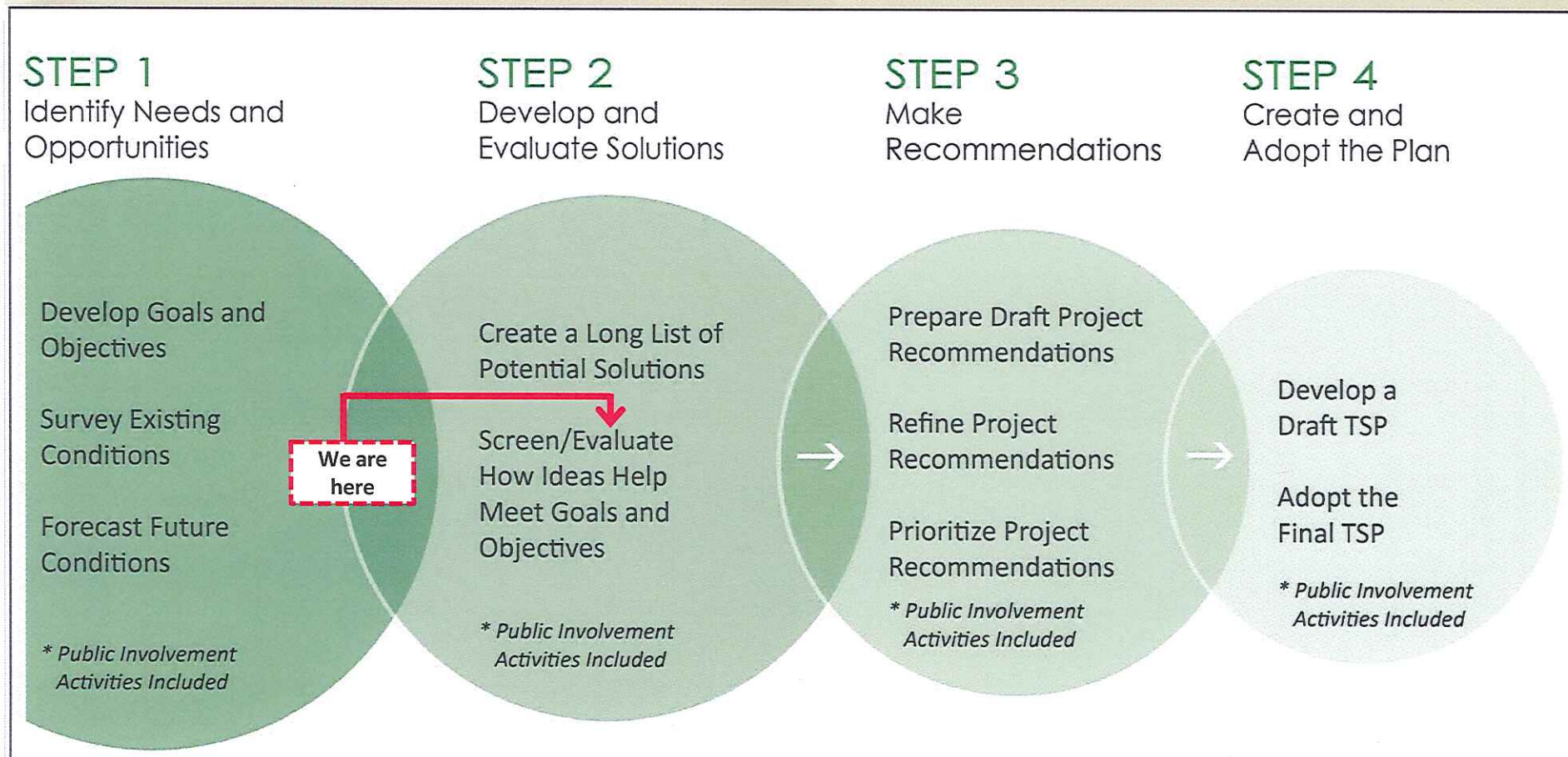
Tualatin TSP

Presentation to
Tualatin Transportation Task Force
May 24, 2012

Presentation Outline

- **Overview of the Evaluation Process**
- **Highlights by Working Group Topic Area**
  - Bicycle and Pedestrian
  - Downtown
  - Industrial and Freight
  - Major Corridors and Intersections
  - Neighborhood Livability
  - Transit
- **Discussion**
- **Next Steps**

Where We Are In the TSP Process



Progress Since our April 19th Meeting…

1. Discussed the project screening process with
   - ✓ City Council
   - ✓ Planning Commission
   - ✓ TPARK
2. Finalized our evaluation framework
3. Conducted a preliminary evaluation
4. Summarized the evaluation by criteria category

The Evaluation Process

- Reviews each feasible project idea against a set of evaluation criteria
- How well does the idea meet the goals and objectives of the TSP?

There are Seven Goal Categories

1. Access and Mobility
2. Safety
3. Vibrant Community
4. Economy
5. Health and the Environment
6. Equity
7. Ability to be Implemented

Our Evaluation Scale

Rating	Description
●	The idea addresses the criterion and/or makes substantial improvements in the criteria category
◒	The idea partially addresses the criterion and/or makes some improvements in the criteria category
○	The idea does not support the intent of and/or negatively impacts the criteria category
N/A	The criterion does not apply

How Will This Information Be Used?

- Preliminary review of evaluation results (tonight)
- Discussion of evaluation results (3rd round of working group meetings, early June)
- 3rd Round of Working Group meetings will also develop preliminary recommendations
  - What projects make sense, include in TSP?
  - What projects *don't* make sense, don't include in TSP?
  - What projects need additional analysis before we decide
- Preliminary recommendations discussion with Task Force (June 21st)
- Online open house on preliminary recommendations (July and August)

Areas for Additional Analysis

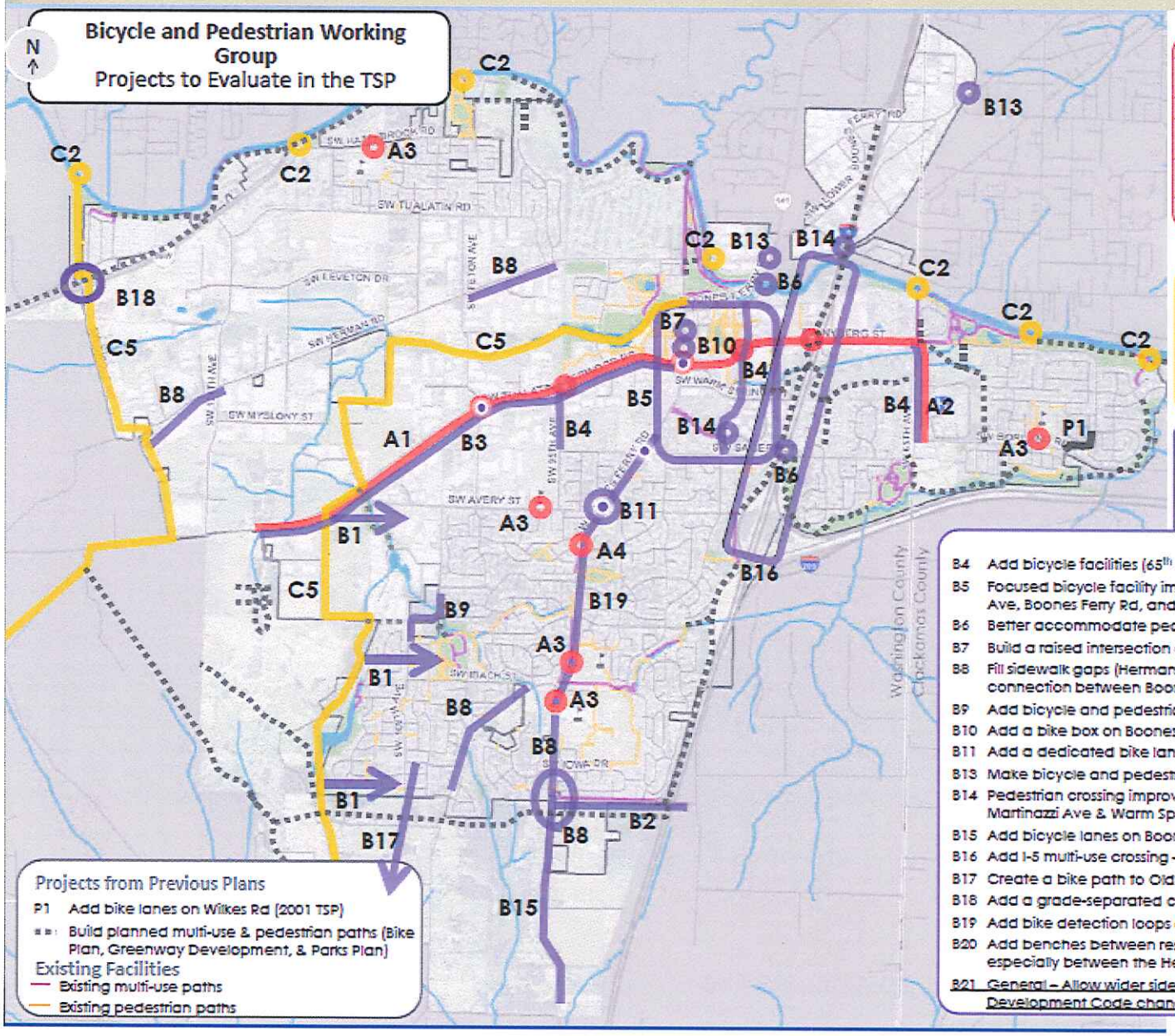
1. Tualatin-Sherwood Road Options
2. Nyberg Interchange Options
3. Boones Ferry Road Options
4. North to South Connectivity
5. Herman Road and Tualatin Road Options
6. Tualatin's Downtown Circulation

Evaluation Highlights

By Working Group Topic Area

Bicycle/Pedestrian

Bicycle and Pedestrian



Safety-Focused Ideas

- A1 Add pedestrian-focused crossing improvements at key crossings of Tualatin-Sherwood Rd & Nyberg St
- A2 Multi-use path between Borland Rd and Nyberg Ln
- A3 Improve visibility and safety near schools at crosswalks
- A4 Improve visibility at crosswalk at Siletz Dr & Boones Ferry Rd
- A6 General – Provide wayfinding signs for Safe Routes to School

Trail-Focused Ideas

- C2 Build bridges for pedestrian and bicycle access over the Tualatin River
- C4 Create a system of bicycle boulevards (Bikeways on lower-volume streets) connecting all major areas including residential areas (Not on map)
- C5 Tonquin Trail

Facility-Focused Ideas

- B1 Connect Tonquin trail with neighborhoods
- B2 Add sidewalks & bicycle lanes on Norwood Rd
- B3 Improve Tualatin-Sherwood Rd to make it more bicycle and pedestrian friendly
- B4 Add bicycle facilities (65th Ave near the hospital, 95th Ave and Martinazzi Ave)
- B5 Focused bicycle facility improvements in heart of downtown, including Martinazzi Ave, Boones Ferry Rd, and Tualatin-Sherwood Rd
- B6 Better accommodate pedestrians on the bridges
- B7 Build a raised intersection at Seneca and Nyberg (crossing Boones Ferry Rd)
- B8 Fill sidewalk gaps (Herman Rd, Grahams Ferry Rd, Boones Ferry Rd, and the connection between Boones Ferry Rd and Norwood Rd)
- B9 Add bicycle and pedestrian facilities on 105th Ave, Blake St, 108th Ave
- B10 Add a bike box on Boones Ferry Rd near the Sweek House
- B11 Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd
- B13 Make bicycle and pedestrian facility improvements at railroad crossings
- B14 Pedestrian crossing improvements (Tualatin View Apartments, Boones Ferry Rd; Martinazzi Ave & Warm Springs St)
- B15 Add bicycle lanes on Boones Ferry Rd to Day Rd
- B16 Add I-5 multi-use crossing – connect to existing multi-use paths
- B17 Create a bike path to Old Town Sherwood as this area develops
- B18 Add a grade-separated crossing over 99W
- B19 Add bike detection loops at major intersections (indicated by●)
- B20 Add benches between residential and commercial areas throughout the city, especially between the Heritage Center and Haggens (not on map)
- B21 General – Allow wider sidewalks for strolling and outdoor cafes. (Potential Tualatin Development Code change)

Projects from Previous Plans

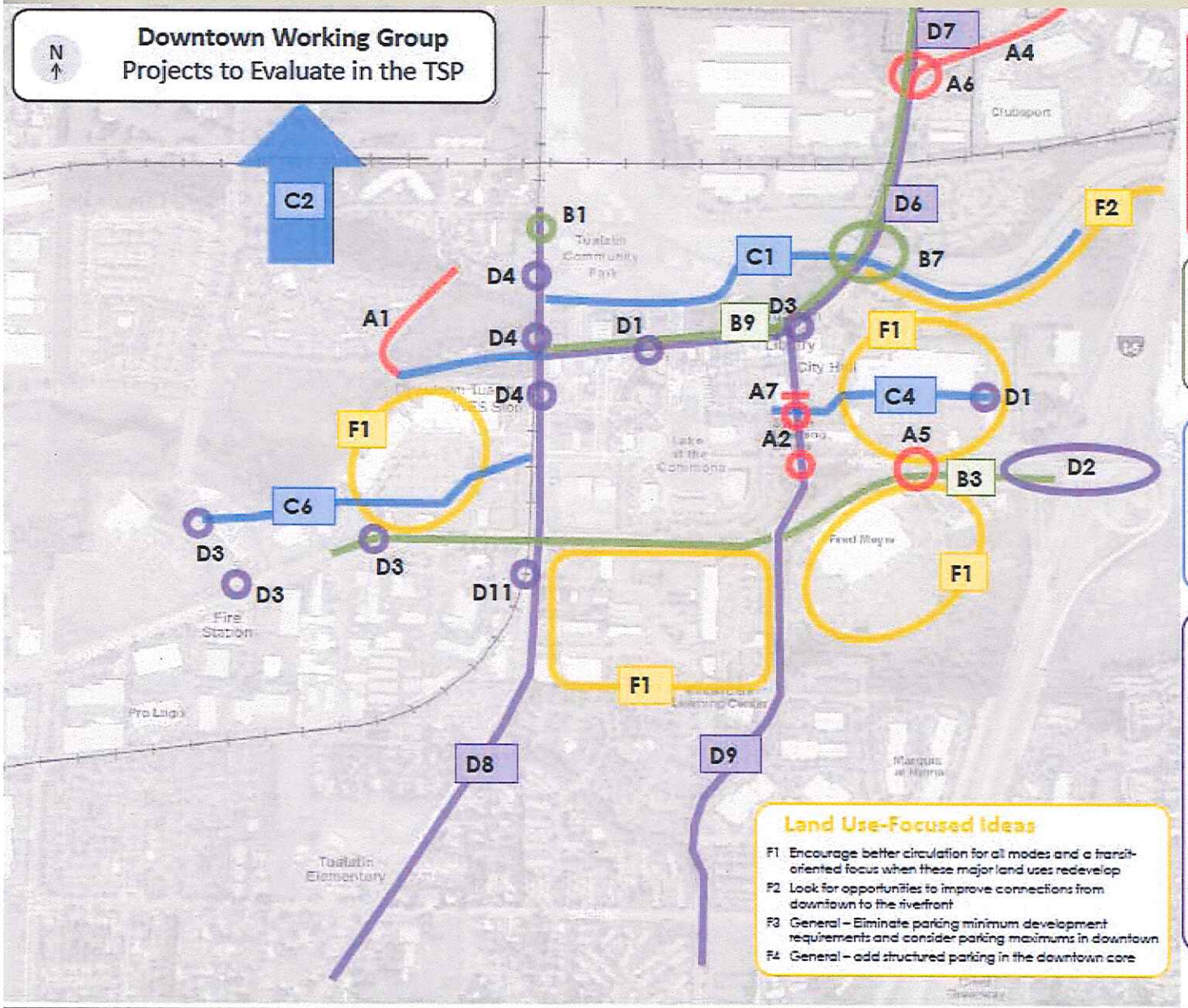
- P1 Add bike lanes on Wilkes Rd (2001 TSP)
- Build planned multi-use & pedestrian paths (Bike Plan, Greenway Development, & Parks Plan)

Existing Facilities

- Existing multi-use paths
- Existing pedestrian paths

Downtown

Downtown



Safety-Focused Ideas

- A1 Upgrade bridge surface and improve illumination along path near Hedges Creek
- A2 Consider raised intersections for pedestrians at Seneca St and Nyberg St
- A4 Reduce speeds near Bridgeport Village
- A5 Redesign Fred Meyer & Kmart intersection – upgrade the pedestrian connection
- A6 Add a roundabout at Lower Boones Ferry Rd and Boones Ferry Rd
- A7 Add a pedestrian island on Martinazzi Ave north of Seneca St

Congestion-Focused Ideas

- B1 Improve circulation into and out of the park
- B8 Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi Ave to I-5
- B7 Replace/widen bridge on Boones Ferry Rd
- B9 Widen Boones Ferry Rd to 5 lanes
- B10 Widen Tualatin-Sherwood Rd through downtown

Connectivity-Focused Ideas

- C1 Build a trail from Boones Ferry Rd to the downtown core along the river to the Tualatin River Greenway
- C2 Look for ways to provide north-south connectivity over Tualatin River for vehicles
- C4 Create a grid system near the Kmart, connect to Seneca St
- C5 General–improve street connectivity in downtown
- C6 Create a public road between Boones Ferry Rd and SW 90th Ave

Bicycle/Pedestrian-Focused Ideas

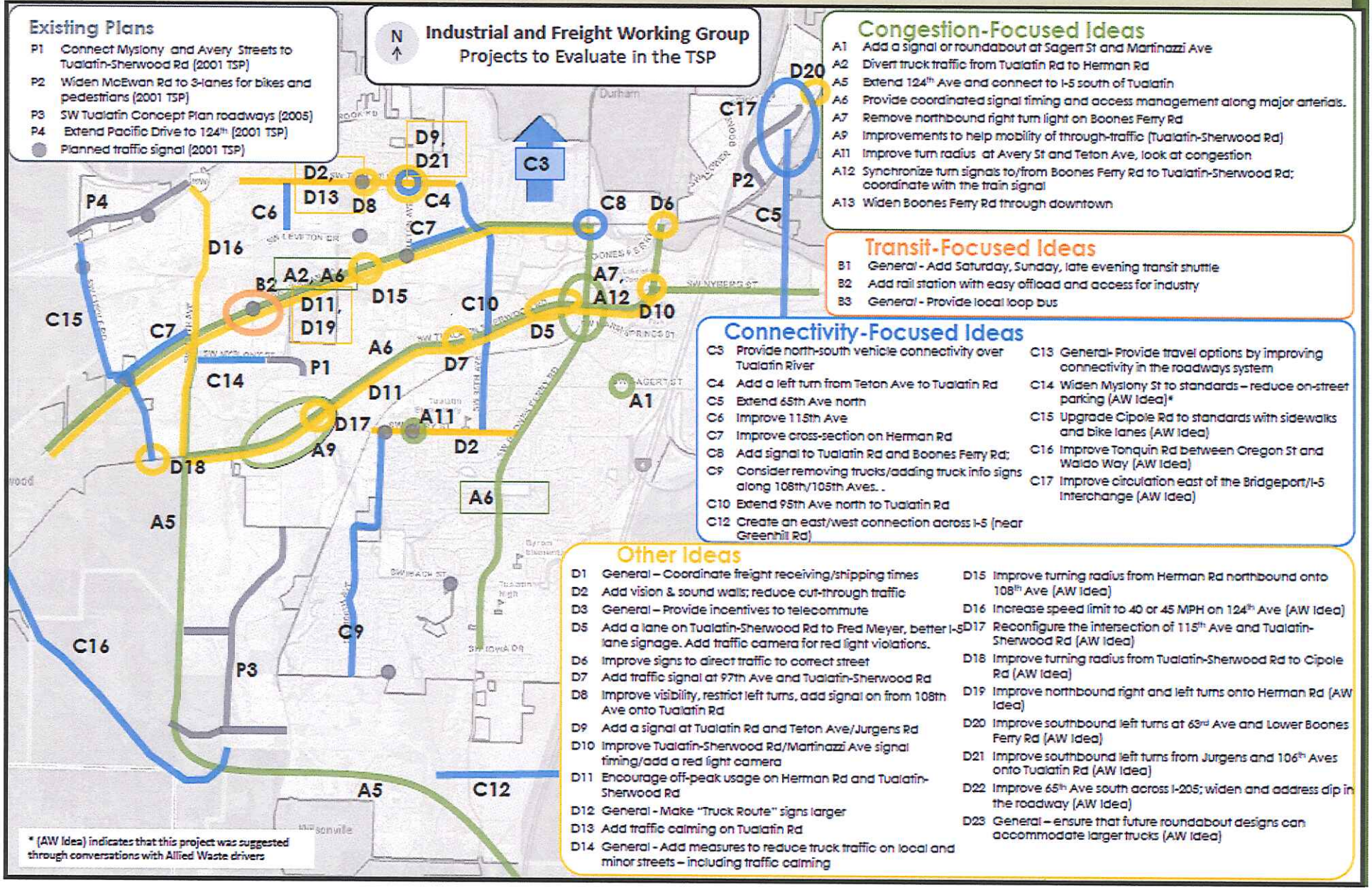
- D1 Redesign pedestrian crossing, consider flashing lights
- D2 Upgrade Nyberg interchange to improve the crossing experience for bicyclists
- D3 Optimize intersections to reduce conflicts between cars and pedestrians (Tualatin-Sherwood Rd & Martinazzi Ave and Boones Ferry Rd)
- D4 Add pedestrian crossings along Boones Ferry Rd
- D6 Improve sidewalks and bicycle lanes Boones Ferry Rd
- D7 Improve bicycle and pedestrian facilities near Bridgeport Village
- D8 Provide signage and/or other visual cues to motorists to accommodate bicycles on Boones Ferry Rd
- D9 Add bicycle lane or "Share the Road" signs on Martinazzi Ave
- D10 General – coordinate traffic signal timing to accommodate pedestrians in downtown
- D11 Focused pedestrian crossing on Boones Ferry Road at Tonka

Land Use-Focused Ideas

- F1 Encourage better circulation for all modes and a transit-oriented focus when these major land uses redevelop
- F2 Look for opportunities to improve connections from downtown to the riverfront
- F3 General – Eliminate parking minimum development requirements and consider parking maximums in downtown
- F4 General – add structured parking in the downtown core

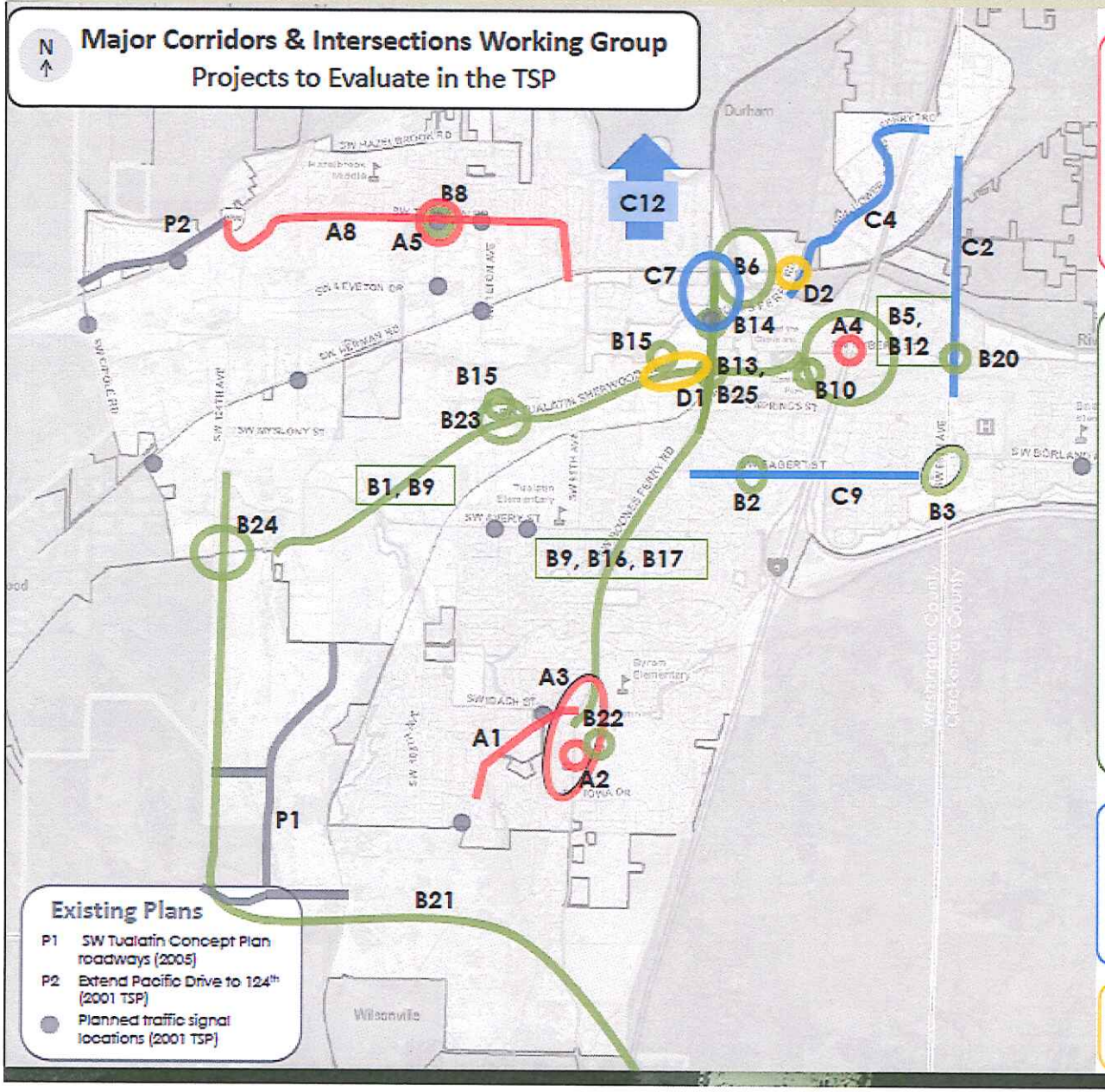
Industrial and Freight

Industrial and Freight



Major Corridors and Intersections

Major Corridors and Intersections



Safety-Focused Ideas

- A1 Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd
- A2 Add traffic signal at Tualatin High School
- A3 Consistent speed zones for both Tualatin High School & Byrom Elementary School
- A4 Improve the sight distance at the I-5-Nyberg Rd interchange
- A5 Add traffic signal on Tualatin Rd at 108th Ave
- A6 General – consistent use of yellow turn signals on all traffic signals
- A8 Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd. Make residential access easier.

Congestion-Focused Ideas

- B1 Widen Tualatin-Sherwood Rd
- B2 Signal or roundabout at Sagert St and Martinazzi Ave
- B3 Realign Sagert St/Borland Rd intersection
- B5 Restrict right turn on red at Nyberg Interchange
- B6 Rethink access in vicinity of Tualatin Community Park
- B8 Prohibit left turns out of 108th Ave or remove trees in the southwest corner
- B9 Coordinate signal timing on Boones Ferry Rd and Tualatin-Sherwood Rd; widen Boones Ferry Rd
- B10 Redesign the intersection at the Fred Meyer (from Nyberg Rd)
- B12 Make two right turn lanes from I-5 north onto Nyberg Rd
- B13 Extend the northbound left turn lane and create a southbound right turn lane on Boones Ferry Rd at Tualatin-Sherwood Rd to reduce backup from WES train; add red light cameras
- B14 Reconfigure Boones Ferry Rd at Tualatin Rd
- B15 Add a 4-way stop by 90th Ave at Kaiser
- B16 Add bus pullouts on Boones Ferry Rd
- B17 Widen Boones Ferry Rd
- B20 Roundabout or signal intersection at Nyberg Rd/65th Ave; keep Nyberg Rd 2 lanes
- B21 Extend 124th Ave and connect to I-5 and Tonquin Rd
- B22 Address congestion caused by high school
- B23 Add a dedicated right turn lane on Teton Ave at Tualatin-Sherwood Rd
- B24 Add right turn lane on Tualatin-Sherwood Rd at 124th Ave

Connectivity-Focused Ideas

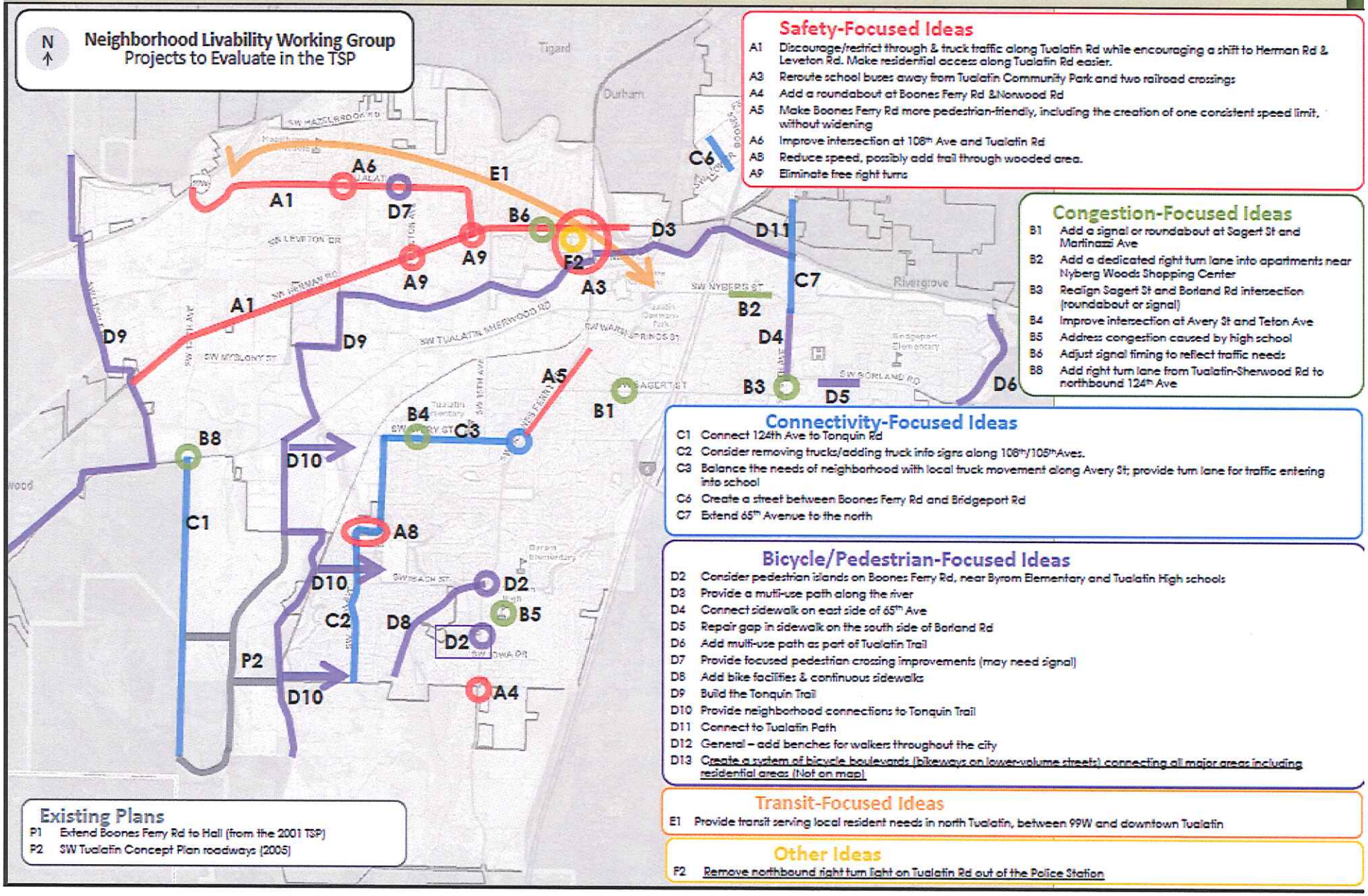
- C2 Extend 65th Ave north
- C4 Improve traffic flow on Lower Boones Ferry Rd near Bridgeport Village into downtown Tualatin
- C7 Revise connection between Tualatin Rd and Boones Ferry Rd near the railroad tracks
- C9 Widen Sagert to 2 lanes in each direction
- C12 Provide north-south connectivity over Tualatin River for vehicles

Other Ideas

- D1 Add lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Install traffic camera for signal violations.
- D2 Better signs needed to direct traffic to correct street

Neighborhood Livability

Neighborhood Livability



Safety-Focused Ideas

- A1 Discourage/restrict through & truck traffic along Tualatin Rd while encouraging a shift to Herman Rd & Leveton Rd. Make residential access along Tualatin Rd easier.
- A3 Reroute school buses away from Tualatin Community Park and two railroad crossings
- A4 Add a roundabout at Boones Ferry Rd &Norwood Rd
- A5 Make Boones Ferry Rd more pedestrian-friendly, including the creation of one consistent speed limit, without widening
- A6 Improve intersection at 108th Ave and Tualatin Rd
- A8 Reduce speed, possibly add trail through wooded area.
- A9 Eliminate free right turns

Congestion-Focused Ideas

- B1 Add a signal or roundabout at Sagert St and Martinazzi Ave
- B2 Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center
- B3 Realign Sagert St and Borland Rd intersection (roundabout or signal)
- B4 Improve intersection at Avery St and Teton Ave
- B5 Address congestion caused by high school
- B6 Adjust signal timing to reflect traffic needs
- B8 Add right turn lane from Tualatin-Sherwood Rd to northbound 124th Ave

Connectivity-Focused Ideas

- C1 Connect 124th Ave to Tonquin Rd
- C2 Consider removing trucks/adding truck info signs along 108th/105thAves.
- C3 Balance the needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school
- C6 Create a street between Boones Ferry Rd and Bridgeport Rd
- C7 Extend 65th Avenue to the north

Bicycle/Pedestrian-Focused Ideas

- D2 Consider pedestrian islands on Boones Ferry Rd, near Byrom Elementary and Tualatin High schools
- D3 Provide a multi-use path along the river
- D4 Connect sidewalk on east side of 65th Ave
- D5 Repair gap in sidewalk on the south side of Borland Rd
- D6 Add multi-use path as part of Tualatin Trail
- D7 Provide focused pedestrian crossing improvements (may need signal)
- D8 Add bike facilities & continuous sidewalks
- D9 Build the Tonquin Trail
- D10 Provide neighborhood connections to Tonquin Trail
- D11 Connect to Tualatin Path
- D12 General – add benches for walkers throughout the city
- D13 Create a system of bicycle boulevards (bikeways on lower-volume streets) connecting all major areas including residential areas (Not on map)

Transit-Focused Ideas

- E1 Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin

Other Ideas

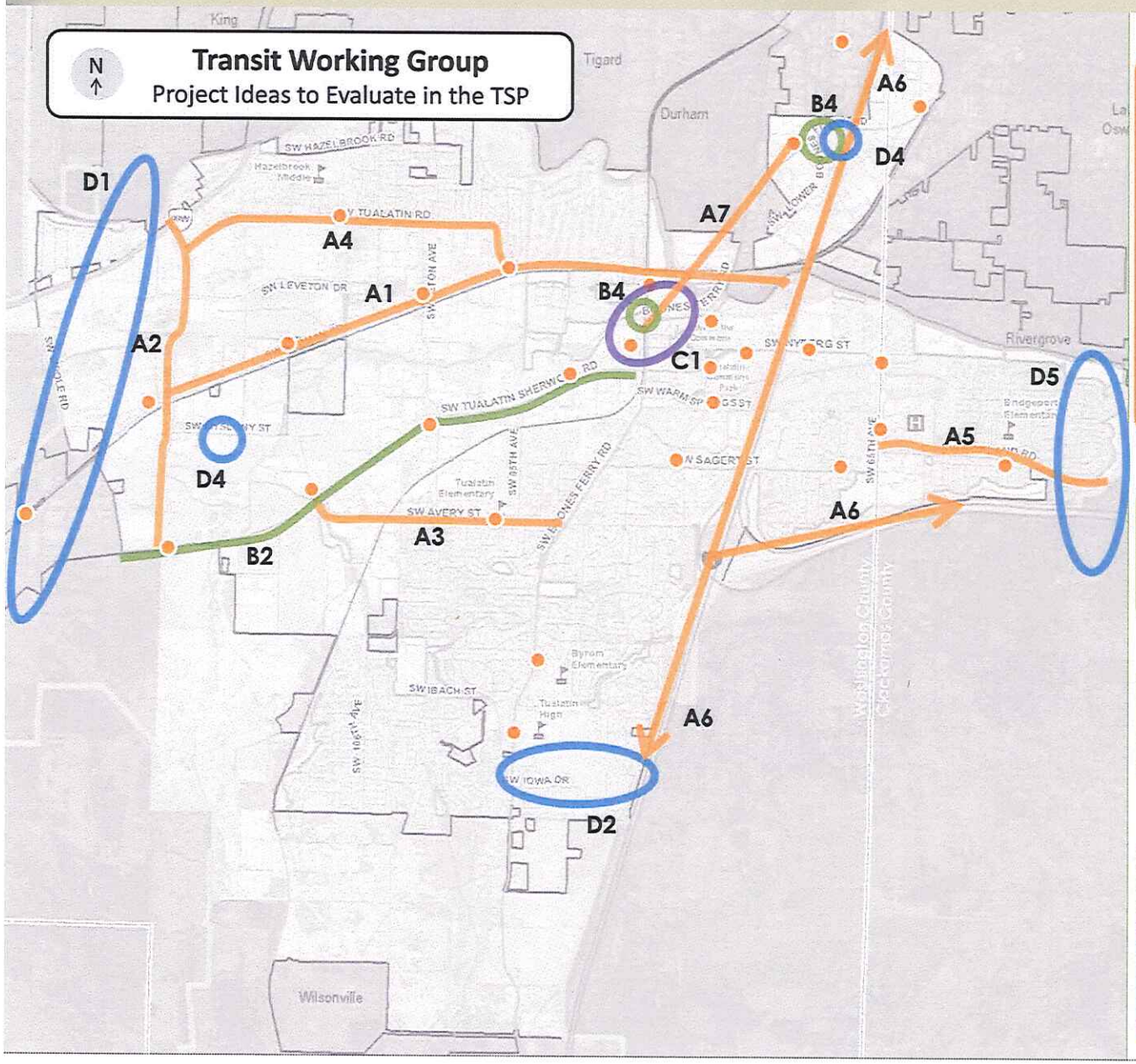
- F2 Remove northbound right turn light on Tualatin Rd out of the Police Station

Existing Plans

- P1 Extend Boones Ferry Rd to Hall (from the 2001 TSP)
- P2 SW Tualatin Concept Plan roadways (2005)

Transit

Transit - Projects to Evaluate



Bus Service-Focused Ideas

- A1 Provide bus transit service on Herman Road
- A2 Provide bus transit service on 124th Street
- A3 Provide bus transit service on Avery Street
- A4 Provide bus transit service on Tualatin Road between downtown and 99W
- A5 Extend bus service to east Tualatin
- A6 Improve bus service between Tualatin and Salem
- A7 Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
- A8 Provide a loop bus route around the city*
- A10 Expand existing on-call shuttle and charge fares*
- A12 General – need extended service hours for all transit*
- A13 General – use more energy efficient buses*
- A14 Coordinate bus schedules with WES schedule*
- A16 Add stops on higher-volume routes*

● Potential bus stop locations connecting major employers and activity centers

*not shown on map

Rail Service-Focused Ideas

- B2 Provide rail or high capacity bus transit service on Tualatin-Sherwood Road (towards Sherwood)
- B4 Build elevated pedestrian bridge to connect park-and-ride with shopping at Bridgeport Village
- B10 General – Add more spaces for bicycles on WES trains*

Land Use-Focused Ideas

- C1 Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Park-and-Ride-Focused Ideas

- D1 Look for potential park-and-ride locations in west Tualatin
- D2 Look for potential park-and-ride locations in south Tualatin
- D3 Add parking capacity at Tualatin Park-and-Ride (near Bridgeport Village)
- D4 Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots
- D5 Add a park-and-ride location in east Tualatin

In Summary

- Preliminary review of evaluation results (tonight)
- Discussion of evaluation results (3rd round of working group meetings, early June)
- 3rd Round of Working Group meetings will also develop preliminary recommendations
  - What projects make sense, include in TSP?
  - What projects *don't* make sense, don't include in TSP?
  - What projects need additional analysis before we decide
- Preliminary recommendations discussion with Task Force (June 21st)
- Online open house on preliminary recommendations (July and August)

Third Round of Working Group Meetings

No.	Working Group	Date
1.	Downtown	June 4
2.	Transit	June 5
3.	Bicycle and Pedestrian	June 6
4.	Industrial and Freight	June 13 (lunchtime)
5.	Neighborhood Livability	June 13 (evening)
6.	Major Corridors	June 14

Next Steps

STEP 1
Identify Needs and Opportunities

- Develop Goals and Objectives
- Survey Existing Conditions
- Forecast Future Conditions

** Public Involvement Activities Included*

STEP 2
Develop and Evaluate Solutions

Our June Meeting will Focus on Preliminary Recommendations

- Create a Long List of Potential Solutions
- Screen/Evaluate How Ideas Help Meet Goals and Objectives

** Public Involvement Activities Included*

STEP 3
Make Recommendations

- Prepare Draft Project Recommendations
- Refine Project Recommendations
- Prioritize Project Recommendations

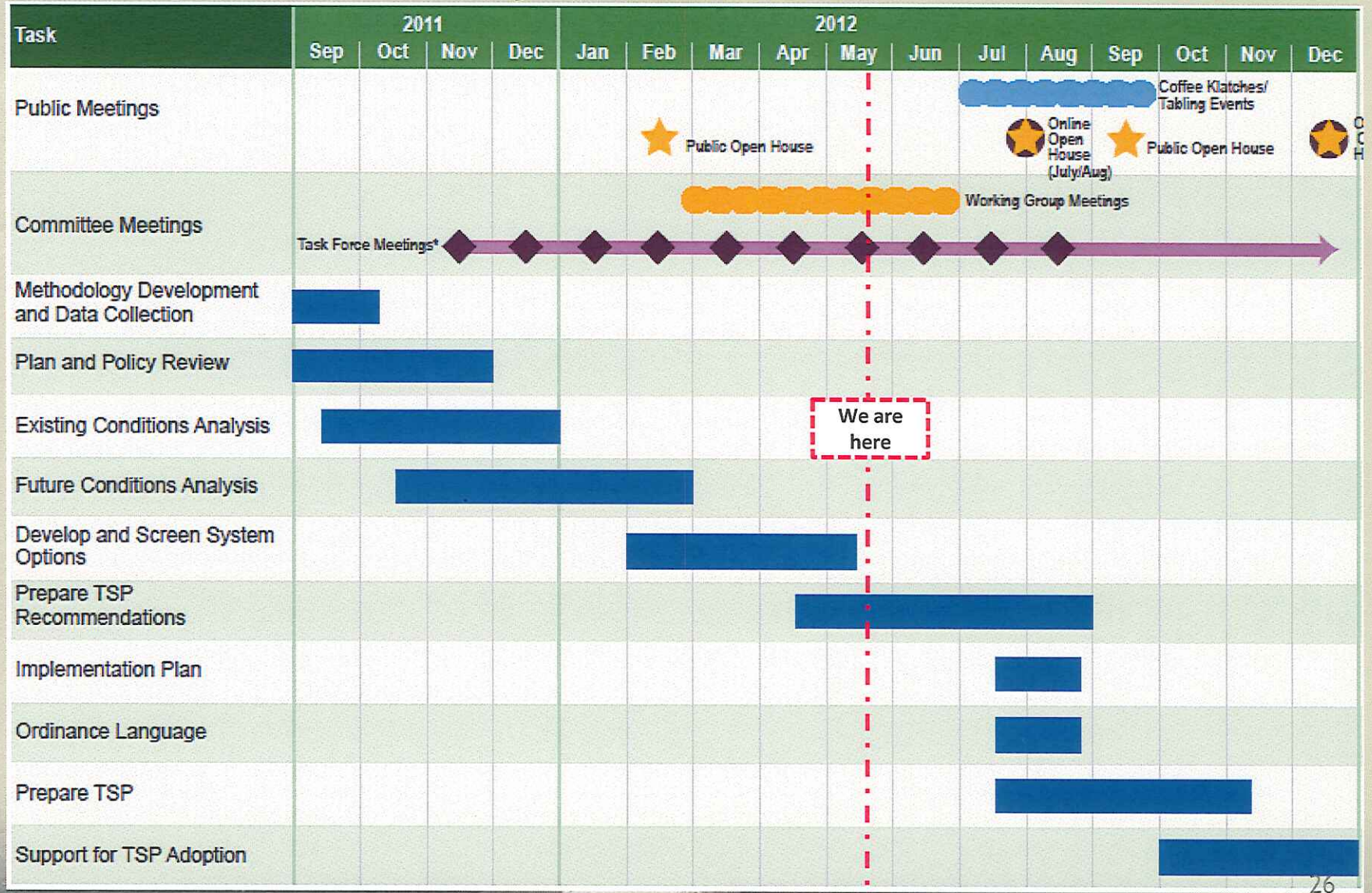
** Public Involvement Activities Included*

STEP 4
Create and Adopt the Plan

- Develop a Draft TSP
- Adopt the Final TSP

** Public Involvement Activities Included*

Transportation System Plan Timeline



Thank You

Tualatin TSP Goals and Objectives

As accepted by the Transportation Task Force at its February 2, 2012 meeting

With suggestions at and following Open House

Goal Category	Goal	Objective
Access and Mobility	Maintain and enhance the transportation system to reduce travel times, provide travel time reliability, provide a functional and smooth transportation system, and promote access for all users.	Improve travel time reliability/ provide travel information for all modes including freight and transit
		Provide efficient and quick travel between point A and B
		Provide connectivity within the City between popular destinations and residential areas
		Accommodate future traffic, bicycle, pedestrian, and transit demand
		Reduce trip length and potential travel times for motor vehicles, freight, transit, bicycles, and walking
		Improve comfort and convenience of travel for all modes including bicycles, pedestrians, and transit users
		Increase access to key destinations for all modes
Safety	Improve safety for all users, all modes, all ages, and all abilities within the City of Tualatin.	Address known safety locations, including high crash locations for motor vehicles, bicycles, and pedestrians
		Address geometric deficiencies that could affect safety including intersection design, location and existence of facilities, and street design
		Ensure emergency vehicles are able to provide services throughout the City to support a safe community
		Provide a secure transportation system for all modes
Vibrant Community	Allow for a variety of alternative transportation choices for citizens of and visitors to Tualatin to support a high quality of life and the livability of the community. Produce a plan which respects and preserves neighborhood values and identity.	Create a variety of safe options for transportation needs including bicycling, pedestrians, transit, freight, and motor vehicles
		Provide complete streets that include universal access through pedestrian facilities, bicycle facilities and transit on some streets
		Support a livable community with family-friendly neighborhoods
		Maintain a small town feel
Equity	Consider the distribution of benefits and impacts from potential transportation options, and work towards fair access to transportation facilities for all users, all ages, and all abilities.	Promote a fair distribution of benefits and burdens on different populations within the City (i.e. low-income, transit dependant, minority, age groups) and different neighborhoods and employment areas within the City
		Consider access to transit for all users

Goal Category	Goal	Objective
Economy	Support local employment, local businesses and a prosperous community while recognizing Tualatin's role in the regional economy	Support a vibrant City Center and community, accessible to all modes of transportation
		Support employment centers by providing transportation options to major employers
		Increase access to employment and commercial centers on foot, bike, or transit
		Consider positive and negative effects of alternatives on adjacent residential and business areas
		Accommodate freight movement
		Facilitate efficient access for goods, employees, and customers to and from commercial and industrial lands, including access to the regional transportation network.
Health/Environment	Provide active transportation options to improve the health of citizens in Tualatin. Ensure transportation does not adversely impact public health or the environment.	Provide active transportation options to area schools to reduce childhood obesity
		Promote active transportation modes to support a healthy public and children of all ages
		Provide interconnected networks for bicyclists and pedestrians throughout the City for all age groups
		Consider air quality effects of potential transportation solutions
		Protect park land and create an environmentally sustainable community
		Consider positive and negative effects of potential solutions on the natural environment (including wetlands and habitat areas)
Ability to be Implemented	Promote potential options that are able to be implemented because they have community and political support and are likely to be funded.	Promote fiscal responsibility and ensure that potential transportation system options are able to be funded given existing and anticipated future funding sources
		Evaluate for consistency with existing community, regional, and state goals and policies
		Strive for broad community and political support
		Optimize benefits over the life-cycle of the potential option
		Consider transportation options that make best use of the existing network
		Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood

Bicycle and Pedestrian Preliminary Project Evaluation

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Safety	A1	Add pedestrian crossing treatments at key locations on Tualatin-Sherwood and Nyberg	◒	●	●	◒	◒	●	◒
	A2	Multi-use path on 65th Ave between Borland and Nyberg	●	◒	●	●	◒	●	◒
	A3	Improve visibility and safety near schools at crosswalks	◒	●	◒	○	◒	◒	◒
	A4	Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd	○	●	○	○	◒	◒	◒
	A6	Provide wayfinding for Safe Routes to School	◒	◒	◒	◒	◒	○	◒
Facility	B1	Add bike box on Boones Ferry Rd near the Sweek House	○	◒	◒	○	◒	○	●
	B2	Add sidewalks and bicycle lanes on Norwood Rd	◒	●	◒	◒	●	◒	◒
	B3	Improve Tualatin-Sherwood Rd for bicyclists and pedestrians	◒	◒	N/A	◒	●	●	○
	B4	Add bicycle facilities near the hospital, 95th and Martinazzi	◒	●	●	◒	●	◒	◒
	B5	Improve bicycle facility treatments in downtown core	◒	●	●	●	●	●	◒
	B6	Better accommodate pedestrians on the bridges	●	◒	◒	◒	●	●	○
	B7	Build a raised intersection at Seneca and Nyberg	○	○	◒	○	◒	◒	○
	B8	Fill sidewalk gaps on Grahams Ferry, Boones Ferry, and Herman	●	●	●	N/A	●	◒	◒

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Facility, cont.	B9	Add bicycle and pedestrian facilities on 105th Ave, Blake St, and 108th Ave	◒	●	◒	◒	●	◒	◒
	B10	Connect Tonquin trail with neighborhoods	●	◒	◒	●	●	●	◒
	B11	Add dedicated bike lane through Avery and Boones Ferry intersection	◒	◒	N/A	N/A	◒	◒	◒
	B13	Improve bicycle and pedestrian treatments at railroad crossings	◒	●	N/A	N/A	●	◒	○
	B14	Improve pedestrian crossing along Boones Ferry Rd	◒	◒	●	●	◒	N/A	●
	B15	Add bicycle lanes on Boones Ferry Rd to Day Rd	◒	●	●	N/A	●	●	◒
	B16	Add I-5 multi-use crossing – connect to planned and existing multi-use paths	●	○	●	●	◒	◒	◒
	B17	Create a bike path to Old Town Sherwood as this area develops	●	●	◒	◒	◒	●	○
	B18	Add a grade-separated crossing over 99W	◒	●	○	○	◒	○	○
	B19	Add bike detection loops at major intersections	◒	N/A	◒	N/A	◒	◒	●
	B20	Add benches for walkers throughout the city	N/A	N/A	●	N/A	●	●	●
	B21	Allow wider sidewalks for strolling and outdoor cafes	N/A	◒	●	●	◒	N/A	◒
Trail	C2	Build pedestrian and bicycle bridges over the Tualatin River	◒	●	●	◒	●	◒	○
	C4	Create a bicycle boulevard system connecting major areas	◒	●	◒	◒	●	●	◒
	C5	Build the Tonquin Trail	●	●	●	●	●	●	●

Downtown Preliminary Project Evaluation

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Safety	A1	Upgrade bridge surface and improve illumination along path in back of Haggens	▬	●	●	▬	●	▬	▬
	A2	Consider raised intersections on Martinazzi for pedestrian safety	○	▬	●	○	▬	●	▬
	A4	Reduce speeds near Bridgeport Village	○	●	○	○	▬	N/A	○
	A5a	Redesign Fred Meyer / Kmart intersection	▬	●	▬	●	▬	▬	▬
	A5b	Improve pedestrian crossing at Fred Meyer/Kmart intersection	●	●	▬	▬	▬	▬	▬
	A6	Add roundabout at Boones Ferry and Lower Boones Ferry Road	▬	○	○	▬	▬	▬	○
	A7	Add pedestrian island on Martinazzi Ave north of Seneca	○	▬	○	●	▬	▬	●
Congestion	B1	Improve circulation into and out of the Tualatin Community Park	●	▬	▬	●	●	●	▬
	B3	Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi to I-5	●	▬	○	●	○	▬	▬
	B7	Replace/widen Boones Ferry Road bridge over Tualatin River	●	●	▬	●	▬	●	▬
	B9	Widen Boones Ferry Rd	●	▬	▬	▬	○	▬	○
	B10	Widen Tualatin-Sherwood Rd through downtown	▬	▬	○	●	○	●	○
Connectivity	C1	Build a trail from Boones Ferry to downtown core along river and extend to the greenway	●	▬	▬	▬	●	▬	▬
	C2	Provide north-south connectivity over Tualatin River for vehicles	●	▬	▬	●	▬	▬	○
	C4	Create a grid system near the Kmart upon redevelopment with a connection to Seneca	●	▬	●	▬	●	▬	▬
	C5	Improve downtown core street connectivity	●	▬	●	○	●	▬	○

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
	C6	Create road connections between Boones Ferry Rd and SW 90th Ave	▬	○	N/A	▬	○	▬	○
Bicycle/Pedestrian	D1	Redesign pedestrian crossings, consider flashing lights in the downtown core	○	●	▬	○	▬	▬	▬
	D2	Upgrade Nyberg interchange to improve the crossing experience for bicyclists	●	●	▬	○	▬	▬	○
	D3	Optimize intersections to reduce car/pedestrian conflicts along Boones Ferry and Tualatin Sherwood Roads	▬	●	▬	○	▬	▬	▬
	D4	Add pedestrian crossing at the WES stop (Seneca)	○	○	▬	○	▬	▬	○
	D6	Improve sidewalks and bicycle lane at Boones Ferry to Lower Boones Ferry.	●	●	▬	▬	●	▬	▬
	D7	Bike and pedestrian treatments near Bridgeport Village	▬	▬	▬	▬	▬	○	▬
	D8	Provide signage and/or other visual cues to motorists to accommodate bicycles	▬	▬	▬	▬	●	▬	▬
	D9	Add bicycle lane or "Share the Road" signs	▬	▬	▬	▬	●	▬	▬
	D10	Coordinate traffic signal timing to accommodate pedestrians.	○	N/A	●	○	○	▬	○
	D11	Add focused pedestrian crossing over Boones Ferry Road at Tonka	○	▬	▬	○	▬	▬	○
Land Use	F1	Encourage better multimodal circulation and transit-oriented redevelopment for major downtown uses	●	▬	●	▬	●	▬	▬
	F2	Look for opportunities to open downtown's connection to the riverfront	●	▬	●	▬	●	▬	▬
	F3	Eliminate parking minimums, consider parking maximums	N/A	▬	○	○	N/A	N/A	○
	F4	Add structured parking in downtown core	▬	N/'A	○	N/A	N/A	N/A	▬

Industrial and Freight Preliminary Project Evaluation

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Congestion	A1	Add a signal or roundabout at Sagert/ Martinazzi	●	▬	▬	●	▬	○	▬
	A2	Divert truck traffic from Tualatin Road to Herman Road	●	N/A	▬	▬	▬	▬	▬
	A5	Extend 124th Ave south	●	▬	▬	●	▬	●	▬
	A6	Provide coordinated signal timing and access management along major arterials	●	●	▬	▬	N/A	N/A	▬
	A7	Remove NB right turn light on Boones Ferry Road	▬	○	▬	▬	N/A	N/A	▬
	A9	Improvements to help mobility of through-traffic on Tualatin-Sherwood Rd	●	▬	▬	●	○	●	▬
	A11	Address congestion on Avery and Teton	●	●	N/A	▬	N/A	N/A	▬
	A12	Synchronize turn signals to/from Boones Ferry to Tualatin-Sherwood; coordinate with the train signal	●	N/A	▬	▬	N/A	N/A	▬
	A13	Widen Boones Ferry Rd through downtown	●	▬	▬	▬	○	▬	○
Transit	B1	Expand service hours of chamber shuttle to nights and weekends	●	●	▬	●	▬	○	○
	B2	Add rail station with easy offload and access for industry in the west part of town	●	N/A	●	▬	●	●	▬
	B3	Provide local loop bus	▬	N/A	▬	▬	▬	●	▬
Connectivity	C3	Provide north-south vehicle connectivity over Tualatin River	●	▬	▬	●	▬	▬	○
	C4	Add a left turn from Teton Ave to Tualatin Rd	N/A	N/A	N/A	N/A	N/A	N/A	○
	C5	Extend 65th Ave north	●	●	▬	●	▬	▬	○

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Connectivity, Cont.	C6	Improve 115th Ave	●	▬	○	▬	▬	▬	▬
	C7	Improve cross-section on Herman Rd	●	●	○	●	●	▬	▬
	C8	Add signal to Tualatin and Boones Ferry intersection	●	●	N/A	▬	○	▬	○
	C9	Consider removing trucks/adding truck info signs along 108th/105th Aves	○	N/A	●	○	●	○	▬
	C10	Extend 95th Ave north to Tualatin Rd	●	▬	○	▬	○	○	○
	C12	Create an east/west connection across I-5 (near Greenhill Rd)	●	●	▬	▬	▬	▬	▬
	C13	Provide travel options by improving connectivity in the roadway system	▬	●	●	▬	▬	▬	▬
	C14	Widen Myslony St to standards - reduce on-street parking	▬	●	N/A	▬	N/A	▬	▬
	C15	Upgrade Cipole Rd to standards with sidewalks and bike lanes	▬	▬	●	●	▬	▬	▬
	C16	Improve Tonquin Rd between Oregon St and Waldo Way	▬	▬	N/A	▬	N/A	▬	▬
	C17	Improve circulation east of the Bridgeport/I-5 Interchange	▬	▬	▬	▬	▬	▬	▬
Other	D1	Coordinate freight receiving/ shipping times	●	●	●	▬	N/A	N/A	▬
	D2	Add vision and sound walls; reduce cut-through traffic	○	○	●	○	○	○	○
	D3	Provide incentives to telecommute	▬	▬	N/A	▬	▬	▬	▬
	D5	Add lane on Tualatin-Sherwood to Fred Meyer, better I-5 lane signage, add red light camera	●	▬	○	●	▬	N/A	▬
	D6	Improve signs to direct traffic to correct street	▬	N/A	N/A	N/A	N/A	N/A	○
	D7	Add traffic signal at 97th Ave and Tualatin-Sherwood Rd	▬	▬	▬	▬	▬	N/A	▬

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Other, Cont.	D8	Improve visibility, add signal restrict left turns from 108th onto Tualatin	▬	▬	▬	○	▬	▬	▬
	D9	Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd	▬	N/A	▬	▬	▬	▬	▬
	D10	Improve Tualatin-Sherwood and Martinazzi signal timing	▬	N/A	N/A	▬	N/A	N/A	▬
	D11	Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd	▬	N/A	N/A	▬	●	N/A	▬
	D12	Make "Truck Route" signs larger	N/A	N/A	▬	▬	N/A	N/A	▬
	D13	Add traffic calming on Tualatin Road	○	○	●	○	▬	●	▬
	D14	Add measures to reduce truck traffic on local and minor streets	○	●	●	○	▬	●	▬
	D15	Improve turning radius from Herman Rd northbound onto 108th Ave	▬	▬	N/A	▬	N/A	N/A	▬
	D16	Increase speed limit to 40 or 45 MPH on 124th Ave	▬	N/A	N/A	▬	N/A	N/A	▬
	D17	Reconfigure the intersection of 115th and Tualatin-Sherwood	▬	▬	N/A	▬	N/A	N/A	▬
	D18	Improve turning radius from Tualatin-Sherwood to Cipole	▬	▬	N/A	▬	N/A	N/A	▬
	D19	Improve NB right and left turns onto Herman	▬	▬	N/A	●	N/A	N/A	▬
	D20	Improve southbound left turns at 63rd and Lower Boones Ferry	▬	▬	N/A	▬	N/A	N/A	▬
	D21	Improve SB left turns from Jurgens and 106th onto Tualatin	▬	▬	N/A	▬	N/A	N/A	▬
	D22	Improve 65th Ave south across I-205; widen and address dip in the roadway	▬	▬	N/A	▬	N/A	N/A	▬
	D23	Ensure that future roundabout designs can accommodate larger trucks	▬	●	N/A	▬	N/A	N/A	▬

This page left blank intentionally.

PRELIMINARY

Major Corridors and Intersections Preliminary Project Evaluation

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Safety	A1	Reduce speeds, add guardrail and shoulders to section of Grahams Ferry	▬	●	●	N/A	▬	▬	▬
	A2	Add traffic signal at Tualatin HS	▬	▬	▬	N/A	▬	○	○
	A3	Consistent speed zones for Tualatin HS and Byrom Elementary	N/A	●	N/A	N/A	N/A	N/A	●
	A4	Improve sight distance at I-5 and Nyberg Rd interchange	N/A	●	N/A	▬	▬	▬	▬
	A5	Add traffic signal on Tualatin Rd at 108th	▬	▬	▬	▬	▬	▬	▬
	A6	Consistent use of yellow turn signals at traffic signals	▬	●	N/A	▬	N/A	N/A	●
	A8	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman	●	▬	●	▬	▬	▬	○
Congestion	B1	Widen Tualatin-Sherwood Rd	●	▬	○	●	○	●	○
	B2	Signal or roundabout at Sagert and Martinazzi	●	▬	▬	●	▬	○	▬
	B3	Realign Sagert /Borland to one intersection	●	▬	○	○	○	○	○
	B5	Restrict right turn on red at Nyberg Interchange	○	●	N/A	○	▬	●	○
	B6	Rethink access in vicinity of Tualatin Community Park	▬	▬	●	N/A	▬	●	▬
	B8	Prohibit left turns out of 108th Ave or remove trees in the southwest corner	○	▬	○	▬	▬	○	▬
	B9	Coordinate signal timing on Boones Ferry	●	●	N/A	●	N/A	▬	●
	B10	Redesign Nyberg/Fred Meyer intersection and improve pedestrian crossing	▬	●	▬	●	▬	▬	▬
	B12	Make two right turn lanes from I-5 north onto Nyberg Rd	●	▬	N/A	▬	○	●	▬

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
	B13	Extend NB left turn and create SB right turn lane on Boones Ferry at Tualatin-Sherwood to reduce backup from WES train	●	◒	◒	●	◒	◒	◒
	B14	Reconfigure Boones Ferry at Tualatin	◒	◒	○	◒	○	◒	○
	B15	Add a 4-way stop by 90th Ave at Kaiser	○	◒	◒	○	◒	◒	◒
	B16	Add bus pullouts on Boones Ferry Rd	●	◒	○	◒	○	●	◒
	B17	Widen Boones Ferry at south end of City	●	◒	◒	◒	○	◒	○
	B20	Roundabout at Nyberg and 65th intersection	◒	N/A	○	○	○	○	○
	B21	Extend 124th Ave to south	●	◒	◒	●	◒	●	◒
	B22	Address congestion caused by high school	◒	◒	◒	◒	◒	○	◒
	B23	Add a dedicated right turn lane on Teton at Tualatin-Sherwood	●	◒	N/A	◒	◒	◒	●
	B24	Add right turn lane on Tualatin-Sherwood at 124th	◒	◒	N/A	◒	◒	○	◒
Connectivity	C2	Extend 65th Ave to the north	●	◒	○	●	○	◒	○
Connectivity	C4	Improve traffic flow on Lower Boones Ferry Rd between Bridgeport Village and downtown	●	●	◒	●	◒	◒	◒
Connectivity	C7	Revise connection between Tualatin and Boones Ferry near the railroad tracks	◒	◒	○	◒	○	◒	○
Connectivity	C9	Widen Sagert to 2-lanes each way	●	●	○	●	○	○	○
Connectivity	C12	Look for ways to provide north-south connectivity over Tualatin River for vehicles	●	◒	◒	◒	◒	◒	○
Other	D1	Add lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Install traffic camera for signal violations.	●	●	○	●	○	◒	◒
Other	D2	Better signs needed to direct traffic to correct street	N/A	N/A	N/A	N/A	N/A	N/A	○

Neighborhood Livability Preliminary Project Evaluation

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Safety	A1	Discourage through and truck traffic along Tualatin while encouraging through and truck traffic along Herman	●	▬	●	▬	▬	▬	○
	A3	Reroute school buses away from Tualatin Community Park and two railroad crossings	▬	●	▬	N/A	▬	▬	▬
	A4	Add roundabout at Boones Ferry and Norwood	▬	▬	○	○	○	▬	▬
	A5	Make Boones Ferry Rd more pedestrian-friendly	▬	●	●	▬	●	○	▬
	A6	Improve intersection at 108th and Tualatin	▬	▬	▬	▬	▬	▬	▬
	A8	Reduce speed, possibly add trail through wooded area	○	▬	●	○	▬	▬	▬
	A9	Eliminate free right turns on Herman at Teton and Tualatin	○	●	●	○	▬	▬	●
Congestion	B1	Add signal or roundabout at Sagert and Martinazzi	●	▬	▬	●	▬	○	▬
	B2	Add dedicated right turn lane into apartments near Nyberg Woods Shopping Center	▬	▬	▬	○	▬	▬	▬
	B3	Realign Sagert /Borland to one intersection	●	▬	○	○	○	○	○
	B4	Improve intersection at Avery and Teton	●	●	N/A	▬	N/A	N/A	▬
	B5	Address congestion caused by HS	▬	▬	▬	▬	▬	○	▬
	B6	Adjust signal timing to give priority to Tualatin Road through traffic.	●	▬	○	▬	○	○	▬
	B8	Add right turn lane on Tualatin-Sherwood at 124th	▬	▬	N/A	▬	▬	○	▬
	C1	Extend 124th to south	●	▬	▬	●	▬	●	▬
	C2	Consider removing trucks/adding truck info signs along 108th/105th Aves	○	N/A	●	○	●	●	▬

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Connectivity	C3	Balance neighborhood needs and trucks movement along Avery; provide turn lane for traffic entering school	●	◒	◒	◒	◒	◒	◒
	C6	Create a street between Boones Ferry and Bridgeport	●	◒	○	○	○	○	○
	C7	Extend 65th to the north	●	◒	○	●	○	◒	○
Bicycle/Pedestrian	D2	Add pedestrian islands on Boones Ferry, near Byrom Elementary and Tualatin HS	○	◒	◒	○	◒	◒	◒
	D3	Provide a multi-use path along the river	●	●	●	◒	●	●	◒
	D4	Connect sidewalk on east side of 65th	●	◒	●	●	◒	●	◒
	D5	Repair gap in sidewalk on south side of Borland	●	●	●	N/A	●	◒	●
	D6	Add multi-use path as part of Tualatin Trail	●	●	●	◒	●	◒	◒
	D7	Provide focused pedestrian crossing improvements along Tualatin Road	○	●	●	○	●	◒	◒
	D8	Add bike facilities and continuous sidewalks along Graham's Ferry	●	●	◒	N/A	◒	◒	◒
	D9	Build the Tonquin Trail	●	●	●	●	●	●	●
	D10	Connect Tonquin trail with neighborhoods	●	◒	◒	●	●	●	◒
	D11	Connect to Tualatin Path	●	◒	●	N/A	◒	◒	◒
	D12	Provide benches for walkers throughout city	N/A	N/A	●	N/A	●	●	●
	D13	Create a bicycle boulevard system connecting major areas	◒	●	◒	◒	●	●	◒
Transit	E1	Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin	●	N/A	◒	◒	◒	◒	○
Other	F2	Remove NB right turn signal on Tualatin out of Police Station	○	○	N/A	N/A	N/A	N/A	◒

Transit Preliminary Project Evaluation

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Bus	A1	Provide bus transit service on Herman Road	●	N/A	●	◒	◒	●	◒
	A2	Provide bus transit service on 124th Street	●	N/A	●	◒	◒	●	◒
	A3	Provide bus transit service on Avery Street	●	N/A	●	◒	◒	●	◒
	A4	Provide bus transit service on Tualatin Road between downtown and 99W	●	N/A	●	◒	◒	●	◒
	A5	Extend bus service to east Tualatin	●	N/A	●	◒	◒	●	◒
	A6	Provide express bus service between Tualatin and Salem	●	N/A	◒	◒	◒	●	◒
	A7	Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service	●	N/A	●	●	◒	●	◒
	A8	Provide a loop bus route around the city	●	N/A	●	◒	◒	●	○
	A10	Create an on-call shuttle for industrial and manufacturing workers during the day – consider charging fares	◒	N/A	●	●	◒	●	◒
	A12	General –extend service hours for all transit	●	N/A	●	◒	◒	◒	○
	A13	General – use more energy efficient buses	N/A	N/A	N/A	N/A	●	N/A	○
	A14	Coordinate TriMet and SMART bus schedules with WES schedule	○	N/A	N/A	◒	◒	◒	◒
	A16	Add stops on higher volume bus routes	○	N/A	●	N/A	◒	◒	○
Rail	B1	Add more bicycle storage at the WES station	◒	N/A	N/A	N/A	N/A	N/A	○
	B2	Provide rail or high capacity bus transit service on Tualatin-Sherwood Road	●	N/A	◒	●	◒	●	◒

	ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented
Rail	B4	Build an elevated pedestrian bridge to connect the Tualatin park-and-ride with shopping at Bridgeport Village	◒	N/A	○	N/A	N/A	○	○
Land Use	C1	Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections	●	N/A	●	●	◒	●	◒
Park-and-Ride	D1	Look for potential park-and-ride locations in west Tualatin	◒	N/A	●	◒	●	●	◒
	D2	Look for potential park-and-ride locations in south Tualatin	◒	N/A	●	N/A	●	●	◒
	D3	Add parking capacity at Tualatin Park-and-Ride - Potential structure	◒	N/A	◒	●	○	●	◒
	D4	Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots and transfer spaces to higher utilized areas	◒	N/A	●	◒	◒	●	◒
	D5	Add a park-and-ride in east Tualatin	◒	N/A	●	N/A	●	●	◒

PRELIMINARY

TualatinTSP_TBG061511054135PDX 422992.PS.C1.HWn6/15/2011 kk

City of Tualatin

Preliminary Recommendations

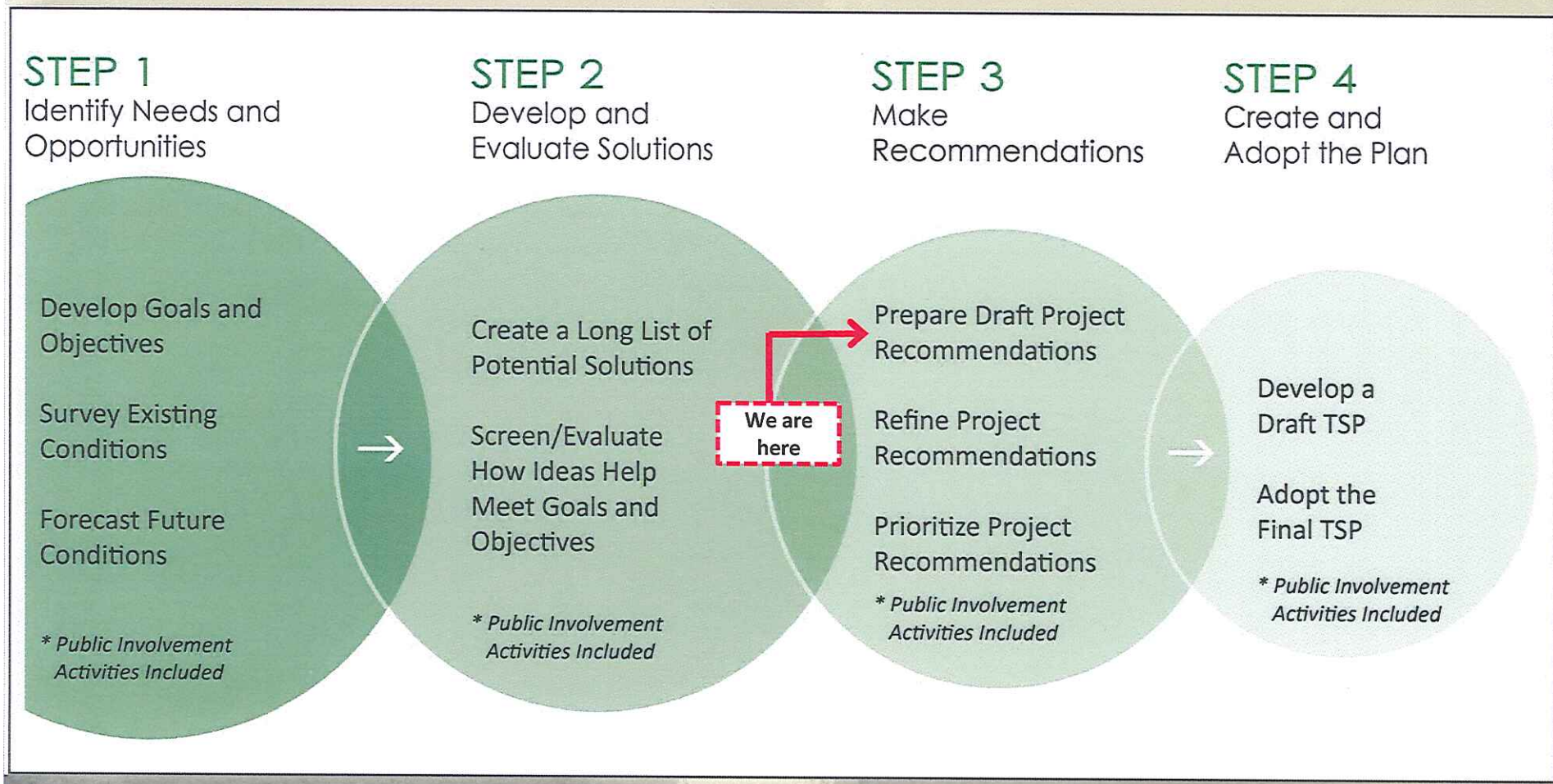
Tualatin TSP

Presentation to
Tualatin Transportation Task Force
June 21, 2012

Presentation Outline

- An Overview
- Discussion of Recommendations by Working Group Topic Area
  - Bicycle and Pedestrian
  - Downtown
  - Industrial and Freight
  - Major Corridors and Intersections
  - Neighborhood Livability
  - Transit
- Next Steps

Where We Are In the TSP Process



Progress Since our May 24th Meeting…

1. Discussed project evaluations with
   - ✓ Planning Commission
   - ✓ TPARK
   - ✓ Working Groups
2. Refined evaluations based on feedback
3. Prepared preliminary recommendations

Working Group Meetings, Round 3

No.	Working Group	Date	No. Attendees
1.	Downtown	June 4	16
2.	Transit	June 5	14
3.	Bicycle and Pedestrian	June 6	6
4.	Industrial and Freight	June 13 (lunchtime)	5
5.	Neighborhood Livability	June 13 (evening)	12
6.	Major Corridors	June 14	18

Structure of Working Group Meetings

- Present evaluation results (project by project) as a large group
- Discuss evaluation results in a small group format
- Provide feedback on recommended projects
  - ✓ Green dots = project provides greatest value to the community
  - ✓ Red dots = project should not be included in TSP

Organization of Recommendations

Description	Recommendation
What projects make sense to include in TSP?	Yes
What projects make some sense, but are not cost effective on their own?	Only with urban upgrade
What projects *don't* make sense, and shouldn't be included in TSP?	No
What projects need additional analysis before we decide	Refinement Topic Area or Needs Refinement

Your Role Tonight

1. Do you agree with these preliminary recommendations?
2. If not, why not?
3. What additional analysis does the technical team need to do?

Refinement Topic Areas

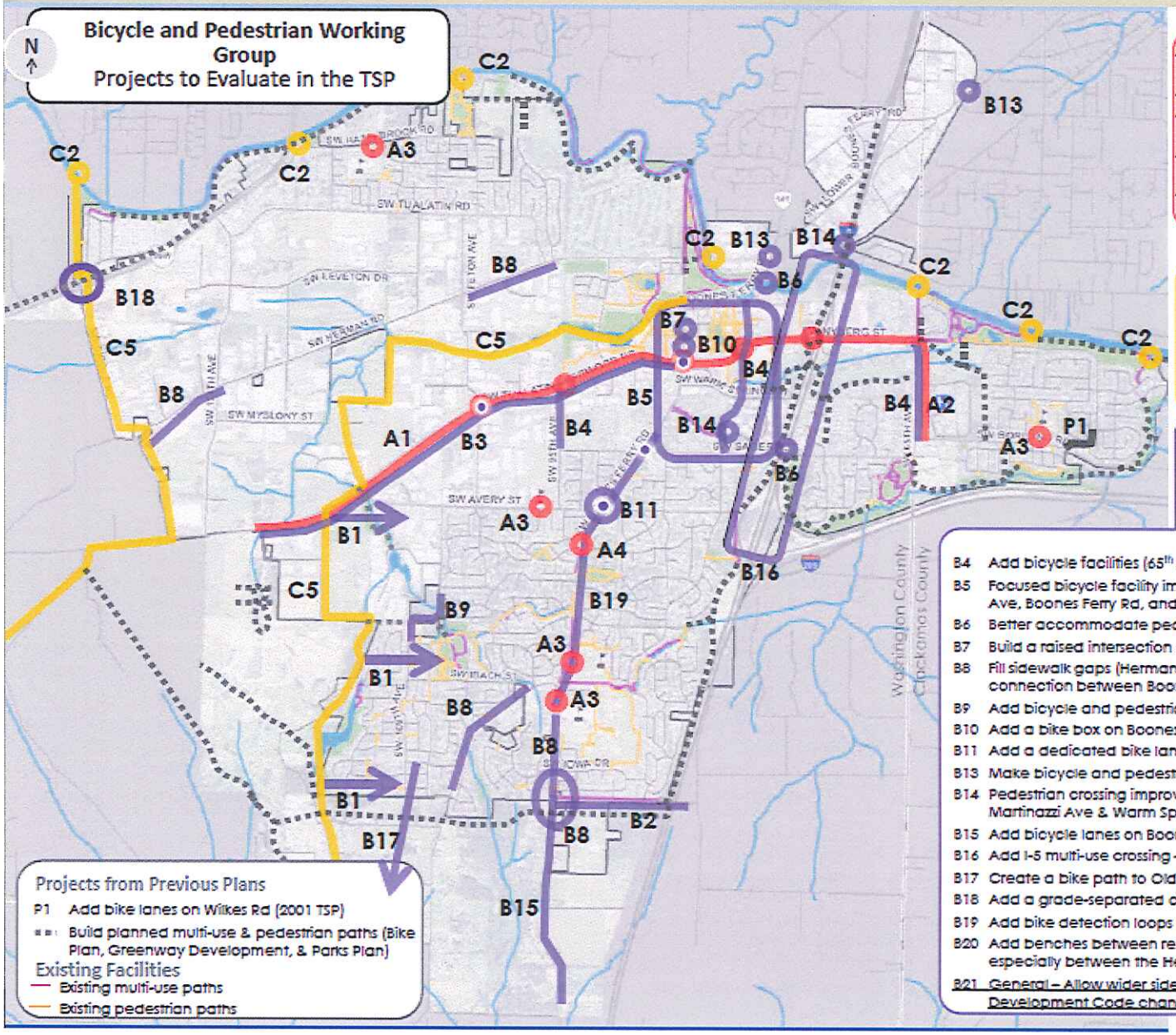
1. Tualatin-Sherwood Road Options
2. Nyberg Interchange Options
3. Boones Ferry Road Options
4. North to South Connectivity
5. Herman Road and Tualatin Road Options
6. Tualatin's Downtown Circulation

Preliminary Recommendations

By Working Group Topic Area

Bicycle/Pedestrian

Bicycle and Pedestrian



Safety-Focused Ideas

- A1 Add pedestrian-focused crossing improvements at key crossings of Tualatin-Sherwood Rd & Nyberg St
- A2 Multi-use path between Borland Rd and Nyberg Ln
- A3 Improve visibility and safety near schools at crosswalks
- A4 Improve visibility at crosswalk at Siletz Dr & Boones Ferry Rd
- A6 General – Provide wayfinding signs for Safe Routes to School

Trail-Focused Ideas

- C2 Build bridges for pedestrian and bicycle access over the Tualatin River
- C4 Create a system of bicycle boulevards (Bikeways on lower-volume streets) connecting all major areas including residential areas (Not on map)
- C5 Tonquin Trail

Facility-Focused Ideas

- B1 Connect Tonquin trail with neighborhoods
- B2 Add sidewalks & bicycle lanes on Norwood Rd
- B3 Improve Tualatin-Sherwood Rd to make it more bicycle and pedestrian friendly
- B4 Add bicycle facilities (65th Ave near the hospital, 95th Ave and Martinazzi Ave)
- B5 Focused bicycle facility improvements in heart of downtown, including Martinazzi Ave, Boones Ferry Rd, and Tualatin-Sherwood Rd
- B6 Better accommodate pedestrians on the bridges
- B7 Build a raised intersection at Seneca and Nyberg (crossing Boones Ferry Rd)
- B8 Fill sidewalk gaps (Herman Rd, Grahams Ferry Rd, Boones Ferry Rd, and the connection between Boones Ferry Rd and Norwood Rd)
- B9 Add bicycle and pedestrian facilities on 105th Ave, Blake St, 108th Ave
- B10 Add a bike box on Boones Ferry Rd near the Sweek House
- B11 Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd
- B13 Make bicycle and pedestrian facility improvements at railroad crossings
- B14 Pedestrian crossing improvements (Tualatin View Apartments, Boones Ferry Rd; Martinazzi Ave & Warm Springs St)
- B15 Add bicycle lanes on Boones Ferry Rd to Day Rd
- B16 Add I-5 multi-use crossing – connect to existing multi-use paths
- B17 Create a bike path to Old Town Sherwood as this area develops
- B18 Add a grade-separated crossing over 99W
- B19 Add bike detection loops at major intersections (indicated by●)
- B20 Add benches between residential and commercial areas throughout the city, especially between the Heritage Center and Haggens (not on map)
- B21 General – Allow wider sidewalks for strolling and outdoor cafes. (Potential Tualatin Development Code change)

Projects from Previous Plans

- P1 Add bike lanes on Wilkes Rd (2001 TSP)
- Build planned multi-use & pedestrian paths (Bike Plan, Greenway Development, & Parks Plan)

Existing Facilities

- Existing multi-use paths
- Existing pedestrian paths

Projects to Forward into the TSP

No.	Project Description
A1	Add ped crossing treatments at key locations on Tualatin-Sherwood, Nyberg
A2	Multi-use path on 65th Ave between Borland and Nyberg
A3	Improve visibility and safety near schools at crosswalks
A4	Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd
A6	Provide wayfinding for Safe Routes to School
B1	Connect Tonquin trail with neighborhoods
B8	Fill sidewalk gaps on Grahams Ferry, Boones Ferry, and Herman
B9	Add bicycle and pedestrian facilities on 15th Ave, Blake St, and 18th
B11	Add dedicated bike lane through Avery and Boones Ferry intersection
B13	Improve bicycle and pedestrian treatments at railroad crossings
B16	Add I-5 multi-use crossing – connect to planned, existing paths
B20	Add benches for walkers throughout the city
C4	Create a bicycle boulevard system connecting major areas
C5	Build the Tonquin Trail

Urban Upgrade Projects

No.	Project Description
B2	Add sidewalks and bicycle lanes on Norwood
B4	Add bicycle facilities near the hospital, 95th and Martinazzi
B6	Better accommodate pedestrians on the bridges
B15	Add bicycle lanes on Boones Ferry Rd to Day Rd

Projects NOT to Forward into the TSP

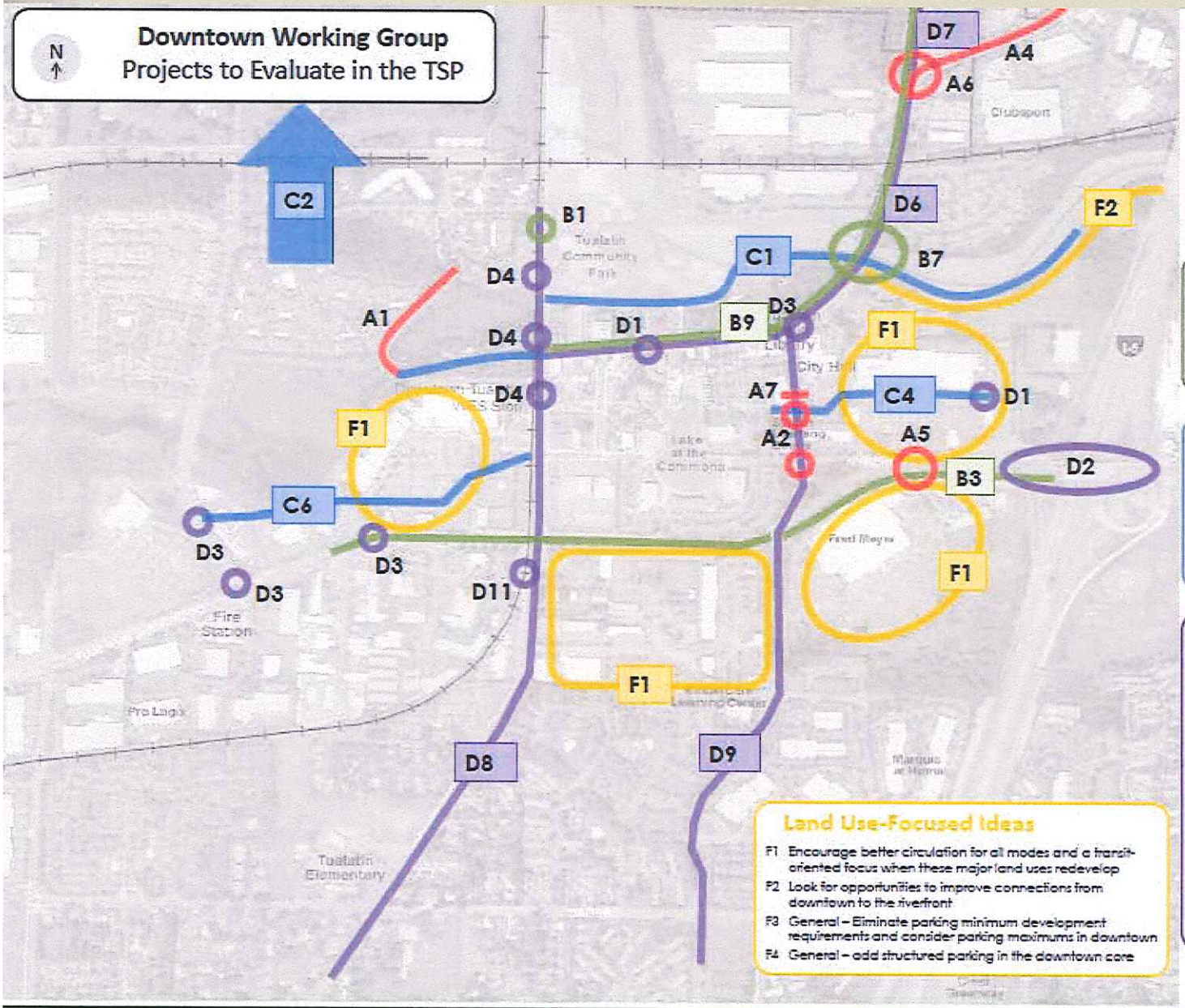
No.	Project Description
B3	Improve Tualatin-Sherwood Rd for bicyclists and pedestrians (Tonquin Trail serves as the recommendation instead)
B7	Build a raised intersection at Seneca and Nyberg
B10	Add bike box on Boones Ferry near Sweek House
B17	Create a bike path to Old Town Sherwood as this area develops
B18	Add a grade-separated crossing over 99W
B19	Add bike detection loops at major intersections

Projects for Further Refinement

No.	Project Description	Refinement Topic Area
B5	Improve bicycle facility treatments in downtown core	Connectivity in Downtown
B14	Improve pedestrian crossing along Boones Ferry Rd	Boones Ferry Road
B21	Allow wider sidewalks for strolling and outdoor cafes	Connectivity in Downtown
C2	Build pedestrian and bicycle bridges over the Tualatin River	North/South Connectivity

Downtown

Downtown



Safety-Focused Ideas

- A1 Upgrade bridge surface and improve illumination along path near Hedges Creek
- A2 Consider raised intersections for pedestrians at Seneca St and Nyberg St
- A4 Reduce speeds near Bridgeport Village
- A5 Redesign Fred Meyer & Kmart intersection – upgrade the pedestrian connection
- A6 Add a roundabout at Lower Boones Ferry Rd and Boones Ferry Rd
- A7 Add a pedestrian island on Martinazzi Ave north of Seneca St

Congestion-Focused Ideas

- B1 Improve circulation into and out of the park
- B3 Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi Ave to I-5
- B7 Replace/widen bridge on Boones Ferry Rd
- B9 Widen Boones Ferry Rd to 5 lanes
- B10 Widen Tualatin-Sherwood Rd through downtown

Connectivity-Focused Ideas

- C1 Build a trail from Boones Ferry Rd to the downtown core along the river to the Tualatin River Greenway
- C2 Look for ways to provide north-south connectivity over Tualatin River for vehicles
- C4 Create a grid system near the Kmart, connect to Seneca St
- C5 General–improve street connectivity in downtown
- C6 Create a public road between Boones Ferry Rd and SW 90th Ave

Bicycle/Pedestrian-Focused Ideas

- D1 Redesign pedestrian crossing, consider flashing lights
- D2 Upgrade Nyberg interchange to improve the crossing experience for bicyclists
- D3 Optimize intersections to reduce conflicts between cars and pedestrians (Tualatin-Sherwood Rd & Martinazzi Ave and Boones Ferry Rd)
- D4 Add pedestrian crossings along Boones Ferry Rd
- D6 Improve sidewalks and bicycle lanes Boones Ferry Rd
- D7 Improve bicycle and pedestrian facilities near Bridgeport Village
- D8 Provide signage and/or other visual cues to motorists to accommodate bicycles on Boones Ferry Rd
- D9 Add bicycle lane or "Share the Road" signs on Martinazzi Ave
- D10 General – coordinate traffic signal timing to accommodate pedestrians in downtown
- D11 Focused pedestrian crossing on Boones Ferry Road at Tonka

Land Use-Focused Ideas

- F1 Encourage better circulation for all modes and a transit-oriented focus when these major land uses redevelop
- F2 Look for opportunities to improve connections from downtown to the riverfront
- F3 General – Eliminate parking minimum development requirements and consider parking maximums in downtown
- F4 General – add structured parking in the downtown core

Projects to Forward into the TSP

No.	Project Description
A1	Upgrade bridge surface, improve illumination along path in back of Haggens
A5	Redesign Fred Meyer to Kmart intersection (including pedestrian crossing)
B1	Rethink access between Tualatin Road and Tualatin Community Park
B3	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5
B7	Replace/widen Boones Ferry Road bridge over Tualatin River
C1	Build trail along river from Boones Ferry to downtown, extend to greenway
C4	Create grid system near Kmart upon redevelopment, connect to Seneca
D2	Upgrade Nyberg interchange for bicyclist safety
D6	Improve sidewalks and bicycle lane at Boones Ferry to Lower Boones Ferry
D7	Bike and pedestrian treatments near Bridgeport Village
D8	Provide signage to accommodate bicycles on Boones Ferry
D9	Add bicycle lane on Martinazzi north of Warm Springs
F1	Encourage multimodal circulation and transit-oriented redevelopment
F2	Look for opportunities to open downtown's connection to the riverfront
F4	Add structured parking in the downtown core

Projects NOT to Forward into the TSP

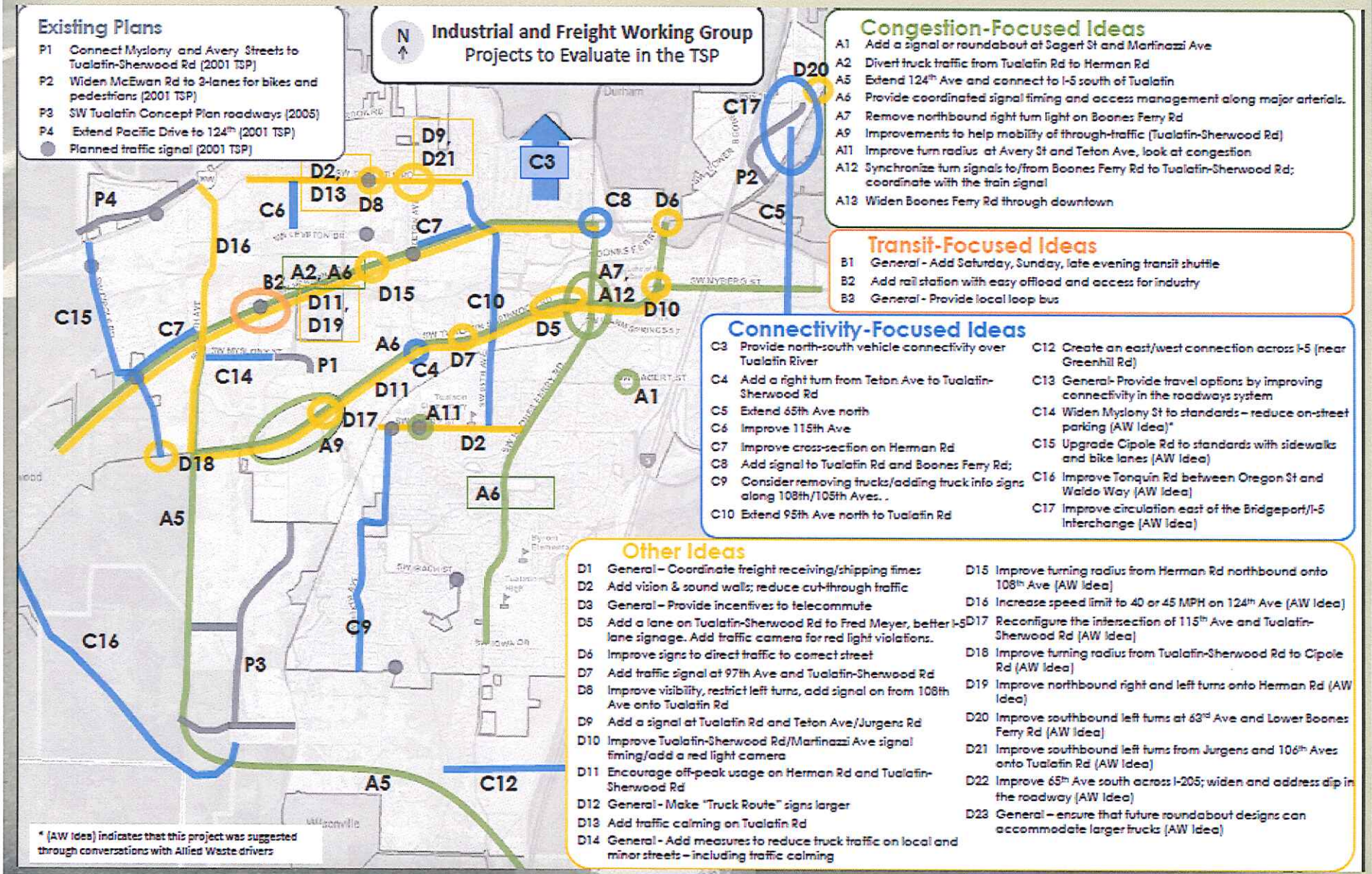
No.	Project Description
A2	Consider raised intersections on Martinazzi
A4	Reduce speeds near Bridgeport Village
A7	Add pedestrian island on Martinazzi Ave north of Seneca
C6	Create road connections between Boones Ferry Rd and SW 90th Ave
D4	Add pedestrian crossing at the WES stop (Seneca)
D10	Coordinate traffic signal timing to accommodate pedestrians
D11	Add focused pedestrian crossing over Boones Ferry Road at Tonka
F3	Eliminate parking minimum development requirements and consider parking maximums

Projects for Further Refinement

No.	Project Description	Refinement Topic Area
A6	Add roundabout at Boones Ferry and Lower Boones Ferry Road	Boones Ferry Road
B9	Widen Boones Ferry Rd	Boones Ferry Road
B10	Widen Tualatin-Sherwood Rd	Tualatin Sherwood Road
C2	Provide north-south connectivity over Tualatin River for vehicles	North/South Connectivity
C5	Improve downtown core street connectivity	Connectivity in Downtown
D1	Redesign pedestrian crossings, consider flashing lights	Connectivity in Downtown
D3	Optimize intersections to reduce conflicts along Boones Ferry and Tualatin Sherwood Roads	Boones Ferry Road, Tualatin Sherwood Road

Industrial and Freight

Industrial and Freight



Existing Plans

- P1 Connect Mylony and Avery Streets to Tualatin-Sherwood Rd (2001 TSP)
- P2 Widen McEwan Rd to 3-lanes for bikes and pedestrians (2001 TSP)
- P3 SW Tualatin Concept Plan roadways (2005)
- P4 Extend Pacific Drive to 124th (2001 TSP)
- Planned traffic signal (2001 TSP)

Congestion-Focused Ideas

- A1 Add a signal or roundabout at Sagert St and Martinazzi Ave
- A2 Divert truck traffic from Tualatin Rd to Herman Rd
- A5 Extend 124th Ave and connect to I-5 south of Tualatin
- A6 Provide coordinated signal timing and access management along major arterials.
- A7 Remove northbound right turn light on Boones Ferry Rd
- A9 Improvements to help mobility of through-traffic (Tualatin-Sherwood Rd)
- A11 Improve turn radius at Avery St and Teton Ave, look at congestion
- A12 Synchronize turn signals to/from Boones Ferry Rd to Tualatin-Sherwood Rd; coordinate with the train signal
- A13 Widen Boones Ferry Rd through downtown

Transit-Focused Ideas

- B1 General - Add Saturday, Sunday, late evening transit shuttle
- B2 Add rail station with easy offload and access for industry
- B3 General - Provide local loop bus

Connectivity-Focused Ideas

- C3 Provide north-south vehicle connectivity over Tualatin River
- C4 Add a right turn from Teton Ave to Tualatin-Sherwood Rd
- C5 Extend 65th Ave north
- C6 Improve 115th Ave
- C7 Improve cross-section on Herman Rd
- C8 Add signal to Tualatin Rd and Boones Ferry Rd;
- C9 Consider removing trucks/adding truck info signs along 108th/105th Aves. .
- C10 Extend 95th Ave north to Tualatin Rd
- C12 Create an east/west connection across I-5 (near Greenhill Rd)
- C13 General- Provide travel options by improving connectivity in the roadways system
- C14 Widen Mylony St to standards – reduce on-street parking (AW Idea)*
- C15 Upgrade Cipole Rd to standards with sidewalks and bike lanes (AW Idea)
- C16 Improve Tonquin Rd between Oregon St and Waldo Way (AW Idea)
- C17 Improve circulation east of the Bridgeport/I-5 Interchange (AW Idea)

Other Ideas

- D1 General – Coordinate freight receiving/shipping times
- D2 Add vision & sound walls; reduce cut-through traffic
- D3 General – Provide incentives to telecommute
- D5 Add a lane on Tualatin-Sherwood Rd to Fred Meyer, better I-5 lane signage. Add traffic camera for red light violations.
- D6 Improve signs to direct traffic to correct street
- D7 Add traffic signal at 97th Ave and Tualatin-Sherwood Rd
- D8 Improve visibility, restrict left turns, add signal on from 108th Ave onto Tualatin Rd
- D9 Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd
- D10 Improve Tualatin-Sherwood Rd/Martinazzi Ave signal timing/add a red light camera
- D11 Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd
- D12 General - Make "Truck Route" signs larger
- D13 Add traffic calming on Tualatin Rd
- D14 General - Add measures to reduce truck traffic on local and minor streets – including traffic calming
- D15 Improve turning radius from Herman Rd northbound onto 108th Ave (AW Idea)
- D16 Increase speed limit to 40 or 45 MPH on 124th Ave (AW Idea)
- D17 Reconfigure the intersection of 115th Ave and Tualatin-Sherwood Rd (AW Idea)
- D18 Improve turning radius from Tualatin-Sherwood Rd to Cipole Rd (AW Idea)
- D19 Improve northbound right and left turns onto Herman Rd (AW Idea)
- D20 Improve southbound left turns at 63rd Ave and Lower Boones Ferry Rd (AW Idea)
- D21 Improve southbound left turns from Jurgens and 106th Aves onto Tualatin Rd (AW Idea)
- D22 Improve 65th Ave south across I-205; widen and address dip in the roadway (AW Idea)
- D23 General – ensure that future roundabout designs can accommodate larger trucks (AW Idea)

* (AW Idea) indicates that this project was suggested through conversations with Allied Waste drivers

Projects to Forward into the TSP (1 of 2)

No.	Project Description
A1	Add a signal or roundabout at Sagert/ Martinazzi
A5	Extend 124th Ave to the south
A6	Provide coordinated signal timing and access management along major arterials
A11	Address congestion on Avery and Teton
A12	Synchronize turn signals to/from Boones Ferry to Tualatin-Sherwood; coordinate with the train signal
B1	Expand shuttle for industrial and manufacturing workers during the day – consider charging fares
B3	Provide a loop bus route serving local residents
C5	Extend 65th Ave north
C9	Consider removing trucks/adding truck info signs along 108th/105th Aves
C12	Create an east/west connection across I-5 (near Greenhill Rd)

Projects to Forward into the TSP (2 of 2)

No.	Project Description
D1	Coordinate freight receiving/ shipping times
D3	Provide incentives to telecommute
D5	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5
D11	Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd
D14	Add measures to reduce truck traffic on local and minor collectors
D22	Improve 65th Ave south across I-205; widen and address dip in the roadway
D23	Ensure that future roundabout designs can accommodate larger trucks

Urban Upgrade Projects

No.	Project Description
C14	Widen Myslony St to standards - reduce on-street parking
C15	Upgrade Cipole Rd to standards with sidewalks and bike lanes
C16	Improve Tonquin Rd between Oregon St and Waldo Way

Projects NOT to Forward into the TSP

No.	Project Description
A7	Remove NB right turn light on Boones Ferry
C4	Add a left turn from Teton to Tualatin Rd
C6	Improve 115th Ave
C8	Add signal to Tualatin and Boones Ferry intersection
C10	Extend 95th Ave north to Tualatin Rd
C13	Provide travel options by improving connectivity in the roadway system
D2	Add vision and sound walls; reduce cut-through traffic
D6	Improve signs to direct traffic to correct street
D10	Improve Tualatin-Sherwood and Martinazzi signal timing
D12	Make "Truck Route" signs larger
D16	Increase speed limit to 40 or 45 MPH on 124th Ave
D20	Improve southbound left turns at 63rd and Lower Boones Ferry

Projects for Further Refinement (1 of 2)

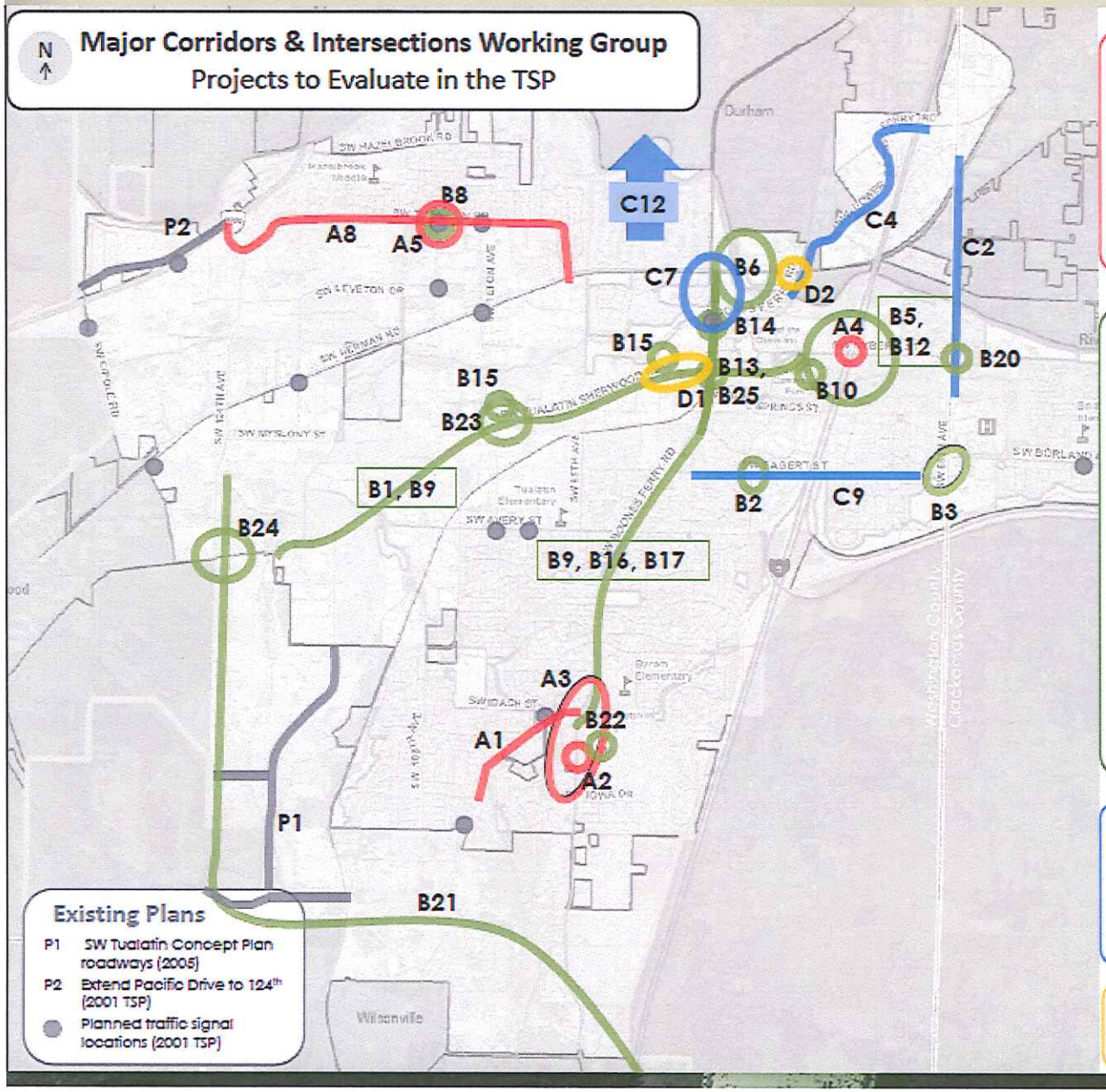
No.	Project Description	Refinement Topic Area
B2	Add rail station with easy offload and access for industry in the west part of town	Stand Alone
C17	Improve circulation east of the Bridgeport/ I-5 Interchange	Stand Alone
A2	Discourage through and truck traffic along Tualatin while encouraging through and truck traffic along Herman	Herman and Tualatin Options
A9	Improvements to help mobility of through-traffic on Tualatin-Sherwood Rd	Tualatin Sherwood Road
A13	Widen Boones Ferry Rd through downtown	Boones Ferry Road, North/South Connectivity
C3	Provide north-south vehicle connectivity over Tualatin River	North/South Connectivity
C7	Improve cross-section on Herman Rd	Herman and Tualatin Options
D7	Add traffic signal at 97th Ave and Tualatin-Sherwood	Tualatin Sherwood Road

Projects for Further Refinement (2 of 2)

No.	Project Description	Refinement Topic Area
D8	Improve visibility, add signal restrict left turns from 108th onto Tualatin	Herman and Tualatin Options
D9	Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd	Herman and Tualatin Options
D13	Add traffic calming on Tualatin Road	Herman and Tualatin Options
D15	Improve turning radius from Herman Rd northbound onto 108th Ave	Herman and Tualatin Options
D17	Reconfigure the intersection of 115th and Tualatin-Sherwood	Tualatin Sherwood Road
D18	Improve turning radius from Tualatin-Sherwood to Cipole	Tualatin Sherwood Road
D19	Improve NB right and left turns onto Herman	Herman and Tualatin Options
D21	Improve SB left turns from Jurgens and 106th onto Tualatin	Herman and Tualatin Options

Major Corridors and Intersections

Major Corridors and Intersections



Safety-Focused Ideas

- A1 Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd
- A2 Add traffic signal at Tualatin High School
- A3 Consistent speed zones for both Tualatin High School & Byrom Elementary School
- A4 Improve the sight distance at the I-5/Nyberg Rd interchange
- A5 Add traffic signal on Tualatin Rd at 108th Ave
- A6 General – consistent use of yellow turn signals on all traffic signals
- A8 Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd. Make residential access easier.

Congestion-Focused Ideas

- B1 Widen Tualatin-Sherwood Rd
- B2 Signal or roundabout at Sagert St and Martinazzi Ave
- B3 Realign Sagert St/Borland Rd intersection
- B5 Restrict right turn on red at Nyberg Interchange
- B6 Rethink access in vicinity of Tualatin Community Park
- B8 Prohibit left turns out of 108th Ave or remove trees in the southwest corner
- B9 Coordinate signal timing on Boones Ferry Rd and Tualatin-Sherwood Rd; widen Boones Ferry Rd
- B10 Redesign the intersection at the Fred Meyer (from Nyberg Rd)
- B12 Make two right turn lanes from I-5 north onto Nyberg Rd
- B13 Extend the northbound left turn lane and create a southbound right turn lane on Boones Ferry Rd at Tualatin-Sherwood Rd to reduce backup from WES train; add red light cameras
- B14 Reconfigure Boones Ferry Rd at Tualatin Rd
- B15 Add a 4-way stop by 90th Ave at Kaiser
- B16 Add bus pullouts on Boones Ferry Rd
- B17 Widen Boones Ferry Rd
- B20 Roundabout or signal intersection at Nyberg Rd/65th Ave; keep Nyberg Rd 2 lanes
- B21 Extend 124th Ave and connect to I-5 and Tonquin Rd
- B22 Address congestion caused by high school
- B23 Add a dedicated right turn lane on Teton Ave at Tualatin-Sherwood Rd
- B24 Add right turn lane on Tualatin-Sherwood Rd at 124th Ave

Connectivity-Focused Ideas

- C2 Extend 65th Ave north
- C4 Improve traffic flow on Lower Boones Ferry Rd near Bridgeport Village into downtown Tualatin
- C7 Revise connection between Tualatin Rd and Boones Ferry Rd near the railroad tracks
- C9 Widen Sagert to 2 lanes in each direction
- C12 Provide north-south connectivity over Tualatin River for vehicles

Other Ideas

- D1 Add lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Install traffic camera for signal violations.
- D2 Better signs needed to direct traffic to correct street

Projects to Forward into the TSP

No.	Project Description
A1	Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd
A3	Consistent speed zones for Tualatin High School and Byrom Elementary School
A6	Consistent use of yellow turn signals at traffic signals
B2	Signal or roundabout at Sagert and Martinazzi
B6	Rethink access between Tualatin Road and Tualatin Community Park
B8	Prohibit left turns out of 108th Ave or remove trees in the southwest corner
B9	Coordinate signal timing on Boones Ferry Rd
B10	Redesign Nyberg/Fred Meyer intersection and improve pedestrian crossing
B16	Add bus pullouts on Boones Ferry Rd
B21	Extend 124th Ave to south
B23	Add a dedicated right turn lane on Teton at Tualatin-Sherwood
C2	Extend 65th Ave to the north
C4	Improve traffic flow on Lower Boones Ferry between Bridgeport and downtown
D1	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5

Projects NOT to Forward into the TSP

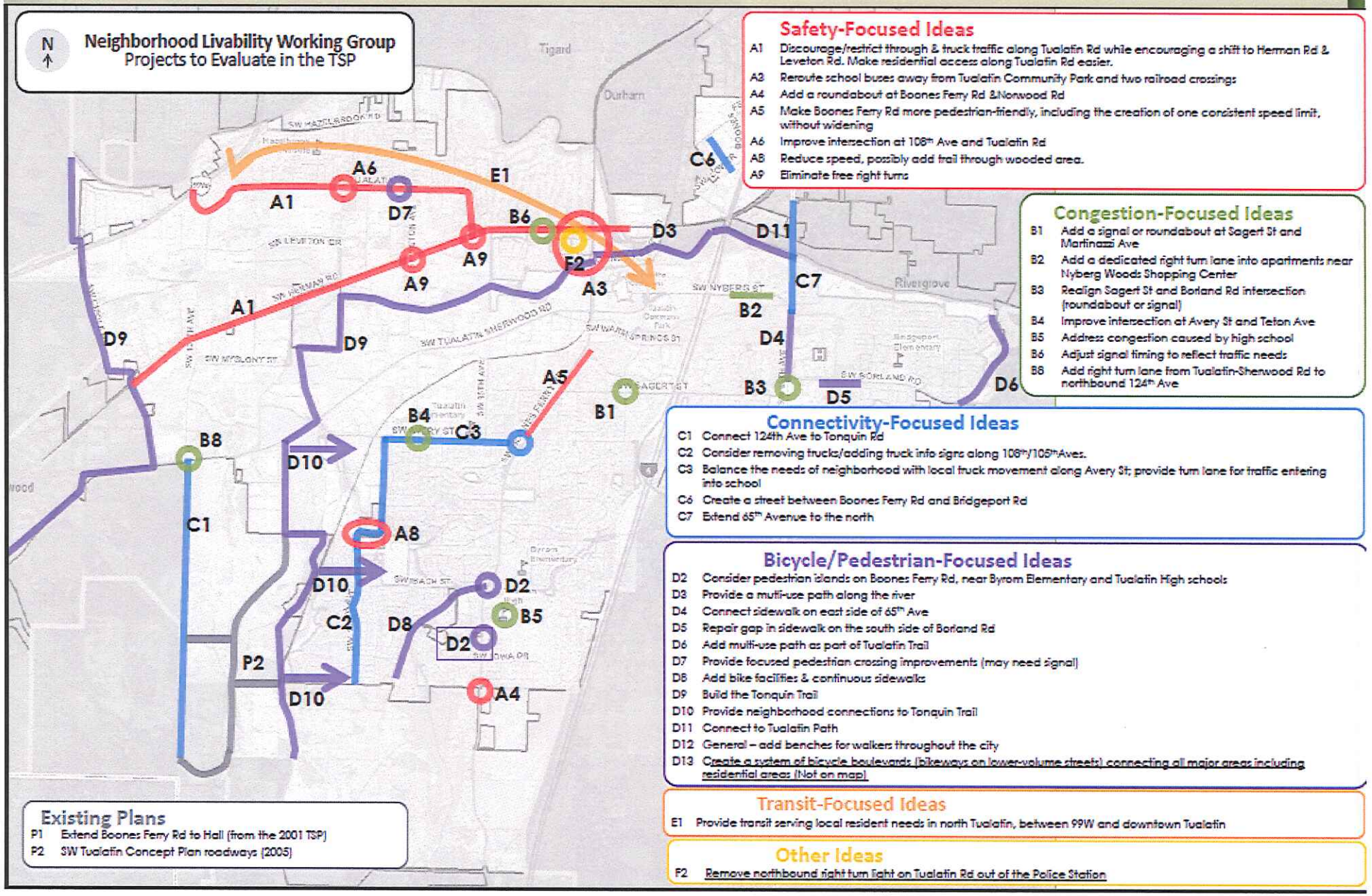
No.	Project Description
A2	Add traffic signal at Tualatin High School
B3	Realign Sagert /Borland to one intersection
B14	Reconfigure Boones Ferry at Tualatin Road
B15	Add a 4-way stop by 90th Ave at Kaiser
B20	Roundabout or signal at Nyberg and 65th intersection
B22	Address congestion caused by high school
C7	Revise connection between Tualatin and Boones Ferry near the railroad tracks
C9	Widen Sagert to 2-lanes each way
D2	Better signs needed to direct traffic to correct street

Projects for Further Refinement

No.	Project Description	Refinement Topic Area
A4	Improve sight distance at I-5 and Nyberg Rd interchange	Nyberg Interchange
A5	Add traffic signal on Tualatin Rd at 108th	Herman and Tualatin Options
A8	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	Herman and Tualatin Options
B1	Widen Tualatin-Sherwood Rd	Tualatin Sherwood Road
B5	Restrict right turn on red at Nyberg Interchange	Nyberg Interchange
B12	Make two right turn lanes from I-5 north onto Nyberg Rd	Nyberg Interchange
B13	Extend NB left turn and create a SB right turn lane on Boones Ferry at Tualatin-Sherwood to reduce backup from WES train	North/South Connectivity
B17	Widen Boones Ferry Rd at the south end of the City	Boones Ferry Road
B24	Add right turn lane on Tualatin-Sherwood at 124th	Tualatin Sherwood Road
C12	Look for ways to provide north-south connectivity over Tualatin River for vehicles	North/South Connectivity

Neighborhood Livability

Neighborhood Livability



Safety-Focused Ideas

- A1 Discourage/restrict through & truck traffic along Tualatin Rd while encouraging a shift to Herman Rd & Leveton Rd. Make residential access along Tualatin Rd easier.
- A3 Reroute school buses away from Tualatin Community Park and two railroad crossings
- A4 Add a roundabout at Boones Ferry Rd &Norwood Rd
- A5 Make Boones Ferry Rd more pedestrian-friendly, including the creation of one consistent speed limit, without widening
- A6 Improve intersection at 108th Ave and Tualatin Rd
- A8 Reduce speed, possibly add trail through wooded area.
- A9 Eliminate free right turns

Congestion-Focused Ideas

- B1 Add a signal or roundabout at Sagert St and Martinazzi Ave
- B2 Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center
- B3 Realign Sagert St and Borland Rd intersection (roundabout or signal)
- B4 Improve intersection at Avery St and Teton Ave
- B5 Address congestion caused by high school
- B6 Adjust signal timing to reflect traffic needs
- B8 Add right turn lane from Tualatin-Sherwood Rd to northbound 124th Ave

Connectivity-Focused Ideas

- C1 Connect 124th Ave to Tonquin Rd
- C2 Consider removing trucks/adding truck info signs along 108th/105th Aves.
- C3 Balance the needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school
- C6 Create a street between Boones Ferry Rd and Bridgeport Rd
- C7 Extend 65th Avenue to the north

Bicycle/Pedestrian-Focused Ideas

- D2 Consider pedestrian islands on Boones Ferry Rd, near Byrom Elementary and Tualatin High schools
- D3 Provide a multi-use path along the river
- D4 Connect sidewalk on east side of 65th Ave
- D5 Repair gap in sidewalk on the south side of Borland Rd
- D6 Add multi-use path as part of Tualatin Trail
- D7 Provide focused pedestrian crossing improvements (may need signal)
- D8 Add bike facilities & continuous sidewalks
- D9 Build the Tonquin Trail
- D10 Provide neighborhood connections to Tonquin Trail
- D11 Connect to Tualatin Path
- D12 General – add benches for walkers throughout the city
- D13 Create a system of bicycle boulevards (bikeways on lower-volume streets) connecting all major areas including residential areas (Not on map)

Transit-Focused Ideas

- E1 Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin

Other Ideas

- F2 Remove northbound right turn light on Tualatin Rd out of the Police Station

Existing Plans

- P1 Extend Boones Ferry Rd to Hall (from the 2001 TSP)
- P2 SW Tualatin Concept Plan roadways (2005)

Projects to Forward into the TSP (1 of 2)

No.	Project Description
A3	Reroute school buses away from Tualatin Community Park and railroad crossings
A8	Reduce speed, possibly add trail through wooded area
B1	Add signal or roundabout at Sagert and Martinazzi
B4	Improve intersection at Avery and Teton
C1	Extend 124th Ave to south
C2	Consider removing trucks/adding truck info signs along 108th/105th Aves
C3	Balance needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school
C7	Extend 65th Ave to the north
D3	Provide a multi-use path along the river
D4	Multi-use path on 65th Ave between Borland and Nyberg
D5	Repair sidewalk gap on south side of Borland

Projects to Forward into the TSP (2 of 2)

No.	Project Description
D6	Add multi-use path as part of Tualatin Trail
D9	Build the Tonquin Trail
D10	Connect Tonquin trail with neighborhoods
D11	Connect to Tualatin Path
D12	Add benches for walkers throughout city
D13	Create a bicycle boulevard system connecting major areas
E1	Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin

Projects NOT to Forward into the TSP

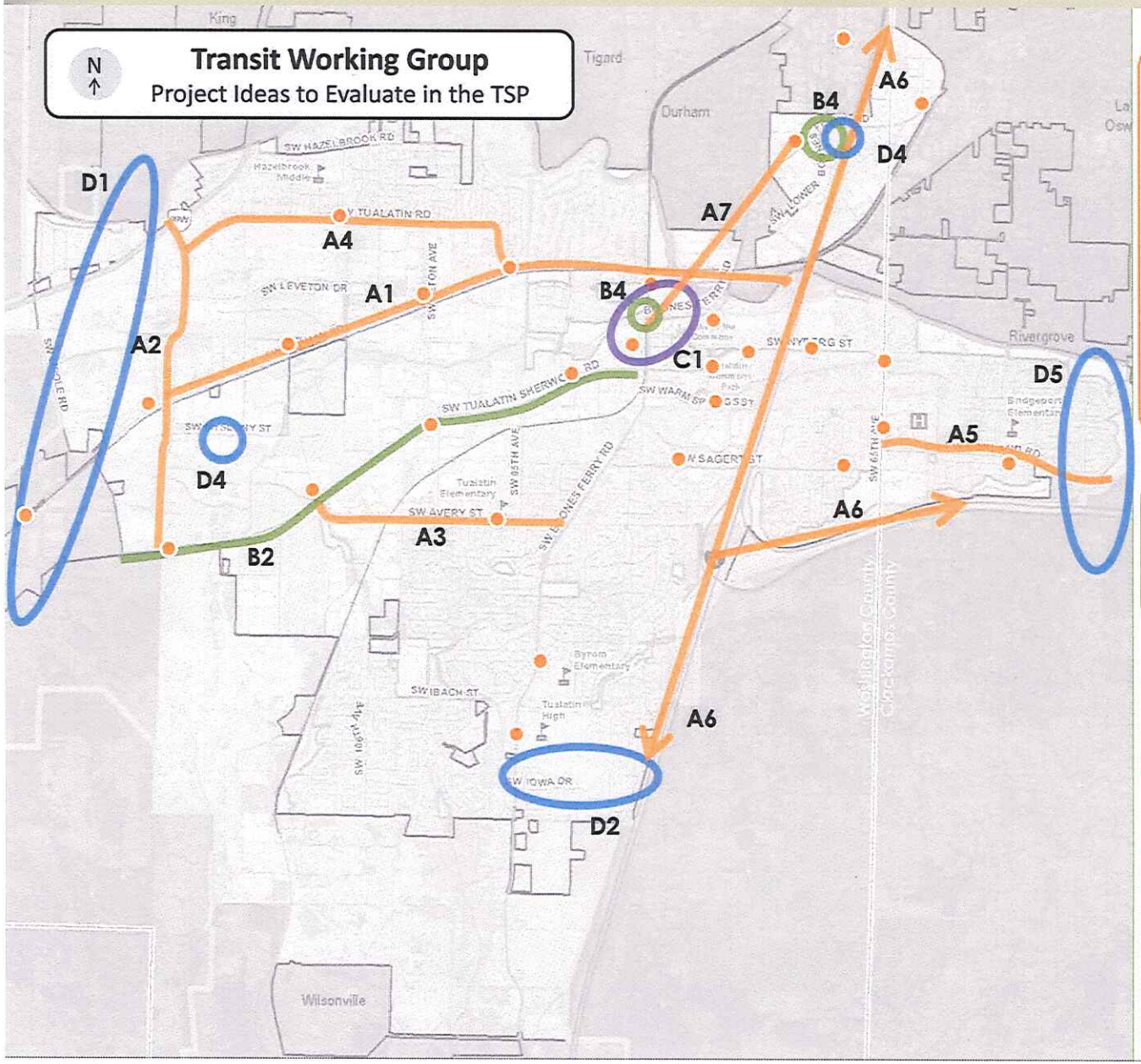
No.	Project Description
D8	Add bike facilities and continuous sidewalks along Graham's Ferry Road (only as part of an urban upgrade)
B3	Realign Sagert /Borland to one intersection
B5	Address congestion caused by high school
C6	Create a street between Boones Ferry Rd and Bridgeport Rd
F2	Remove right turn light in the northbound direction on Tualatin Rd out of the Police Station

Projects for Further Refinement

No.	Project Description	Refinement Topic Area
A1	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	Herman and Tualatin Options
A4	Add a roundabout at Boones Ferry and Norwood	Boones Ferry Road
A5	Make Boones Ferry Rd more pedestrian-friendly	Boones Ferry Road
A6	Improve intersection at 108th and Tualatin	Herman and Tualatin Options
A9	Eliminate free right turns – on Herman Rd at Teton Ave and Tualatin Rd	Herman and Tualatin Options
B2	Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center	Nyberg Interchange
B6	Adjust signal timing to give priority to Tualatin Road through traffic	Tualatin Sherwood Road
B8	Add right turn lane on Tualatin-Sherwood at 124th	Tualatin Sherwood Road
D2	Add pedestrian islands on Boones Ferry, near Byrom ES and Tualatin HS	Boones Ferry Road
D7	Provide focused pedestrian crossing improvements along Tualatin Road	Herman and Tualatin Options

Transit

Transit - Projects to Evaluate



Bus Service-Focused Ideas

- A1 Provide bus transit service on Herman Road
- A2 Provide bus transit service on 124th Street
- A3 Provide bus transit service on Avery Street
- A4 Provide bus transit service on Tualatin Road between downtown and 99W
- A5 Extend bus service to east Tualatin
- A6 Improve bus service between Tualatin and Salem
- A7 Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
- A8 Provide a loop bus route around the city*
- A10 Expand existing on-call shuttle and charge fares*
- A12 General – need extended service hours for all transit*
- A13 General – use more energy efficient buses*
- A14 Coordinate bus schedules with WES schedule*
- A16 Add stops on higher-volume routes*
- ● Potential bus stop locations connecting major employers and activity centers

*not shown on map

Rail Service-Focused Ideas

- B2 Provide rail or high capacity bus transit service on Tualatin-Sherwood Road (towards Sherwood)
- B4 Build elevated pedestrian bridge to connect park-and-ride with shopping at Bridgeport Village
- B10 General – Add more spaces for bicycles on WES trains*

Land Use-Focused Ideas

- C1 Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Park-and-Ride-Focused Ideas

- D1 Look for potential park-and-ride locations in west Tualatin
- D2 Look for potential park-and-ride locations in south Tualatin
- D3 Add parking capacity at Tualatin Park-and-Ride (near Bridgeport Village)
- D4 Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots
- D5 Add a park-and-ride location in east Tualatin

Projects to Forward into the TSP

No.	Project Description
A2	Provide bus transit service on 124th Street
A3	Provide bus transit service on Avery Street
A5	Extend bus service to east Tualatin
A7	Explore a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
A8	Provide a loop bus route serving local residents
A10	Expand shuttle for industrial and manufacturing workers during the day – consider charging fares
A12	General – need extended service for all transit
B2	Provide high capacity transit service on Tualatin-Sherwood Road
C1	Make the WES station a central focus of downtown and the main transit center.
D1	Look for potential park-and-ride locations in west Tualatin
D2	Look for potential park-and-ride locations in south Tualatin
D3	Add parking capacity at Tualatin Park-and-Ride - Potential structure

Projects NOT to Forward into the TSP

No.	Project Description
A6	Provide express bus service between Tualatin and Salem
A13	General – use more energy efficient buses
A14	Coordinate bus schedules with WES schedule
A16	Add stops on higher volume routes
B1	Add more bicycle storage at the WES station
B4	Build an elevated pedestrian bridge to connect the Tualatin park-and-ride with shopping
D4	Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots and transfer spaces to higher utilized areas
D5	Add a park-and-ride in east Tualatin

Projects for Further Refinement

No.	Project Description	Refinement Topic Area
A1	Provide bus transit service on Herman Road	Herman and Tualatin Options
A4	Provide bus transit service on Tualatin Road between downtown and 99W	

What Happens Next?

- Online forum goes live July 1st
- Technical team reviews six refinement areas
  - Organize discrete project ideas into packages
  - Up to three alternatives per refinement area
  - Traffic (local and city-wide)
  - Geometric constraints and right of way
  - Cost
  - Environmental and policy effects
- July and August TTF meetings review/discuss findings
  - What are the benefits?
  - What are the impacts?
  - What are we willing to accept?
- Transportation Community Summit in September (draft date September 20th)

Next Two Meetings

STEP 1
Identify Needs and Opportunities

- Develop Goals and Objectives
- Survey Existing Conditions
- Forecast Future Conditions

** Public Involvement Activities Included*

STEP 2
Develop and Evaluate Solutions

- Create a Long List of Potential Solutions
- Screen/Evaluate How Ideas Help Meet Goals and Objectives

** Public Involvement Activities Included*

July, August meetings focus on refinement topics

STEP 3
Make Recommendations

- Prepare Draft Project Recommendations
- Refine Project Recommendations
- Prioritize Project Recommendations

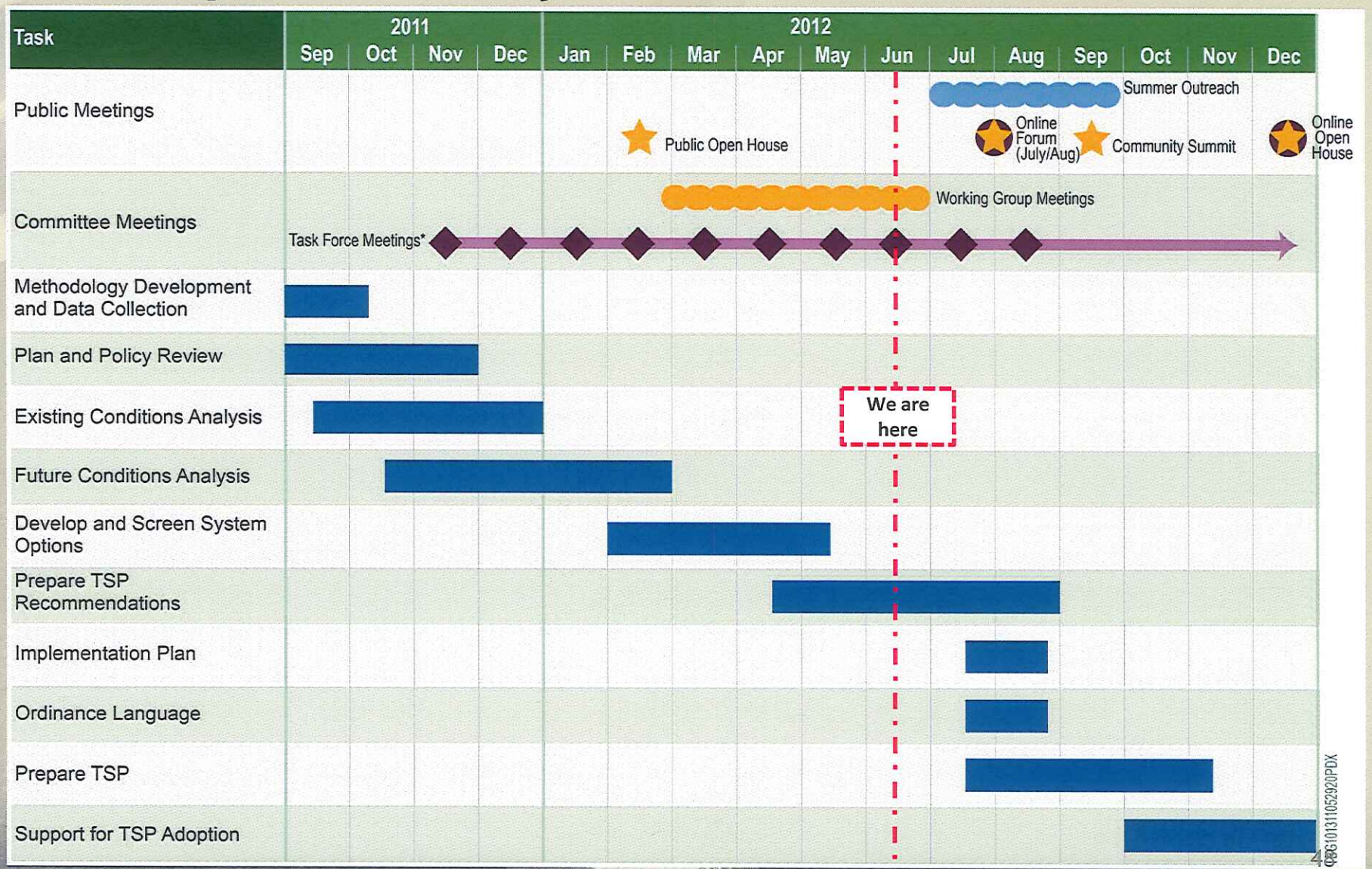
** Public Involvement Activities Included*

STEP 4
Create and Adopt the Plan

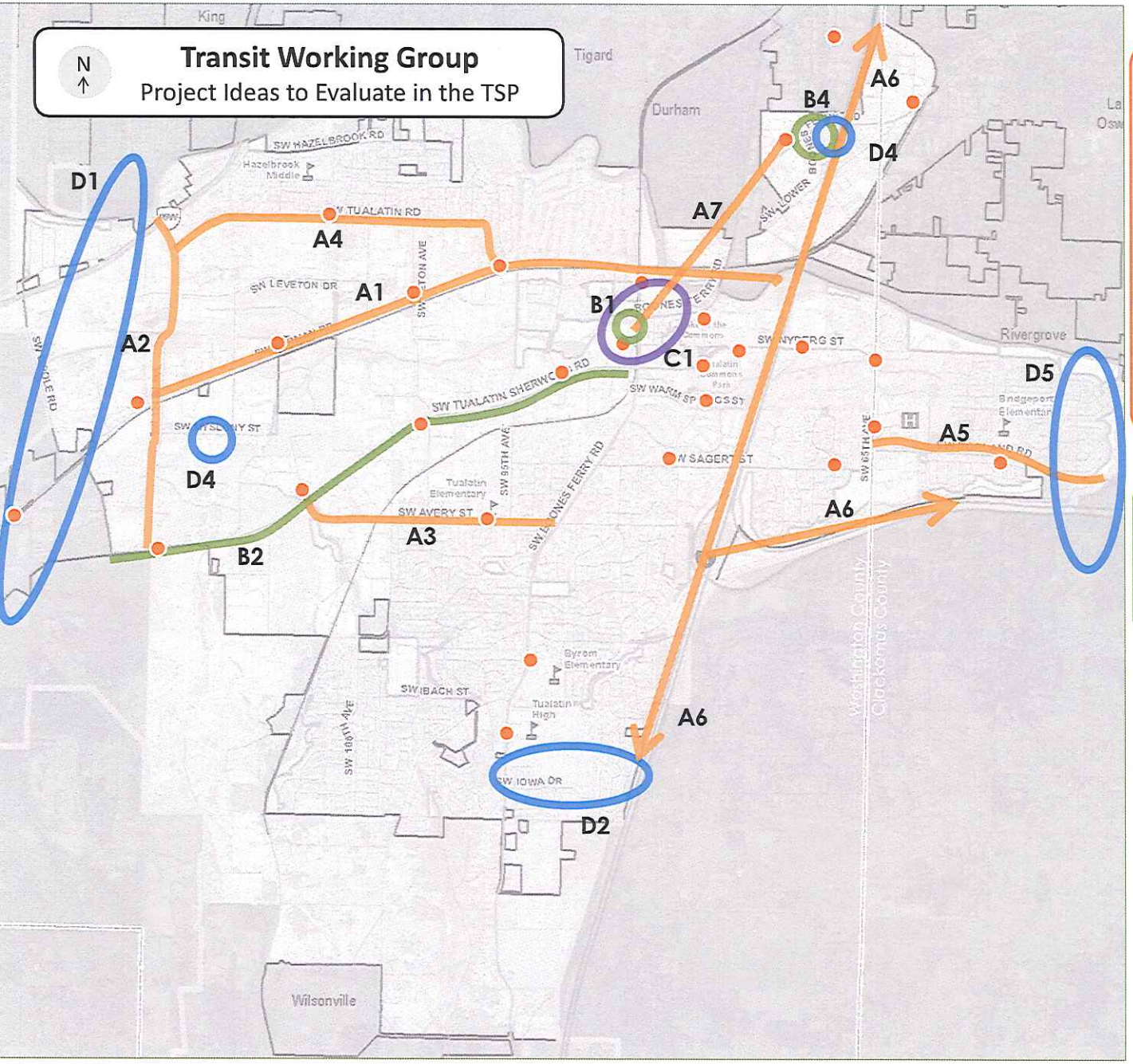
- Develop a Draft TSP
- Adopt the Final TSP

** Public Involvement Activities Included*

Transportation System Plan Timeline



Questions



Bus Service-Focused Ideas

- A1 Provide bus transit service on Herman Road
- A2 Provide bus transit service on 124th Avenue
- A3 Provide bus transit service on Avery Street
- A4 Provide bus transit service on Tualatin Road between downtown and 99W
- A5 Extend bus service to east Tualatin
- A6 Provide express service between Tualatin and Salem
- A7 Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
- A8 Provide a loop bus route around the city*
- A10 Expand existing on-call shuttle and charge fares*
- A12 General –extend service hours for all transit*
- A13 General – use more energy efficient buses*
- A14 Coordinate TriMet and SMART bus schedules with WES schedule*
- A16 Add stops on higher-volume bus routes*
- ● Potential bus stop locations connecting major employers and activity centers

*not shown on map

Rail Service-Focused Ideas

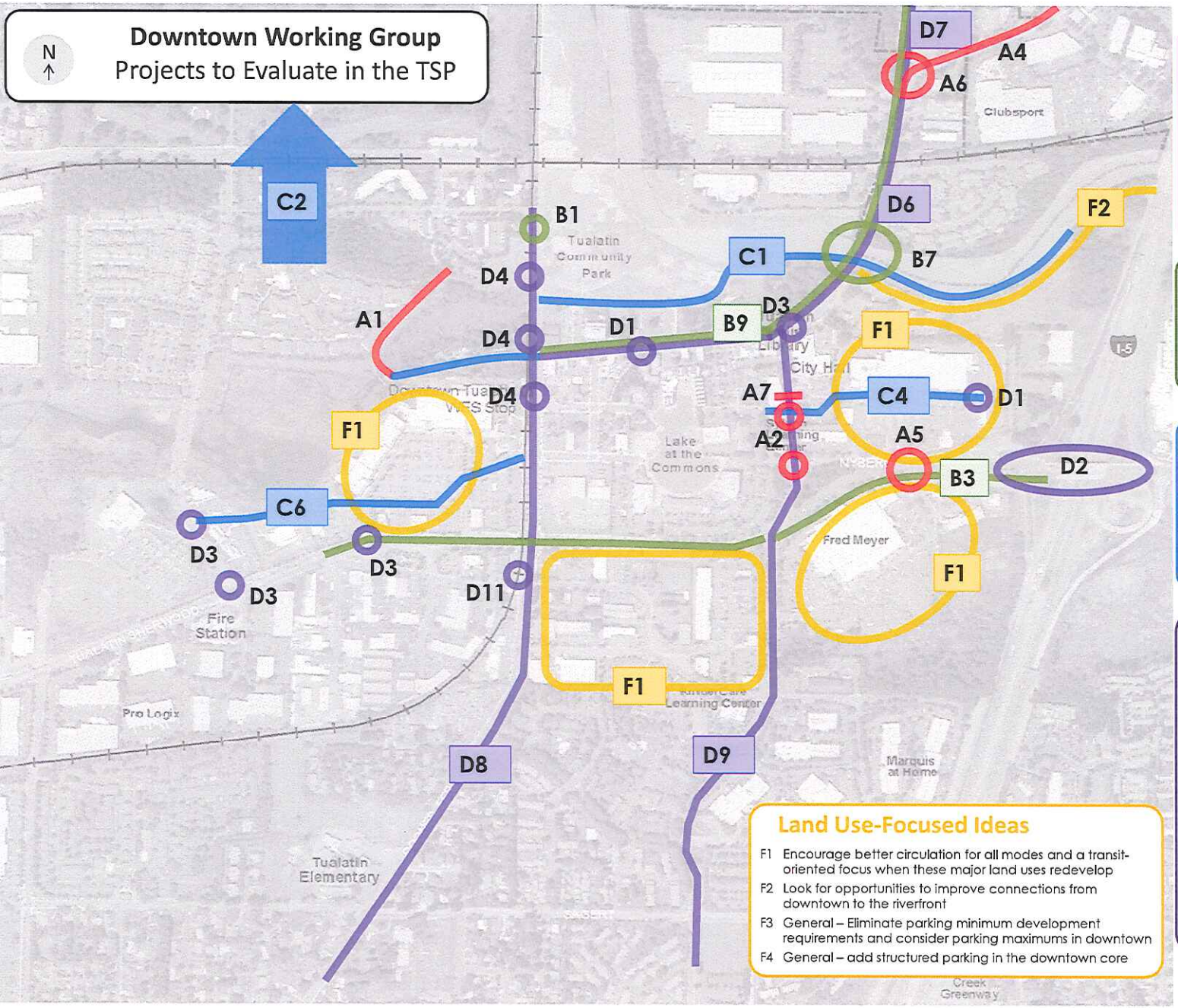
- B1 Add more bicycle storage at the WES Station
- B2 Provide rail or high capacity bus transit service on Tualatin-Sherwood Road (towards Sherwood)
- B4 Build elevated pedestrian bridge to connect park-and-ride with shopping at Bridgeport Village
- B10 General – Add bicycle storage at the WES Station*

Land Use-Focused Ideas

- C1 Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Park-and-Ride-Focused Ideas

- D1 Look for potential park-and-ride locations in west Tualatin
- D2 Look for potential park-and-ride locations in south Tualatin
- D3 Add parking capacity at Tualatin Park-and-Ride (near Bridgeport Village)
- D4 Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots
- D5 Add a park-and-ride location in east Tualatin



Safety-Focused Ideas

- A1 Upgrade bridge surface and improve illumination along path near Hedges Creek
- A2 Consider raised intersections for pedestrians at Seneca St and Nyberg St
- A4 Reduce speeds near Bridgeport Village
- A5 Redesign Fred Meyer & Kmart intersection – upgrade the pedestrian connection
- A6 Add a roundabout at Lower Boones Ferry Rd and Boones Ferry Rd
- A7 Add a pedestrian island on Martinazzi Ave north of Seneca St

Congestion-Focused Ideas

- B1 Improve circulation into and out of the park
- B3 Add an eastbound lane on Tualatin-Sherwood Rd from Martinazzi Ave to I-5
- B7 Replace/widen bridge on Boones Ferry Rd
- B9 Widen Boones Ferry Rd to 5 lanes
- B10 Widen Tualatin-Sherwood Rd through downtown

Connectivity-Focused Ideas

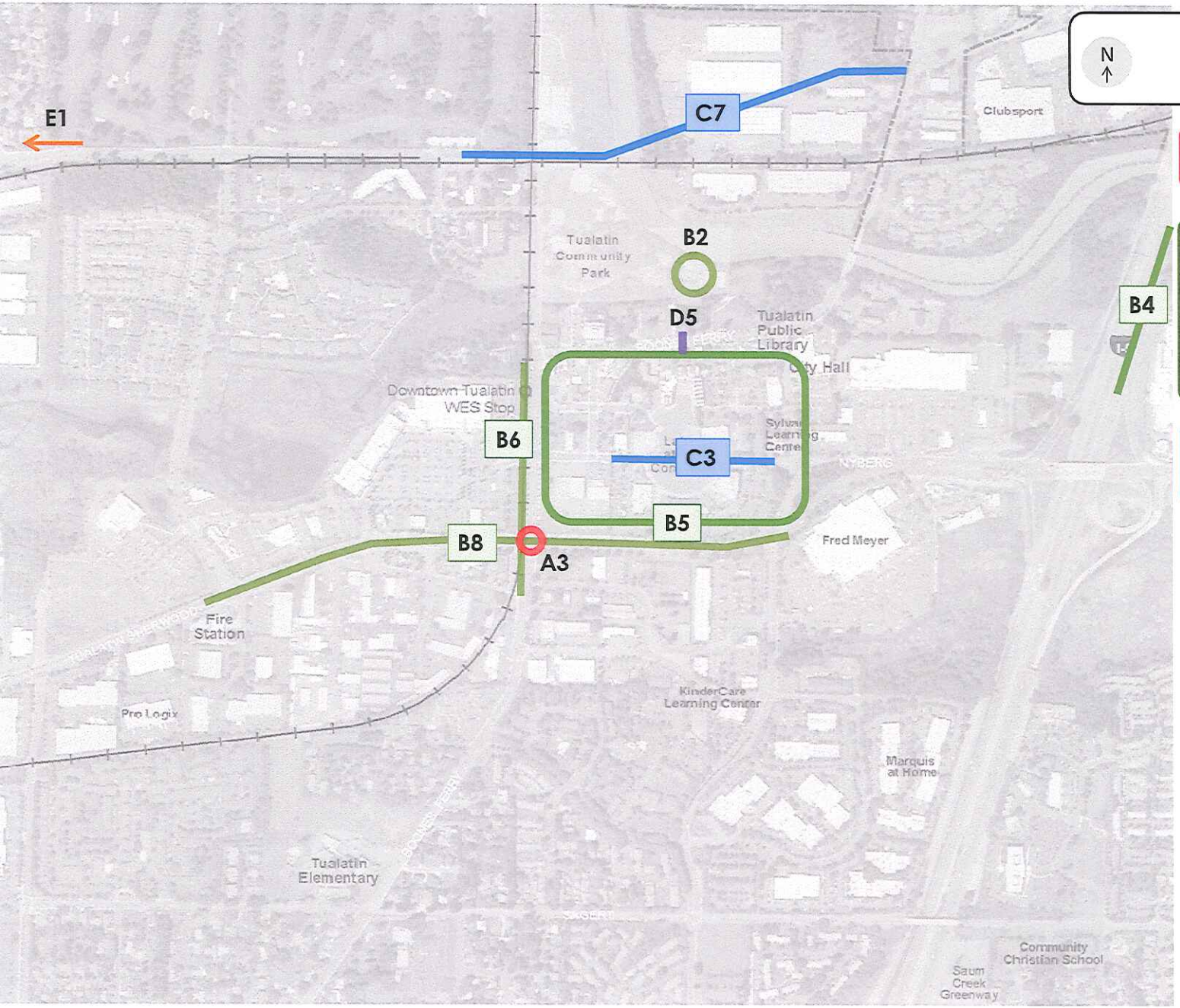
- C1 Build a trail from Boones Ferry Rd to the downtown core along the river to the Tualatin River Greenway
- C2 Look for ways to provide north-south connectivity over Tualatin River for vehicles
- C4 Create a grid system near the Kmart, connect to Seneca St
- C5 General–improve street connectivity in downtown
- C6 Create a public road between Boones Ferry Rd and SW 90th Ave

Bicycle/Pedestrian-Focused Ideas

- D1 Redesign pedestrian crossing, consider flashing lights
- D2 Upgrade Nyberg interchange to improve the crossing experience for bicyclists
- D3 Optimize intersections to reduce conflicts between cars and pedestrians (Tualatin-Sherwood Rd & Martinazzi Ave and Boones Ferry Rd)
- D4 Add pedestrian crossings along Boones Ferry Rd
- D6 Improve sidewalks and bicycle lanes Boones Ferry Rd
- D7 Improve bicycle and pedestrian facilities near Bridgeport Village
- D8 Provide signage and/or other visual cues to motorists to accommodate bicycles on Boones Ferry Rd
- D9 Add bicycle lane or "Share the Road" signs on Martinazzi Ave
- D10 General – coordinate traffic signal timing to accommodate pedestrians in downtown
- D11 Focused pedestrian crossing on Boones Ferry Road at Tonka

Land Use-Focused Ideas

- F1 Encourage better circulation for all modes and a transit-oriented focus when these major land uses redevelop
- F2 Look for opportunities to improve connections from downtown to the riverfront
- F3 General – Eliminate parking minimum development requirements and consider parking maximums in downtown
- F4 General – add structured parking in the downtown core



N

Downtown Working Group
Ideas that will not be evaluated

Safety-Focused Ideas

- A3 Add a grade separated railroad crossing on Tualatin-Sherwood Rd

Congestion-Focused Ideas

- B2 Provide secondary exit from park, and provide additional parking
- B4 Add a travel lane on I-5 northbound (between Tualatin and OR 217)
- B5 Create a one-way circulator loop roadway around downtown
- B6 Reduce ambient noise along Boones Ferry Rd in downtown
- B8 Add HOV lanes on Tualatin-Sherwood Rd

Connectivity-Focused Ideas

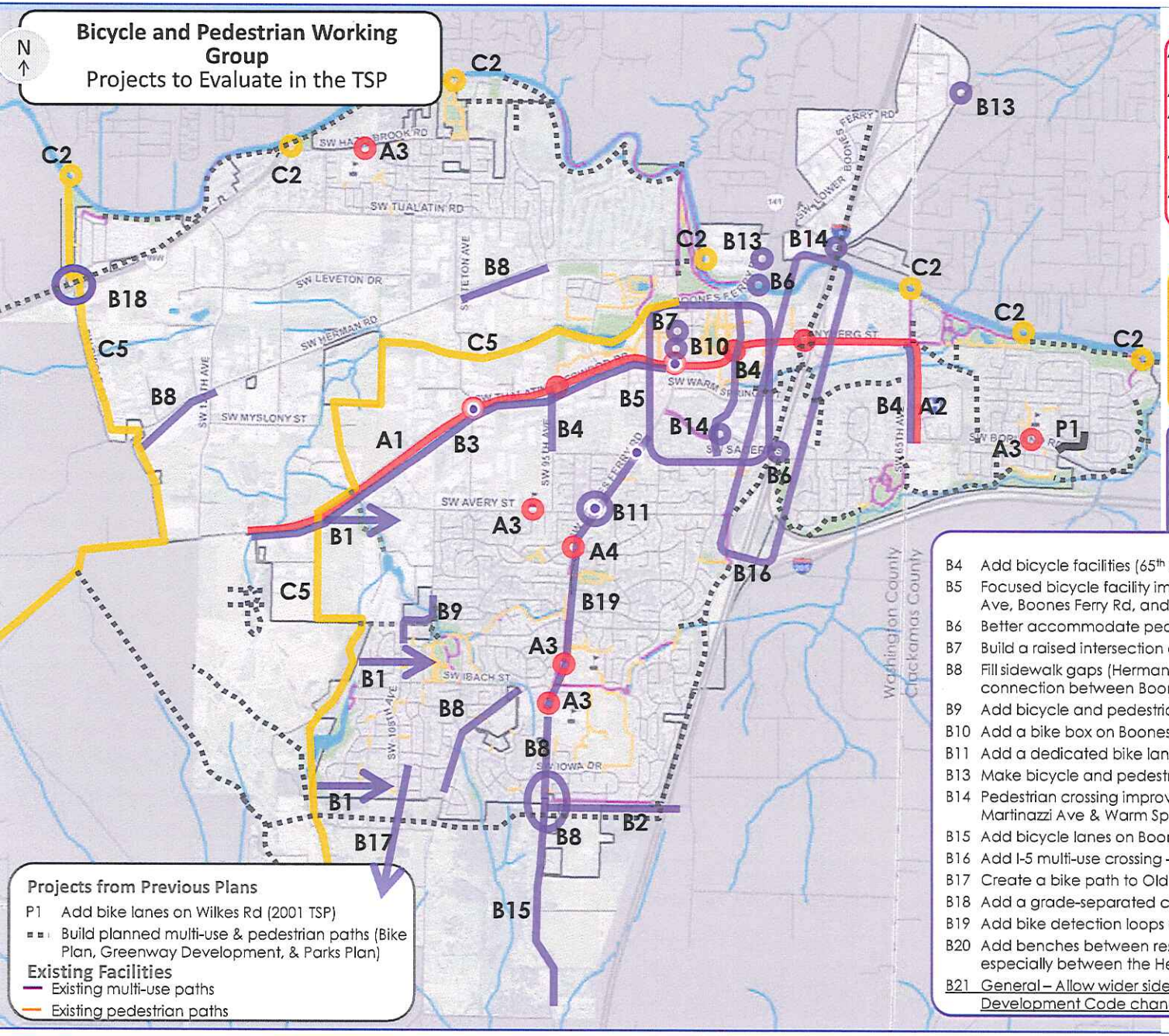
- C3 Connect Nyberg Rd through the Commons
- C7 Extend Lower Boones Ferry Rd across Tualatin River

Bicycle/Pedestrian-Focused Ideas

- D5 Create a pedestrian skybridge that connects downtown retail businesses and the park

Transit-Focused Ideas

- E1 Look for opportunities to build a new park-and-ride to the west of downtown towards 99W (not shown on map) – This is included on the transit map.



Safety-Focused Ideas

- A1 Add pedestrian-focused crossing improvements at key crossings of Tualatin-Sherwood Rd & Nyberg St
- A2 Multi-use path between Borland Rd and Nyberg Ln
- A3 Improve visibility and safety near schools at crosswalks
- A4 Improve visibility at crosswalk at Siletz Dr & Boones Ferry Rd
- A6 General – Provide wayfinding signs for Safe Routes to School

Trail-Focused Ideas

- C2 Build bridges for pedestrian and bicycle access over the Tualatin River
- C4 Create a system of bicycle boulevards (Bikeways on lower –volume streets) connecting all major areas including residential areas (Not on map)
- C5 Tonquin Trail

Facility-Focused Ideas

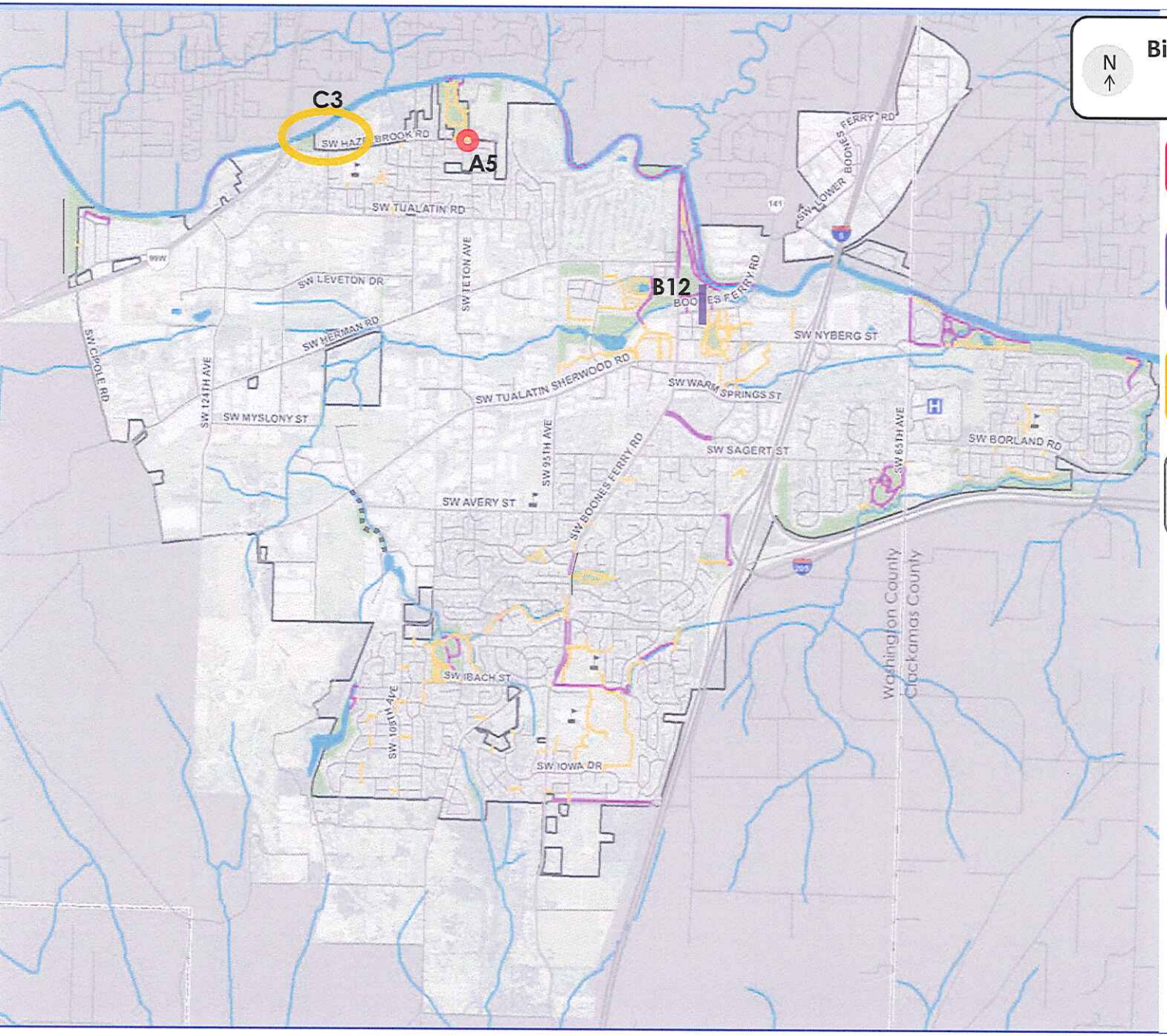
- B1 Connect Tonquin trail with neighborhoods
- B2 Add sidewalks & bicycle lanes on Norwood Rd
- B3 Improve Tualatin-Sherwood Rd to make it more bicycle and pedestrian friendly
- B4 Add bicycle facilities (65th Ave near the hospital, 95th Ave and Martinazzi Ave)
- B5 Focused bicycle facility improvements in heart of downtown, including Martinazzi Ave, Boones Ferry Rd, and Tualatin-Sherwood Rd
- B6 Better accommodate pedestrians on the bridges
- B7 Build a raised intersection at Seneca and Nyberg (crossing Boones Ferry Rd)
- B8 Fill sidewalk gaps (Herman Rd, Grahams Ferry Rd, Boones Ferry Rd, and the connection between Boones Ferry Rd and Norwood Rd)
- B9 Add bicycle and pedestrian facilities on 105th Ave, Blake St, 108th Ave
- B10 Add a bike box on Boones Ferry Rd near the Sweek House
- B11 Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd
- B13 Make bicycle and pedestrian facility improvements at railroad crossings
- B14 Pedestrian crossing improvements (Tualatin View Apartments, Boones Ferry Rd; Martinazzi Ave & Warm Springs St)
- B15 Add bicycle lanes on Boones Ferry Rd to Day Rd
- B16 Add I-5 multi-use crossing – connect to existing multi-use paths
- B17 Create a bike path to Old Town Sherwood as this area develops
- B18 Add a grade-separated crossing over 99W
- B19 Add bike detection loops at major intersections (indicated by ●)
- B20 Add benches between residential and commercial areas throughout the city, especially between the Heritage Center and Haggens (not on map)
- B21 General – Allow wider sidewalks for strolling and outdoor cafes. (Potential Tualatin Development Code change)

Projects from Previous Plans

- P1 Add bike lanes on Wilkes Rd (2001 TSP)
- Build planned multi-use & pedestrian paths (Bike Plan, Greenway Development, & Parks Plan)

Existing Facilities

- Existing multi-use paths
- Existing pedestrian paths



N

Bicycle and Pedestrian Working Group
Ideas that will not be evaluated

Safety-Focused Ideas

A5 Improve lighting at Jurgens Rd and Hazelbrook Rd
Not transportation related

Facility-Focused Ideas

B12 Add a pedestrian overcrossing between the Community park and Tualatin Commons
Not transportation related, project is cost prohibitive

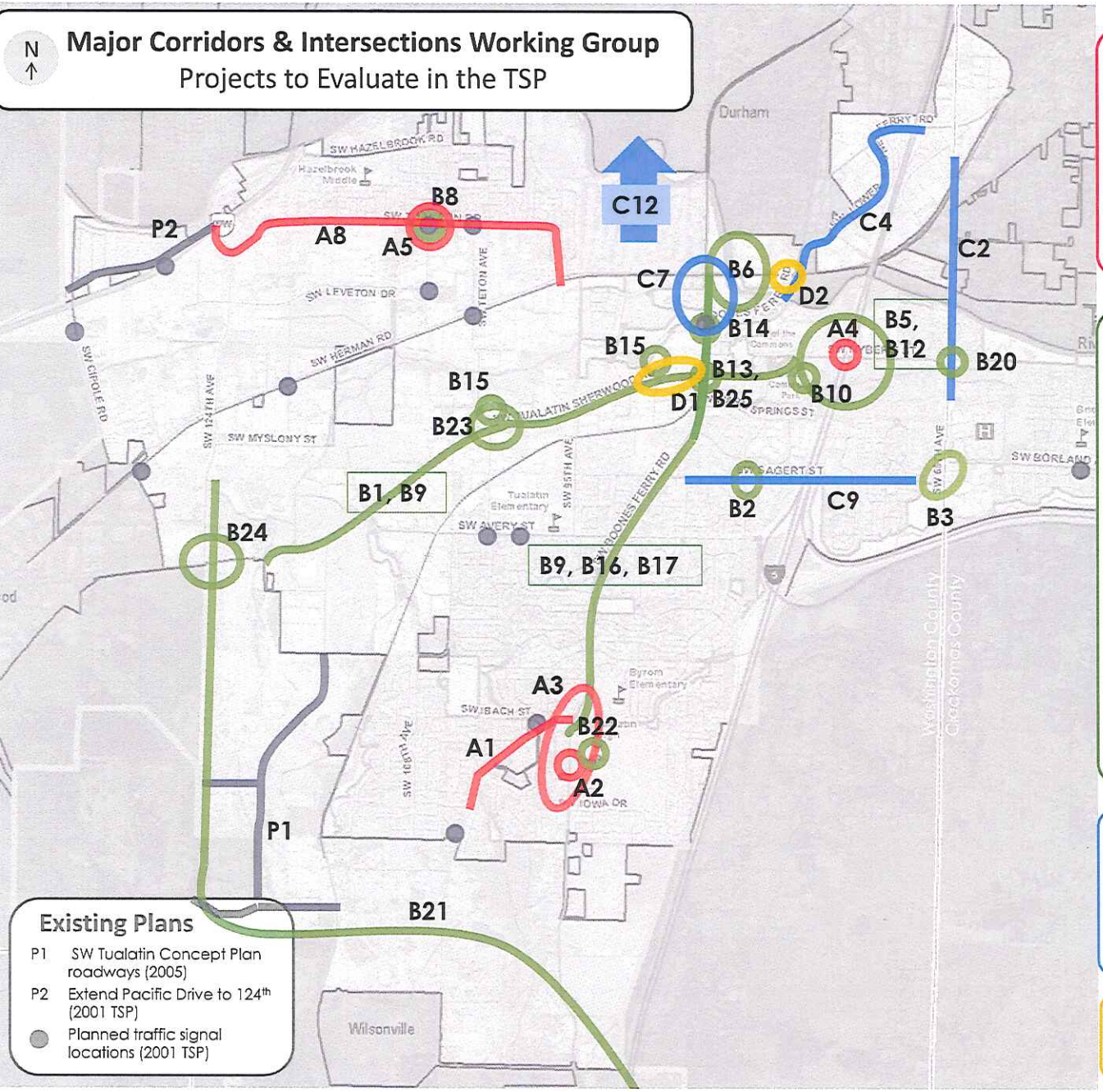
Trail-Focused Ideas

C1 This project has been combined with B16

C3 Add a pedestrian shortcut between Hazelbrook Rd and 99W
~~Not transportation related – no identified need~~

Existing Facilities

- Existing multi-use paths
- Existing pedestrian paths



Existing Plans

- P1 SW Tualatin Concept Plan roadways (2005)
- P2 Extend Pacific Drive to 124th (2001 TSP)
- Planned traffic signal locations (2001 TSP)

Safety-Focused Ideas

- A1 Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd
- A2 Add traffic signal at Tualatin High School
- A3 Consistent speed zones for both Tualatin High School & Byrom Elementary School
- A4 Improve the sight distance at the I-5-Nyberg Rd interchange
- A5 Add traffic signal on Tualatin Rd at 108th Ave
- A6 *General* – consistent use of yellow turn signals on all traffic signals
- A8 Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd. Make residential access easier.

Congestion-Focused Ideas

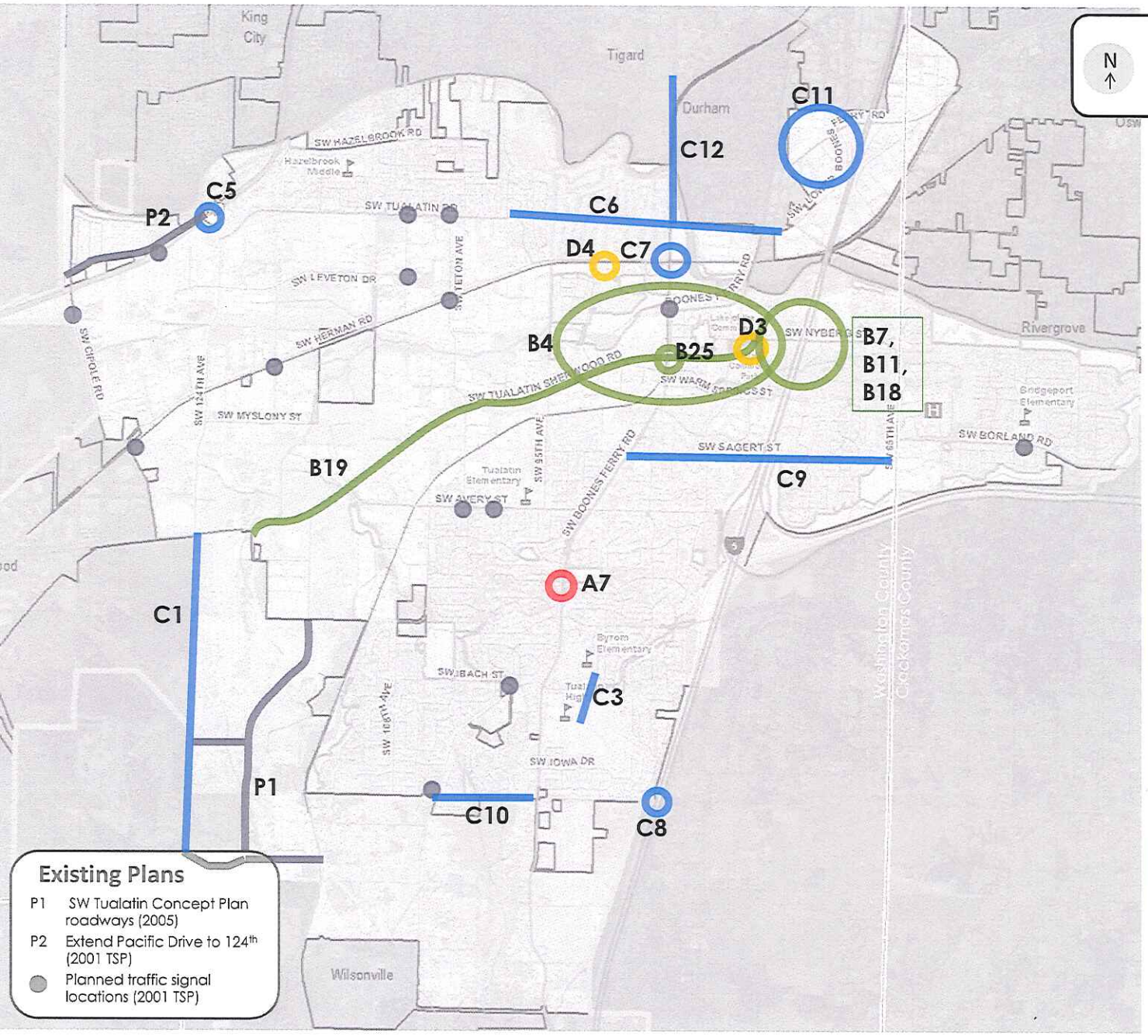
- B1 Widen Tualatin-Sherwood Rd
- B2 Signal or roundabout at Sagert St and Martinazzi Ave
- B3 Realign Sagert St/Borland Rd intersection
- B5 Restrict right turn on red at Nyberg Interchange
- B6 Rethink access in vicinity of Tualatin Community Park
- B8 Prohibit left turns out of 108th Ave or remove trees in the southwest corner
- B9 Coordinate signal timing on Boones Ferry Rd and Tualatin-Sherwood Rd; widen Boones Ferry Rd
- B10 Redesign the intersection at the Fred Meyer (from Nyberg Rd)
- B12 Make two right turn lanes from I-5 north onto Nyberg Rd
- B13 Extend the northbound left turn lane and create a southbound right turn lane on Boones Ferry Rd at Tualatin-Sherwood Rd to reduce backup from WES train; add red light cameras
- B14 Reconfigure Boones Ferry Rd at Tualatin Rd
- B15 Add a 4-way stop by 90th Ave at Kaiser
- B16 Add bus pullouts on Boones Ferry Rd
- B17 Widen Boones Ferry Rd
- B20 Roundabout or signal intersection at Nyberg Rd/65th Ave; keep Nyberg Rd 2 lanes
- B21 Extend 124th Ave and connect to I-5 and Tonquin Rd
- B22 Address congestion caused by high school
- B23 Add a dedicated right turn lane on Teton Ave at Tualatin-Sherwood Rd
- B24 Add right turn lane on Tualatin-Sherwood Rd at 124th Ave

Connectivity-Focused Ideas

- C2 Extend 65th Ave north
- C4 Improve traffic flow on Lower Boones Ferry Rd near Bridgeport Village into downtown Tualatin
- C7 Revise connection between Tualatin Rd and Boones Ferry Rd near the railroad tracks
- C9 Widen Sagert to 2 lanes in each direction
- C12 Provide north-south connectivity over Tualatin River for vehicles

Other Ideas

- D1 Add lane on Tualatin-Sherwood Rd to Fred Meyer, better lane signage for I-5. Install traffic camera for signal violations.
- D2 Better signs needed to direct traffic to correct street



Existing Plans

- P1 SW Tualatin Concept Plan roadways (2005)
- P2 Extend Pacific Drive to 124th (2001 TSP)
- Planned traffic signal locations (2001 TSP)

Major Corridors and Intersections Working Group

Ideas that will not be evaluated

Safety-Focused Ideas

- A7 Improve sight distance and reduce speeds at Boones Ferry Rd and Arapaho Rd

Congestion-Focused Ideas

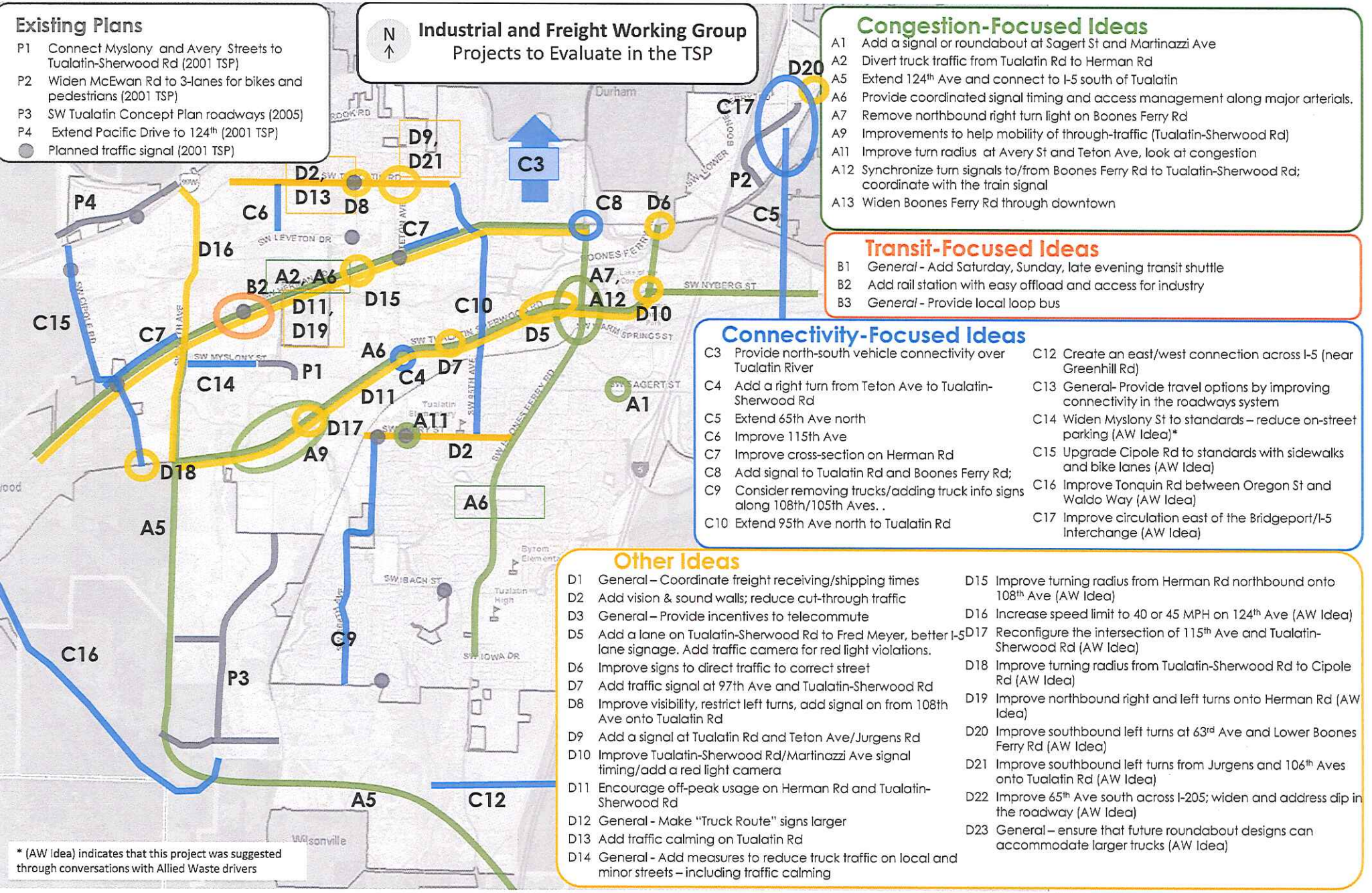
- B4 Consider a traffic loop in downtown (one way, right turn only)
- B7 Consider removing ramp signals at Nyberg interchange
- B11 Consider redesigning the Nyberg interchange into a full cloverleaf
- B18 Add a southbound left turn and right turn lane to Nyberg interchange
- B19 Restrict trucks to right lane. Widen travel lanes.
- B25 Limit access and grade separate the intersection of Tualatin-Sherwood Rd and Boones Ferry Rd

Connectivity-Focused Ideas

- C1 Extend 124th Ave to Tonquin Rd
- C3 Construct a new road between Tualatin High School and Byrom Elementary
- C5 Improve intersection at 99 W and Tualatin Rd
- C6 Extend Tualatin Rd to Lower Boones Ferry Rd
- C7 Add a connection between Tualatin Rd and Boones Ferry Rd; revise signal
- C8 Need on/off ramps from I-5 to Norwood Rd
- C9 Widen Sagert St to 2-lanes each way with pedestrian median
- C10 Extend Helenius Rd (Grahams Ferry Rd to Norwood Rd)
- C11 Create street grid in Bridgeport

Other Ideas

- D3 Tualatin-Sherwood Rd/Martinazzi adjust signal timing, and add a red light camera
- D4 Adjust signal timing



Congestion-Focused Ideas

- A1 Add a signal or roundabout at Sagert St and Martinazzi Ave
- A2 Divert truck traffic from Tualatin Rd to Herman Rd
- A5 Extend 124th Ave and connect to I-5 south of Tualatin
- A6 Provide coordinated signal timing and access management along major arterials.
- A7 Remove northbound right turn light on Boones Ferry Rd
- A9 Improvements to help mobility of through-traffic (Tualatin-Sherwood Rd)
- A11 Improve turn radius at Avery St and Teton Ave, look at congestion
- A12 Synchronize turn signals to/from Boones Ferry Rd to Tualatin-Sherwood Rd; coordinate with the train signal
- A13 Widen Boones Ferry Rd through downtown

Transit-Focused Ideas

- B1 *General* - Add Saturday, Sunday, late evening transit shuttle
- B2 Add rail station with easy offload and access for industry
- B3 *General* - Provide local loop bus

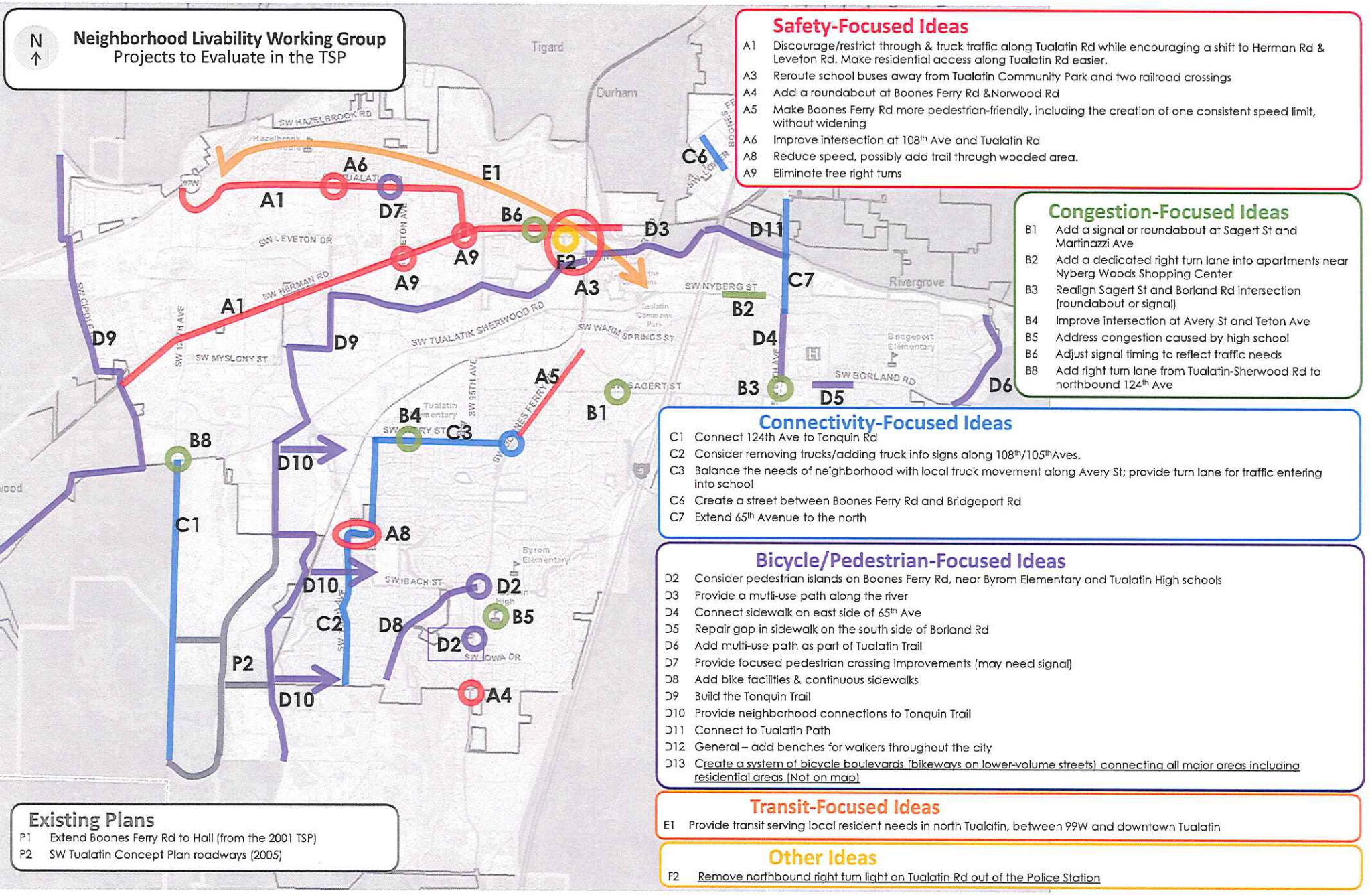
Connectivity-Focused Ideas

- C3 Provide north-south vehicle connectivity over Tualatin River
- C4 Add a right turn from Teton Ave to Tualatin-Sherwood Rd
- C5 Extend 65th Ave north
- C6 Improve 115th Ave
- C7 Improve cross-section on Herman Rd
- C8 Add signal to Tualatin Rd and Boones Ferry Rd;
- C9 Consider removing trucks/adding truck info signs along 108th/105th Aves. .
- C10 Extend 95th Ave north to Tualatin Rd
- C12 Create an east/west connection across I-5 (near Greenhill Rd)
- C13 General- Provide travel options by improving connectivity in the roadways system
- C14 Widen Myslony St to standards – reduce on-street parking (AW Idea)*
- C15 Upgrade Cipole Rd to standards with sidewalks and bike lanes (AW Idea)
- C16 Improve Tonquin Rd between Oregon St and Waldo Way (AW Idea)
- C17 Improve circulation east of the Bridgeport/I-5 Interchange (AW Idea)

Other Ideas

- D1 General – Coordinate freight receiving/shipping times
- D2 Add vision & sound walls; reduce cut-through traffic
- D3 General – Provide incentives to telecommute
- D5 Add a lane on Tualatin-Sherwood Rd to Fred Meyer, better I-5 lane signage. Add traffic camera for red light violations.
- D6 Improve signs to direct traffic to correct street
- D7 Add traffic signal at 97th Ave and Tualatin-Sherwood Rd
- D8 Improve visibility, restrict left turns, add signal on from 108th Ave onto Tualatin Rd
- D9 Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd
- D10 Improve Tualatin-Sherwood Rd/Martinazzi Ave signal timing/add a red light camera
- D11 Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd
- D12 General - Make "Truck Route" signs larger
- D13 Add traffic calming on Tualatin Rd
- D14 General - Add measures to reduce truck traffic on local and minor streets – including traffic calming
- D15 Improve turning radius from Herman Rd northbound onto 108th Ave (AW Idea)
- D16 Increase speed limit to 40 or 45 MPH on 124th Ave (AW Idea)
- D17 Reconfigure the intersection of 115th Ave and Tualatin-Sherwood Rd (AW Idea)
- D18 Improve turning radius from Tualatin-Sherwood Rd to Cipole Rd (AW Idea)
- D19 Improve northbound right and left turns onto Herman Rd (AW Idea)
- D20 Improve southbound left turns at 63rd Ave and Lower Boones Ferry Rd (AW Idea)
- D21 Improve southbound left turns from Jurgens and 106th Aves onto Tualatin Rd (AW Idea)
- D22 Improve 65th Ave south across I-205; widen and address dip in the roadway (AW Idea)
- D23 General – ensure that future roundabout designs can accommodate larger trucks (AW Idea)

* (AW Idea) indicates that this project was suggested through conversations with Allied Waste drivers



Safety-Focused Ideas

- A1 Discourage/restrict through & truck traffic along Tualatin Rd while encouraging a shift to Herman Rd & Leveton Rd. Make residential access along Tualatin Rd easier.
- A3 Reroute school buses away from Tualatin Community Park and two railroad crossings
- A4 Add a roundabout at Boones Ferry Rd &Norwood Rd
- A5 Make Boones Ferry Rd more pedestrian-friendly, including the creation of one consistent speed limit, without widening
- A6 Improve intersection at 108th Ave and Tualatin Rd
- A8 Reduce speed, possibly add trail through wooded area.
- A9 Eliminate free right turns

Congestion-Focused Ideas

- B1 Add a signal or roundabout at Sagert St and Martinazzi Ave
- B2 Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center
- B3 Realign Sagert St and Borland Rd intersection (roundabout or signal)
- B4 Improve intersection at Avery St and Teton Ave
- B5 Address congestion caused by high school
- B6 Adjust signal timing to reflect traffic needs
- B8 Add right turn lane from Tualatin-Sherwood Rd to northbound 124th Ave

Connectivity-Focused Ideas

- C1 Connect 124th Ave to Tonquin Rd
- C2 Consider removing trucks/adding truck info signs along 108th/105thAves.
- C3 Balance the needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school
- C6 Create a street between Boones Ferry Rd and Bridgeport Rd
- C7 Extend 65th Avenue to the north

Bicycle/Pedestrian-Focused Ideas

- D2 Consider pedestrian islands on Boones Ferry Rd, near Byrom Elementary and Tualatin High schools
- D3 Provide a mutli-use path along the river
- D4 Connect sidewalk on east side of 65th Ave
- D5 Repair gap in sidewalk on the south side of Borland Rd
- D6 Add multi-use path as part of Tualatin Trail
- D7 Provide focused pedestrian crossing improvements (may need signal)
- D8 Add bike facilities & continuous sidewalks
- D9 Build the Tonquin Trail
- D10 Provide neighborhood connections to Tonquin Trail
- D11 Connect to Tualatin Path
- D12 General – add benches for walkers throughout the city
- D13 Create a system of bicycle boulevards (bikeways on lower-volume streets) connecting all major areas including residential areas (Not on map)

Transit-Focused Ideas

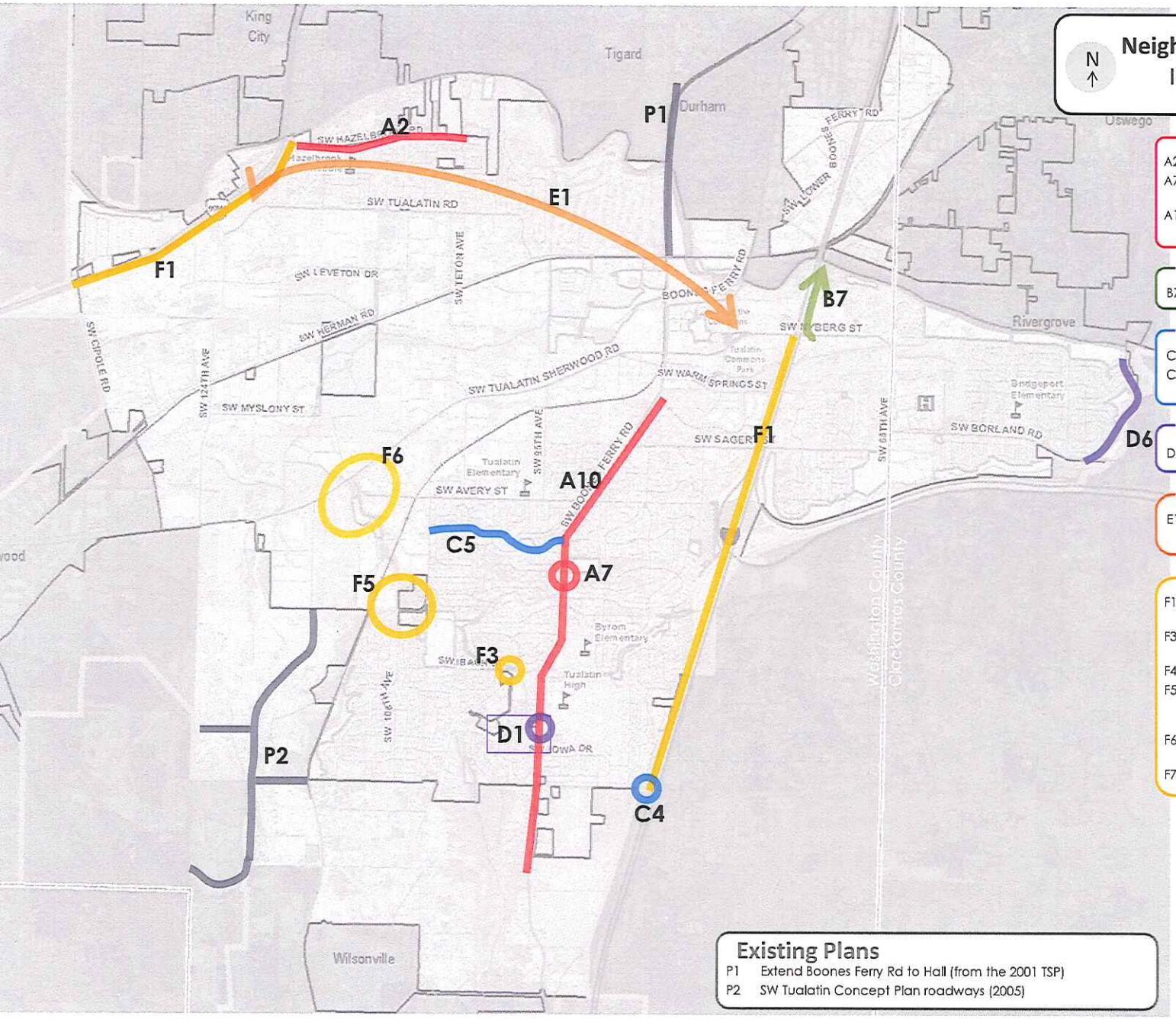
- E1 Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin

Other Ideas

- F2 Remove northbound right turn light on Tualatin Rd out of the Police Station

Existing Plans

- P1 Extend Boones Ferry Rd to Hall (from the 2001 TSP)
- P2 SW Tualatin Concept Plan roadways (2005)



Neighborhood Livability Working Group

Ideas that will not be evaluated

Safety-Focused Ideas

- A2 Improve lighting on Hazelbrook Rd
- A7 Improve sight distance and reduce speeds at Boones Ferry Rd and Arapaho Rd
- A10 Require a stop before vehicles turn right onto Boones Ferry Rd between Mohawk St and Greenhill Ln

Congestion-Focused Ideas

- B7 Add two right turns onto I-5 northbound from Nyberg St

Connectivity-Focused Ideas

- C4 Add I-5 Interchange with Norwood Rd
- C5 Limit Siletz to exit only at Boones Ferry Rd and 105th Ave to minimize cut-through traffic.

Bicycle/Pedestrian-Focused Ideas

- D1 Consider a pedestrian overcrossing on Boones Ferry Rd

Transit-Focused Ideas

- E1 Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin

Other Ideas

- F1 Consider ways to lessen noise from 99W and I-5 on nearby residences
- F3 Intersection of Ibach/Grahams Ferry is confusing; rename road or better signs; need better lighting
- F4 General - Add gateway signs to announce CIOs
- F5 Move industrial area to the SW area (no direct truck route), change to multi family residential, or buffer existing neighborhood better from industrial area
- F6 Create small, neighborhood commercial for residents to walk to
- F7 Add pedestrian benches along Tualatin Road

Existing Plans

- P1 Extend Boones Ferry Rd to Hall (from the 2001 TSP)
- P2 SW Tualatin Concept Plan roadways (2005)

Tualatin TSP Goals and Objectives

As accepted by the Transportation Task Force at its February 2, 2012 meeting

With suggestions at and following Open House

Goal Category	Goal	Objective
Access and Mobility	Maintain and enhance the transportation system to reduce travel times, provide travel time reliability, provide a functional and smooth transportation system, and promote access for all users.	Improve travel time reliability/ provide travel information for all modes including freight and transit
		Provide efficient and quick travel between point A and B
		Provide connectivity within the City between popular destinations and residential areas
		Accommodate future traffic, bicycle, pedestrian, and transit demand
		Reduce trip length and potential travel times for motor vehicles, freight, transit, bicycles, and walking
		Improve comfort and convenience of travel for all modes including bicycles, pedestrians, and transit users
		Increase access to key destinations for all modes
Safety	Improve safety for all users, all modes, all ages, and all abilities within the City of Tualatin.	Address known safety locations, including high crash locations for motor vehicles, bicycles, and pedestrians
		Address geometric deficiencies that could affect safety including intersection design, location and existence of facilities, and street design
		Ensure emergency vehicles are able to provide services throughout the City to support a safe community
		Provide a secure transportation system for all modes
Vibrant Community	Allow for a variety of alternative transportation choices for citizens of and visitors to Tualatin to support a high quality of life and the livability of the community. Produce a plan which respects and preserves neighborhood values and identity.	Create a variety of safe options for transportation needs including bicycling, pedestrians, transit, freight, and motor vehicles
		Provide complete streets that include universal access through pedestrian facilities, bicycle facilities and transit on some streets
		Support a livable community with family-friendly neighborhoods
		Maintain a small town feel
Equity	Consider the distribution of benefits and impacts from potential transportation options, and work towards fair access to transportation facilities for all users, all ages, and all abilities.	Promote a fair distribution of benefits and burdens on different populations within the City (i.e. low-income, transit dependant, minority, age groups) and different neighborhoods and employment areas within the City
		Consider access to transit for all users

Goal Category	Goal	Objective
Economy	Support local employment, local businesses and a prosperous community while recognizing Tualatin's role in the regional economy	Support a vibrant City Center and community, accessible to all modes of transportation
		Support employment centers by providing transportation options to major employers
		Increase access to employment and commercial centers on foot, bike, or transit
		Consider positive and negative effects of alternatives on adjacent residential and business areas
		Accommodate freight movement
		Facilitate efficient access for goods, employees, and customers to and from commercial and industrial lands, including access to the regional transportation network.
Health/Environment	Provide active transportation options to improve the health of citizens in Tualatin. Ensure transportation does not adversely impact public health or the environment.	Provide active transportation options to area schools to reduce childhood obesity
		Promote active transportation modes to support a healthy public and children of all ages
		Provide interconnected networks for bicyclists and pedestrians throughout the City for all age groups
		Consider air quality effects of potential transportation solutions
		Protect park land and create an environmentally sustainable community
		Consider positive and negative effects of potential solutions on the natural environment (including wetlands and habitat areas)
Ability to be Implemented	Promote potential options that are able to be implemented because they have community and political support and are likely to be funded.	Promote fiscal responsibility and ensure that potential transportation system options are able to be funded given existing and anticipated future funding sources
		Evaluate for consistency with existing community, regional, and state goals and policies
		Strive for broad community and political support
		Optimize benefits over the life-cycle of the potential option
		Consider transportation options that make best use of the existing network
		Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood

Tualatin Transportation System Plan, Preliminary Recommendations

PREPARED FOR: Tualatin Transportation Task Force

COPY TO: Kaaren Hofmann, City of Tualatin
Alice Rouyer, City of Tualatin
Dayna Webb, City of Tualatin
Eryn Deeming Kehe, JLA Public Involvement
Terra Lingley, CH2M HILL
Alan Snook, DKS Associates

PREPARED BY: Theresa Carr, CH2M HILL

DATE: February 14, 2013

This memorandum provides a brief overview of the process used to identify preliminary project recommendations for the Tualatin Transportation System Plan (TSP), as presented to the Transportation Task Force (TTF) at its June 21st meeting. Evaluation summaries for each project idea, with the preliminary recommendations, are included at the end of this memo. Maps identifying the location of each project idea are also included.

In May 2012, the TSP's technical team reviewed each of the projects identified as feasible against a set of evaluation criteria. The evaluation criteria are quantitative or qualitative measures that help the team identify how well the project idea is at meeting the TSP's goals and objectives (see Preliminary Evaluation Results memo dated May 25, 2012 for more information on this evaluation) These results were discussed at the May 24th TTF meeting, and with each of the six Working Groups at their third round of meetings, as follows:

- Downtown (June 4)
- Transit (June 5)
- Bicycle and Pedestrian (June 6)
- Industrial and Freight (June 13, mid-day)
- Neighborhood Livability (June 13, evening)
- Major Corridors and Intersections (June 14)

The attached evaluations have been refined to reflect modest changes made during these meetings.

In late May, the technical team conducted a preliminary assessment of whether each project idea should be moved forward into the TSP. All Working Group participants also had this discussion, and participants at Working Group meetings were asked to place dots next to project ideas they thought should or should not move forward, as follows:

- Green dots (participants were given five total) denoted the projects that would provide the greatest value to the community
- Red dots (participants were given five total) denoted projects that should not move forward into the TSP

Working Group participants did not need to use all dots provided. Photos of this dot exercise are on the project website at www.tualatintsp.org. Following the third round of meetings the technical team incorporated feedback from the Working Groups into the attached preliminary recommendations. The attached tables are organized to illustrate the following:

1. Projects that should be included in the TSP
2. Projects that should only be included as part of an urban upgrade, consistent with design standards for that roadway's functional classification
3. Projects that should not be included in the TSP
4. Projects that are topics for further refinement in the summer months

(Please note: Many project ideas were discussed at more than one Working Group meeting. The project team strives for consistency in wording, evaluation, and recommendations, but do allow these cross-cutting project ideas to be reported under each Working Group topic area.)

At its June 21st meeting, the TTF will review developments from this third round of Working Group meetings, and TTF members will be asked to accept or refine the preliminary recommendations before they are forwarded to the community as a whole for review over the summer months.

Six areas have been identified for further refinement over the summer months:

1. Tualatin-Sherwood Road options
2. Nyberg Interchange options
3. Boones Ferry Road options
4. North to South connectivity options
5. Herman Road and Tualatin Road options
6. Downtown connectivity options

For each of the six areas above, the traffic analysis and conceptual design teams will be evaluating up to three alternatives to be discussed with the Task Force during July and August and with the community over the summer months and at a larger meeting in September. Tradeoffs will be discussed related to traffic, connectivity, right of way, environmental, and cost.

Bicycle and Pedestrian Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A1	Add pedestrian crossing treatments at key locations on Tualatin-Sherwood and Nyberg	◒	●	●	◒	◒	●	◒	Yes
A2	Multi-use path on 65th Ave between Borland and Nyberg	●	◒	●	●	◒	●	◒	Yes
A3	Improve visibility and safety near schools at crosswalks	◒	●	◒	○	◒	◒	◒	Yes
A4	Improve visibility at crosswalk at Siletz Dr and Boones Ferry Rd	○	●	○	○	◒	◒	◒	Yes
A6	Provide wayfinding for Safe Routes to School	◒	◒	◒	◒	◒	○	◒	Yes
B1	Connect Tonquin trail with neighborhoods	●	◒	◒	●	●	●	◒	Yes
B8	Fill sidewalk gaps on Grahams Ferry, Boones Ferry, and Herman	●	●	●	N/A	●	◒	◒	Yes
B9	Add bicycle and pedestrian facilities on 105th Ave, Blake St, and 108th Ave	◒	●	◒	◒	●	◒	◒	Yes
B11	Add dedicated bike lane through Avery and Boones Ferry intersection	◒	◒	N/A	N/A	◒	◒	◒	Yes
B13	Improve bicycle and pedestrian treatments at railroad crossings	◒	●	N/A	N/A	●	◒	○	Yes
B16	Add I-5 multi-use crossing – connect to planned and existing multi-use paths	●	○	●	●	◒	◒	◒	Yes
B20	Add benches for walkers throughout the city	N/A	N/A	●	N/A	●	●	●	Yes
C4	Create a bicycle boulevard system connecting major areas	◒	●	◒	◒	●	●	◒	Yes
C5	Build the Tonquin Trail	●	●	●	●	●	●	●	Yes
B2	Add sidewalks and bicycle lanes on Norwood	◒	●	◒	◒	●	◒	◒	Only upon urban upgrade

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
B4	Add bicycle facilities near the hospital, 95th and Martinazzi	◒	●	●	◒	●	◒	◒	Only upon urban upgrade, or as part of A2
B6	Better accommodate pedestrians on the bridges	●	◒	◒	◒	●	●	○	Only upon urban upgrade
B15	Add bicycle lanes on Boones Ferry Rd to Day Rd	◒	●	●	N/A	●	●	◒	Only upon urban upgrade
B3	Improve Tualatin-Sherwood Rd for bicyclists and pedestrians	◒	◒	N/A	◒	●	●	○	No – Tonquin Trail
B7	Build a raised intersection at Seneca and Nyberg	○	○	◒	○	◒	◒	○	No
B10	Add bike box on Boones Ferry Rd near the Sweek House	○	◒	◒	○	◒	○	●	No
B17	Create a bike path to Old Town Sherwood as this area develops	●	●	◒	◒	◒	●	○	No – Tonquin Trail
B18	Add a grade-separated crossing over 99W	◒	●	○	○	◒	○	○	No
B19	Add bike detection loops at major intersections	◒	N/A	◒	N/A	◒	◒	●	No
B5	Improve bicycle facility treatments in downtown core	◒	●	●	●	●	●	◒	Refinement topic area
B14	Improve pedestrian crossing along Boones Ferry Rd	◒	◒	●	●	◒	N/A	●	Refinement topic area
B21	Allow wider sidewalks for strolling and outdoor cafes	N/A	◒	●	●	◒	N/A	◒	Refinement topic area
C2	Build pedestrian and bicycle bridges over the Tualatin River	◒	●	●	◒	●	◒	○	Refinement topic area

PRELIMINARY

Downtown Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A1	Upgrade bridge surface and improve illumination along path in back of Haggens	-	●	●	-	●	-	-	Yes
A5	Redesign Fred Meyer to Kmart intersection (including pedestrian crossing)	●	●	-	-	-	-	-	Yes
B1	Rethink access between Tualatin Road and Tualatin Community Park	●	-	-	●	●	●	-	Yes
B3	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5	●	-	○	●	○	-	-	Yes
B7	Replace/widen Boones Ferry Road bridge over Tualatin River	●	●	-	●	-	●	-	Yes
C1	Build trail along river from Boones Ferry to downtown, extend to greenway	●	-	-	-	●	-	-	Yes
C4	Create grid system near Kmart upon redevelopment with connection to Seneca	●	-	●	-	●	-	-	Yes
D2	Upgrade Nyberg interchange for bicyclist safety	●	●	-	○	-	-	○	Yes
D6	Improve sidewalks and bicycle lane at Boones Ferry to Lower Boones Ferry	●	●	-	-	●	-	-	Yes
D7	Bike and pedestrian treatments near Bridgeport Village	-	-	-	-	-	○	-	Yes
D8	Provide signage to accommodate bicycles on Boones Ferry	-	-	-	-	●	-	-	Yes
D9	Add bicycle lane on Martinazzi north of Warm Springs	-	-	-	-	●	-	-	Yes
F1	Encourage multimodal circulation and transit-oriented redevelopment	●	-	●	-	●	-	-	Yes
F2	Look for opportunities to open downtown's connection to the riverfront	●	-	●	-	●	-	-	Yes

PRELIMINARY

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
F4	Add structured parking in the downtown core	◒	◒	◒	◒	N/A	N/A	◒	Yes
A2	Consider raised intersections on Martinazzi	○	◒	●	○	◒	●	◒	No
A4	Reduce speeds near Bridgeport Village	○	●	○	○	◒	N/A	○	No
A7	Add pedestrian island on Martinazzi Ave north of Seneca	○	◒	○	●	◒	◒	●	No
C6	Create road connections between Boones Ferry Rd and SW 90th Ave	◒	○	N/A	◒	○	◒	○	No
D4	Add pedestrian crossing at the WES stop (Seneca)	○	○	◒	○	◒	◒	○	No
D10	Coordinate traffic signal timing to accommodate pedestrians	○	N/A	●	○	○	◒	○	No
D11	Add focused pedestrian crossing over Boones Ferry Road at Tonka	○	◒	◒	○	◒	◒	○	No
F3	Eliminate parking minimum development requirements and consider parking maximums	N/A	◒	○	○	N/A	N/A	○	No
A6	Add roundabout at Boones Ferry and Lower Boones Ferry Road	◒	○	○	◒	◒	◒	○	Refinement topic area
B9	Widen Boones Ferry Rd	●	◒	◒	◒	○	◒	○	Refinement topic area
B10	Widen Tualatin-Sherwood Rd	◒	◒	○	●	○	●	○	Refinement topic area
C2	Provide north-south connectivity over Tualatin River for vehicles	●	◒	◒	●	◒	◒	○	Refinement topic area
C5	Improve downtown core street connectivity	●	◒	●	○	●	◒	○	Refinement topic area
D1	Redesign pedestrian crossings, consider flashing lights	○	●	◒	○	◒	◒	◒	Refinement topic area
D3	Optimize intersections to reduce conflicts along Boones Ferry and Tualatin Sherwood Roads	◒	●	◒	○	◒	◒	◒	Refinement topic area

Industrial and Freight Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A1	Add a signal or roundabout at Sagert/ Martinazzi	●	▬	▬	●	▬	○	▬	Yes
A5	Extend 124th Ave to the south	●	▬	▬	●	▬	●	▬	Yes
A6	Provide coordinated signal timing and access management along major arterials	●	●	▬	▬	N/A	N/A	▬	Yes
A11	Address congestion on Avery and Teton	●	●	N/A	▬	N/A	N/A	▬	Yes
A12	Synchronize turn signals to/from Boones Ferry to Tualatin-Sherwood; coordinate with the train signal	●	N/A	▬	▬	N/A	N/A	▬	Yes
B1	Expand shuttle for industrial and manufacturing workers during the day – consider charging fares	●	N/A	●	▬	▬	●	▬	Yes
B3	Provide a loop bus route serving local residents	●	N/A	●	▬	▬	●	○	Yes
C5	Extend 65th Ave north	●	▬	○	●	○	▬	○	Yes
C9	Consider removing trucks/adding truck info signs along 108th/105th Aves	○	N/A	●	○	●	○	▬	Yes
C12	Create an east/west connection across I-5 (near Greenhill Rd)	●	●	▬	▬	▬	▬	▬	Yes (with Basalt Creek)
D1	Coordinate freight receiving/ shipping times	●	●	●	▬	N/A	N/A	▬	Yes
D3	Provide incentives to telecommute	▬	▬	N/A	▬	▬	▬	▬	Yes
D5	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5	●	▬	○	●	▬	N/A	▬	Yes
D11	Encourage off-peak usage on Herman Rd and Tualatin-Sherwood Rd	▬	N/A	N/A	▬	●	N/A	▬	Yes
D14	Add measures to reduce truck traffic on local and minor collectors	○	●	●	○	▬	●	▬	Yes
D22	Improve 65th Ave south across I-205; widen and address dip in the roadway	▬	▬	N/A	▬	N/A	N/A	▬	Yes

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
D23	Ensure that future roundabout designs can accommodate larger trucks	◒	●	N/A	◒	N/A	N/A	◒	Yes
C14	Widen Myslony St to standards - reduce on-street parking	◒	●	N/A	◒	N/A	◒	◒	Only with urban upgrade
C15	Upgrade Cipole Rd to standards with sidewalks and bike lanes	◒	◒	●	●	◒	◒	◒	Only with urban upgrade
C16	Improve Tonquin Rd between Oregon St and Waldo Way	◒	◒	N/A	◒	N/A	◒	◒	Only with urban upgrade
A7	Remove NB right turn light on Boones Ferry	◒	○	◒	◒	N/A	N/A	◒	No
C4	Add a left turn from Teton to Tualatin Rd	N/A	N/A	N/A	N/A	N/A	N/A	○	No
C6	Improve 115th Ave	●	◒	○	◒	◒	◒	◒	No
C8	Add signal to Tualatin and Boones Ferry intersection	●	●	N/A	◒	○	◒	○	No
C10	Extend 95th Ave north to Tualatin Rd	●	◒	○	◒	○	○	○	No
C13	Provide travel options by improving connectivity in the roadway system	◒	●	●	◒	◒	◒	◒	No
D2	Add vision and sound walls; reduce cut-through traffic	○	○	●	○	○	○	○	No
D6	Improve signs to direct traffic to correct street	◒	N/A	N/A	N/A	N/A	N/A	○	No
D10	Improve Tualatin-Sherwood and Martinazzi signal timing	◒	N/A	N/A	◒	N/A	N/A	◒	No
D12	Make "Truck Route" signs larger	N/A	N/A	◒	◒	N/A	N/A	◒	No
D16	Increase speed limit to 40 or 45 MPH on 124th Ave	◒	N/A	N/A	◒	N/A	N/A	◒	No
D20	Improve southbound left turns at 63rd and Lower Boones Ferry	◒	◒	N/A	◒	N/A	N/A	◒	No
B2	Add rail station with easy offload and access for industry in the west part of town	●	N/A	●	◒	●	●	◒	Needs Refinement
C17	Improve circulation east of the Bridgeport/ I-5 Interchange	◒	◒	◒	◒	◒	◒	◒	Needs Refinement

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A2	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	●	N/A	▬	▬	▬	▬	▬	Refinement Topic Area
A9	Improvements to help mobility of through-traffic on Tualatin-Sherwood Rd	●	▬	▬	●	○	●	▬	Refinement Topic Area
A13	Widen Boones Ferry Rd through downtown	●	▬	▬	▬	○	▬	○	Refinement Topic Area
C3	Provide north-south vehicle connectivity over Tualatin River	●	▬	▬	●	▬	▬	○	Refinement Topic Area
C7	Improve cross-section on Herman Rd	●	●	○	●	●	▬	▬	Refinement Topic Area
D7	Add traffic signal at 97th Ave and Tualatin-Sherwood Rd	▬	▬	▬	▬	▬	N/A	▬	Refinement Topic Area
D8	Improve visibility, add signal restrict left turns from 108th onto Tualatin	▬	▬	▬	○	▬	▬	▬	Refinement Topic Area
D9	Add a signal at Tualatin Rd and Teton Ave/Jurgens Rd	▬	N/A	▬	▬	▬	▬	▬	Refinement Topic Area
D13	Add traffic calming on Tualatin Road	○	○	●	○	▬	●	▬	Refinement Topic Area
D15	Improve turning radius from Herman Rd northbound onto 108th Ave	▬	▬	N/A	▬	N/A	N/A	▬	Refinement Topic Area
D17	Reconfigure the intersection of 115th and Tualatin-Sherwood	▬	▬	N/A	▬	N/A	N/A	▬	Refinement Topic Area
D18	Improve turning radius from Tualatin-Sherwood to Cipole	▬	▬	N/A	▬	N/A	N/A	▬	Refinement Topic Area
D19	Improve NB right and left turns onto Herman	▬	▬	N/A	●	N/A	N/A	▬	Refinement Topic Area
D21	Improve SB left turns from Jurgens and 106th onto Tualatin	▬	▬	N/A	▬	N/A	N/A	▬	Refinement Topic Area

PRELIMINARY

This page left blank intentionally.

PRELIMINARY

Major Corridors and Intersections Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A1	Reduce speeds, add guardrail and shoulders to this section of Grahams Ferry Rd	◒	●	●	N/A	◒	◒	◒	Yes
A3	Consistent speed zones for Tualatin High School and Byrom Elementary School	N/A	●	N/A	N/A	N/A	N/A	●	Yes
A6	Consistent use of yellow turn signals at traffic signals	◒	●	N/A	◒	N/A	N/A	●	Yes
B2	Signal or roundabout at Sagert and Martinazzi	●	◒	◒	●	◒	○	◒	Yes
B6	Rethink access between Tualatin Road and Tualatin Community Park	◒	◒	●	N/A	◒	●	◒	Yes
B8	Prohibit left turns out of 108th Ave or remove trees in the southwest corner	○	◒	○	◒	◒	○	◒	Yes
B9	Coordinate signal timing on Boones Ferry Rd	●	●	N/A	●	N/A	◒	●	Yes
B10	Redesign Nyberg/Fred Meyer intersection and improve pedestrian crossing	◒	●	◒	●	◒	◒	◒	Yes
B16	Add bus pullouts on Boones Ferry Rd	●	◒	○	◒	○	●	◒	Yes
B21	Extend 124th Ave to south	●	◒	◒	●	◒	●	◒	Yes
B23	Add a dedicated right turn lane on Teton at Tualatin-Sherwood	●	◒	N/A	◒	◒	◒	●	Yes
C2	Extend 65th Ave to the north	●	◒	○	●	○	◒	○	Yes
C4	Improve traffic flow on Lower Boones Ferry Rd between Bridgeport Village and downtown	●	●	◒	●	◒	◒	◒	Yes
D1	Add eastbound lane on Tualatin-Sherwood from Martinazzi to I-5	●	●	○	●	○	◒	◒	Yes
A2	Add traffic signal at Tualatin High School	◒	◒	◒	N/A	◒	○	○	No
B3	Realign Sagert /Borland to one intersection	●	◒	○	○	○	○	○	No
B14	Reconfigure Boones Ferry at Tualatin Road	◒	◒	○	◒	○	◒	○	No

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
B15	Add a 4-way stop by 90th Ave at Kaiser	○	◒	◒	○	◒	◒	◒	No
B20	Roundabout or signal at Nyberg and 65th intersection	◒	N/A	○	○	○	○	○	No
B22	Address congestion caused by high school	◒	◒	◒	◒	◒	○	◒	No
C7	Revise connection between Tualatin and Boones Ferry near the railroad tracks	◒	◒	○	◒	○	◒	○	No
C9	Widen Sagert to 2-lanes each way	●	●	○	●	○	○	○	No
D2	Better signs needed to direct traffic to correct street	N/A	N/A	N/A	N/A	N/A	N/A	○	No
A4	Improve sight distance at I-5 and Nyberg Rd interchange	N/A	●	N/A	◒	◒	◒	◒	Refinement Topic Area
A5	Add traffic signal on Tualatin Rd at 108th	◒	◒	◒	◒	◒	◒	◒	Refinement Topic Area
A8	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	●	◒	●	◒	◒	◒	○	Refinement Topic Area
B1	Widen Tualatin-Sherwood Rd	●	◒	○	●	○	●	○	Refinement Topic Area
B5	Restrict right turn on red at Nyberg Interchange	○	●	N/A	○	◒	●	○	Refinement Topic Area
B12	Make two right turn lanes from I-5 north onto Nyberg Rd	●	◒	N/A	◒	○	●	◒	Refinement Topic Area
B13	Extend NB left turn and create a SB right turn lane on Boones Ferry at Tualatin-Sherwood to reduce backup from WES train	●	◒	◒	●	◒	◒	◒	Refinement Topic Area
B17	Widen Boones Ferry Rd at the south end of the City	●	◒	◒	◒	○	◒	○	Refinement Topic Area
B24	Add right turn lane on Tualatin-Sherwood at 124th	◒	◒	N/A	◒	◒	○	◒	Refinement Topic Area
C12	Look for ways to provide north-south connectivity over Tualatin River for vehicles	●	◒	◒	◒	◒	◒	○	Refinement Topic Area

Neighborhood Livability Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A3	Reroute school buses away from Tualatin Community Park and railroad crossings	◒	●	◒	N/A	◒	◒	◒	Yes
A8	Reduce speed, possibly add trail through wooded area	○	◒	●	○	◒	◒	◒	Yes
B1	Add signal or roundabout at Sagert and Martinazzi	●	◒	◒	●	◒	○	◒	Yes
B4	Improve intersection at Avery and Teton	●	●	N/A	◒	N/A	N/A	◒	Yes
C1	Extend 124th Ave to south	●	◒	◒	●	◒	●	◒	Yes
C2	Consider removing trucks/adding truck info signs along 108th/105th Aves	○	N/A	●	○	●	●	◒	Yes
C3	Balance needs of neighborhood with local truck movement along Avery St; provide turn lane for traffic entering into school	●	◒	◒	◒	◒	◒	◒	Yes
C7	Extend 65th Ave to the north	●	◒	○	●	○	◒	○	Yes
D3	Provide a multi-use path along the river	●	●	●	◒	●	●	◒	Yes
D4	Multi-use path on 65th Ave between Borland and Nyberg	●	◒	●	●	◒	●	◒	Yes
D5	Repair sidewalk gap on south side of Borland	●	●	●	N/A	●	◒	●	Yes
D6	Add multi-use path as part of Tualatin Trail	●	●	●	◒	●	◒	◒	Yes
D9	Build the Tonquin Trail	●	●	●	●	●	●	●	Yes
D10	Connect Tonquin trail with neighborhoods	●	◒	◒	●	●	●	◒	Yes
D11	Connect to Tualatin Path	●	◒	●	N/A	◒	◒	◒	Yes
D12	Add benches for walkers throughout city	N/A	N/A	●	N/A	●	●	●	Yes
D13	Create a bicycle boulevard system connecting major areas	◒	●	◒	◒	●	●	◒	Yes
E1	Provide transit serving local resident needs in north Tualatin, between 99W and downtown Tualatin	●	N/A	◒	◒	◒	◒	○	Yes

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
D8	Add bike facilities and continuous sidewalks along Graham's Ferry Road	●	●	◒	N/A	◒	◒	◒	Only with urban upgrade
B3	Realign Sagert /Borland to one intersection	●	◒	○	○	○	○	○	No
B5	Address congestion caused by high school	◒	◒	◒	◒	◒	○	◒	No
C6	Create a street between Boones Ferry Rd and Bridgeport Rd	●	◒	○	○	○	○	○	No
F2	Remove right turn light in the northbound direction on Tualatin Rd out of the Police Station	○	○	N/A	N/A	N/A	N/A	◒	No
A1	Discourage through and truck traffic along Tualatin Rd while encouraging through and truck traffic along Herman Rd	●	◒	●	◒	◒	◒	○	Refinement Topic Area
A4	Add a roundabout at Boones Ferry Rd and Norwood Rd.	◒	◒	○	○	○	◒	◒	Refinement Topic Area
A5	Make Boones Ferry Rd more pedestrian-friendly	◒	●	●	◒	●	◒	◒	Refinement Topic Area
A6	Improve intersection at 108th and Tualatin	◒	◒	◒	◒	◒	◒	◒	Refinement Topic Area
A9	Eliminate free right turns – on Herman Rd at Teton Ave and Tualatin Rd	○	●	●	○	◒	◒	●	Refinement Topic Area
B2	Add a dedicated right turn lane into apartments near Nyberg Woods Shopping Center	◒	◒	◒	○	◒	◒	◒	Refinement Topic Area
B6	Adjust signal timing to give priority to Tualatin Road through traffic	●	◒	○	◒	○	○	◒	Refinement Topic Area
B8	Add right turn lane on Tualatin-Sherwood at 124th	◒	◒	N/A	◒	◒	○	◒	Refinement Topic Area
D2	Add pedestrian islands on Boones Ferry, near Byrom ES and Tualatin HS	○	◒	◒	○	◒	◒	◒	Refinement Topic Area
D7	Provide focused pedestrian crossing improvements along Tualatin Road	○	●	●	○	●	◒	◒	Refinement Topic Area

Transit Preliminary Project Recommendations

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A2	Provide bus transit service on 124th Street	●	N/A	●	▬	▬	●	▬	Yes
A3	Provide bus transit service on Avery Street	●	N/A	●	▬	▬	●	▬	Yes
A5	Extend bus service to east Tualatin	●	N/A	●	▬	▬	●	▬	Yes
A7	Explore a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service	●	N/A	●	●	▬	●	▬	Yes
A8	Provide a loop bus route serving local residents	●	N/A	●	▬	▬	●	○	Yes
A10	Expand shuttle for industrial and manufacturing workers during the day – consider charging fares	●	N/A	●	▬	▬	●	▬	Yes
A12	General – need extended service for all transit	●	N/A	●	▬	▬	▬	○	Yes/ Focus on 96
B2	Provide high capacity transit service on Tualatin-Sherwood Road	●	N/A	▬	●	▬	●	▬	Yes (combine with South Corridor conversation)
C1	Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections	●	N/A	●	●	▬	●	▬	Yes
D1	Look for potential park-and-ride locations in west Tualatin	▬	N/A	●	▬	●	●	▬	Yes
D2	Look for potential park-and-ride locations in south Tualatin	▬	N/A	●	N/A	●	●	▬	Yes
D3	Add parking capacity at Tualatin Park-and-Ride - Potential structure	▬	N/A	▬	●	○	●	▬	Yes
A6	Provide express bus service between Tualatin and Salem	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No

ID	Project Idea	Access / Mobility	Safety	Vibrant Community	Economy	Health / Environment	Equity	Ability to be Implemented	Preliminary Recommendation
A13	General – use more energy efficient buses	N/A	N/A	N/A	N/A	N/A	N/A	○	No
A14	Coordinate bus schedules with WES schedule	N/A	N/A	N/A	N/A	N/A	N/A	○	No
A16	Add stops on higher volume routes	○	N/A	●	N/A	◒	◒	○	No
B1	Add more bicycle storage at the WES station	◒	N/A	N/A	N/A	N/A	N/A	○	No
B4	Build an elevated pedestrian bridge to connect the Tualatin park-and-ride with shopping	◒	N/A	○	N/A	N/A	○	○	No
D4	Look for opportunities to reduce size of or relinquish underutilized park-and-ride lots and transfer spaces to higher utilized areas	◒	N/A	●	◒	◒	●	◒	No
D5	Add a park-and-ride in east Tualatin	◒	N/A	●	N/A	●	●	◒	No
A1	Provide bus transit service on Herman Road	●	N/A	●	◒	◒	●	◒	Refinement Topic Area
A4	Provide bus transit service on Tualatin Road between downtown and 99W	●	N/A	●	◒	◒	●	◒	Refinement Topic Area

PRELIMINARY

TualatinTSP_TBG061511105413SPDX 422992.PS.C1.HWn6/15/2011 kk

City of Tualatin

Refinement Areas (Part 1)

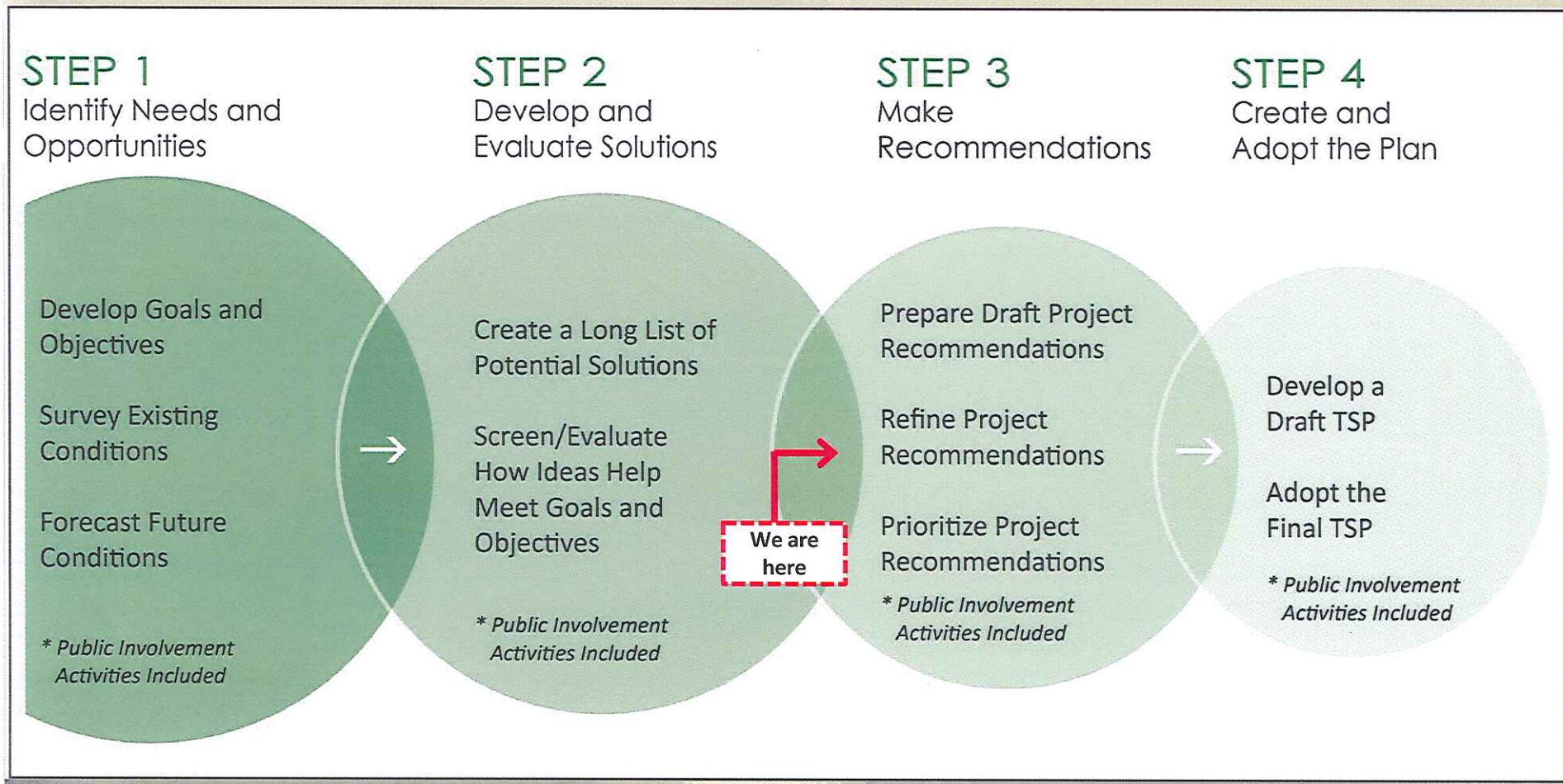
Tualatin TSP

Presentation to
Tualatin Transportation Task Force
July 19, 2012

Presentation Outline

- **Focus of tonight's discussion**
- **Refinement area presentation and discussion**
  - Nyberg interchange
  - 65th Avenue
  - North-south connectivity
  - Herman Road and Tualatin Road
- **Next steps and preview of August meeting**

Where We Are In the TSP Process



Progress Since our June 21st Meeting…

1. Mobilized the team to conduct additional analysis on refinement areas
   - ✓ Traffic and safety
   - ✓ Conceptual design
   - ✓ Environmental and policy
2. Team meetings to share information, package options
3. Discuss options with City, agencies

Our Seven Refinement Topic Areas

1. Nyberg interchange
2. 65th Avenue
3. North to south connectivity
4. Herman Road and Tualatin Road
5. Tualatin-Sherwood Road
6. Boones Ferry Road
7. Tualatin's Downtown Circulation

Tonight's Discussion Focuses on 1-4

1. Nyberg interchange
2. 65th Avenue
3. North to south connectivity
4. Herman Road and Tualatin Road
5. Tualatin-Sherwood Road
6. Boones Ferry Road
7. Tualatin's Downtown Circulation

Next Month's Discussion Focuses on 5-7

1. Nyberg interchange
2. 65th Avenue
3. North to south connectivity
4. Herman Road and Tualatin Road
5. Tualatin-Sherwood Road
6. Boones Ferry Road
7. Tualatin's Downtown Circulation

Plus we will answer questions and revisit anything as needed from tonight's meeting

Organization of Presentation

- Goal statement
- Description and sketch of possible solution
- Considerations
  - Local traffic, safety
  - City-wide traffic
  - Design considerations/constraints
  - Environmental/policy considerations

Your Role Tonight

1. Discuss as a task force the tradeoffs of various solutions
2. What are the benefits of doing something, vs. doing nothing?
3. What are the impacts?
4. Weigh in on forwarding options to the Summit

An Overall Context

- The TSP is in preliminary recommendations stage, through September
- We hope to reach resolution on *some* items tonight
- We don't expect to reach resolution on everything
- The conversation continues…
  - Online
  - August TTF meeting
  - September summit

Refinement Area Discussion

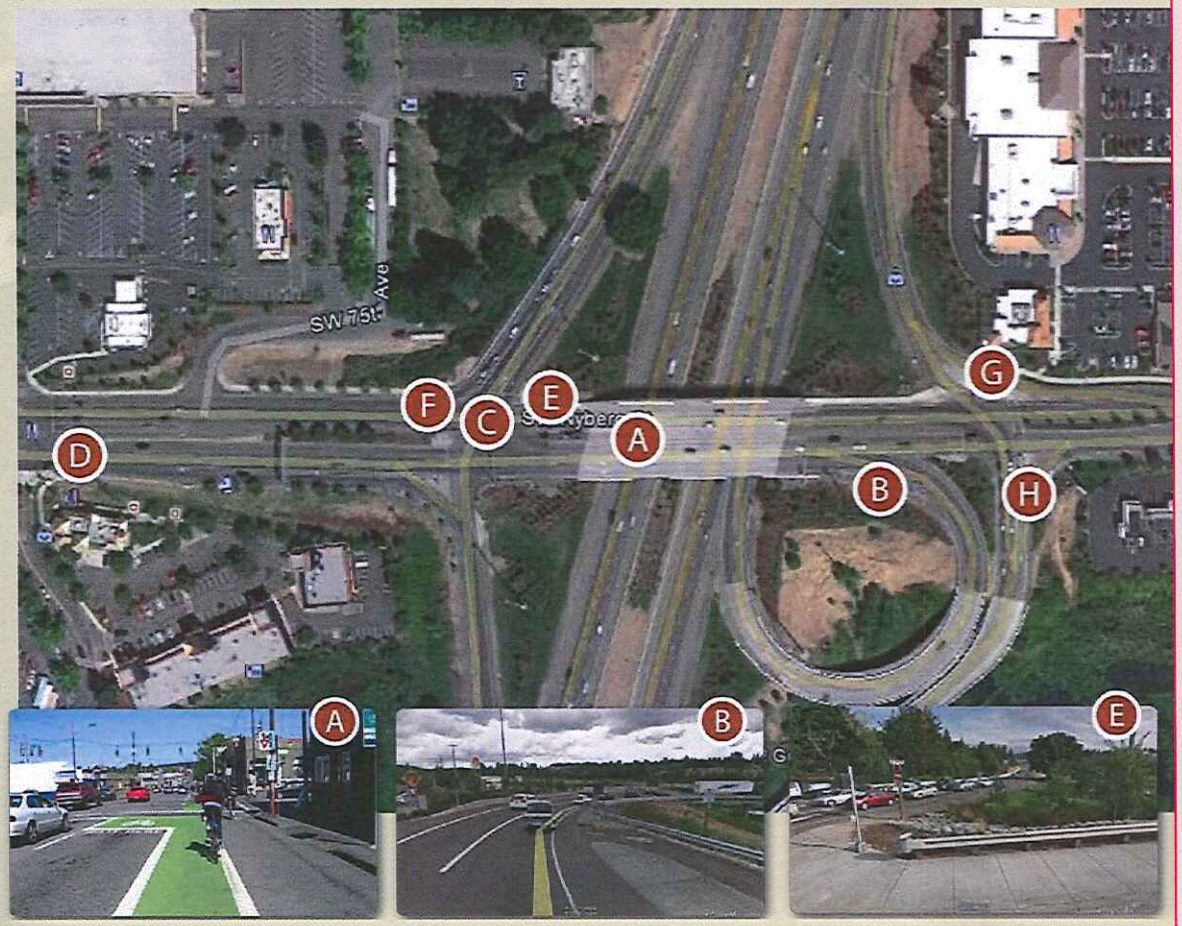
By Topic Area

Refinement Area #1:
Nyberg Interchange

Goal Statement (#1 of 2)

Address safety at the Nyberg Interchange for all modes

Possible Solution



A. Paint bike lanes
B. Redesign bike lane at east end of interchange
C. Skip striping on bike lane at west end of interchange
D. Improve lane signage west of interchange
E. Move guardrail on SB off ramp
F. Disallow right turns on red from SB off ramp
G. Redesign WB-NB movement to enhance safety
H. Redesign NB off ramp to discourage traffic getting off and then right back onto I-5

Nyberg Interchange - Findings

Consideration Area	Comments	Score
Local traffic/safety	• Minor effects on motor vehicle traffic • Moderate safety benefits	●
City-wide traffic	• Minimal effect on city-wide traffic	◒
Design Constraints / Considerations	• Revisions can be incorporated with minor impacts • Provides better delineation for traffic and bicyclists • Redesigns the NB on ramp to allow double rights • Discourages the NB through traffic with minor impacts	●
Environmental / Policy Considerations	• Painted pavement would require ODOT review/approval • Recent precedent for painted bike lanes on ODOT facility • Minor changes to the interchange configuration will not impact the wetlands preservation district	◒

Discussion

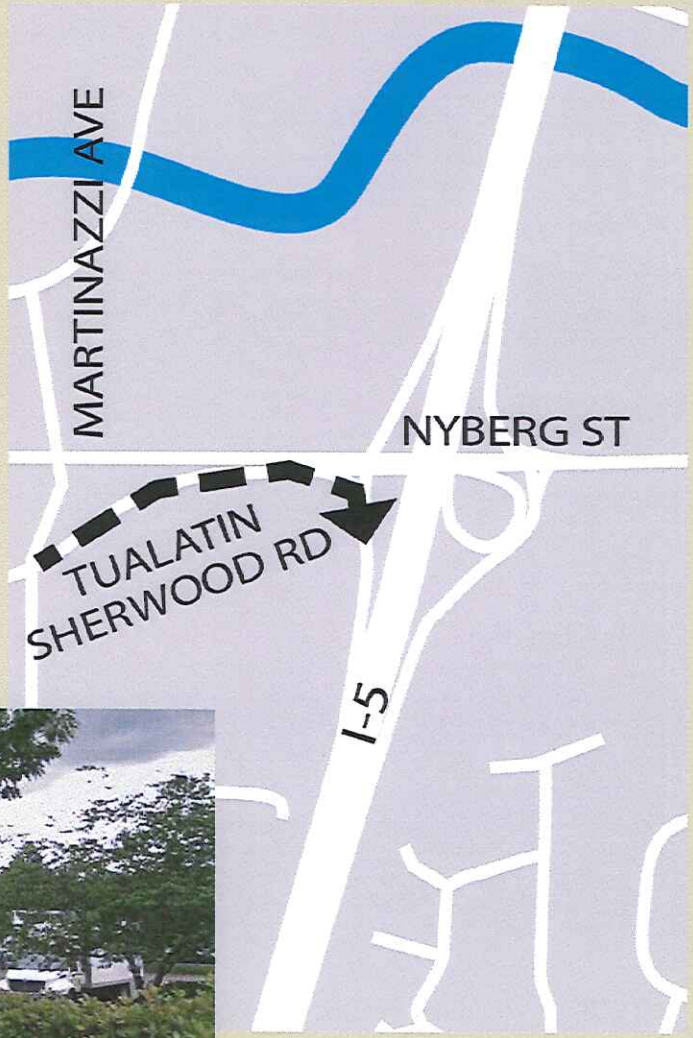
Technical team recommendation:
Yes, move this option forward to the Summit

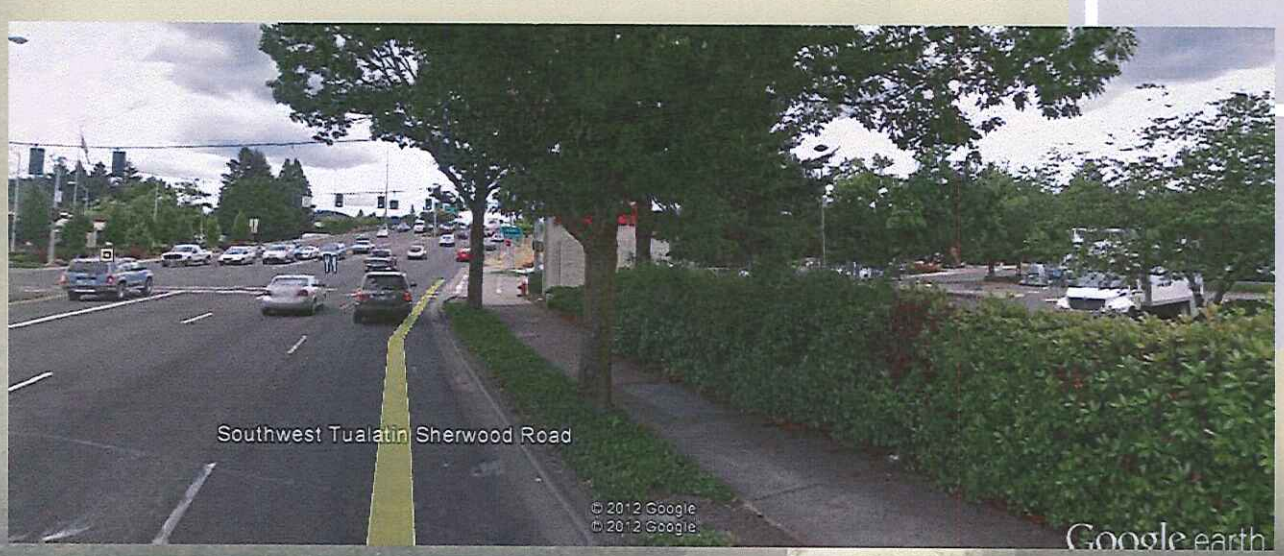
Goal Statement (#2 of 2)

Reduce congestion on Tualatin-Sherwood Road for eastbound drivers

Possible Solution

- Add a new lane on Tualatin-Sherwood Road in the eastbound direction from Martinazzi to I-5





Nyberg Interchange - Findings

Consideration Area	Comments	Score
Local traffic/safety	• Minor increase in EB traffic accessing freeway • Operations stay relatively consistent • Could detract from bicycle and pedestrian safety	▬
City-wide traffic	• This potential solution has minimal effect on city-wide traffic	▬
Design Constraints / Considerations	• Width of Tualatin-Sherwood Road/Nyberg Street from Martinazzi to the east is tight • No impacts forecasted to the Fred Meyer truck access road • Requires removal of mature street trees • Possible solution would be to shift lanes and widen to median • Past Fred Meyer intersection, widening would likely require walls, structure widening and impacts to sensitive areas	▬
Environmental / Policy Considerations	• The area is already built • Only impacts are to the landscaping strip between the roadway and Fred Meyer	●

Discussion

Technical team recommendation:
Yes, forward on to summit as a long-term solution (10-20 year timeframe)

Refinement Area #2:

65th Avenue

Goal Statements

1. Provide north-south connectivity east of I-5

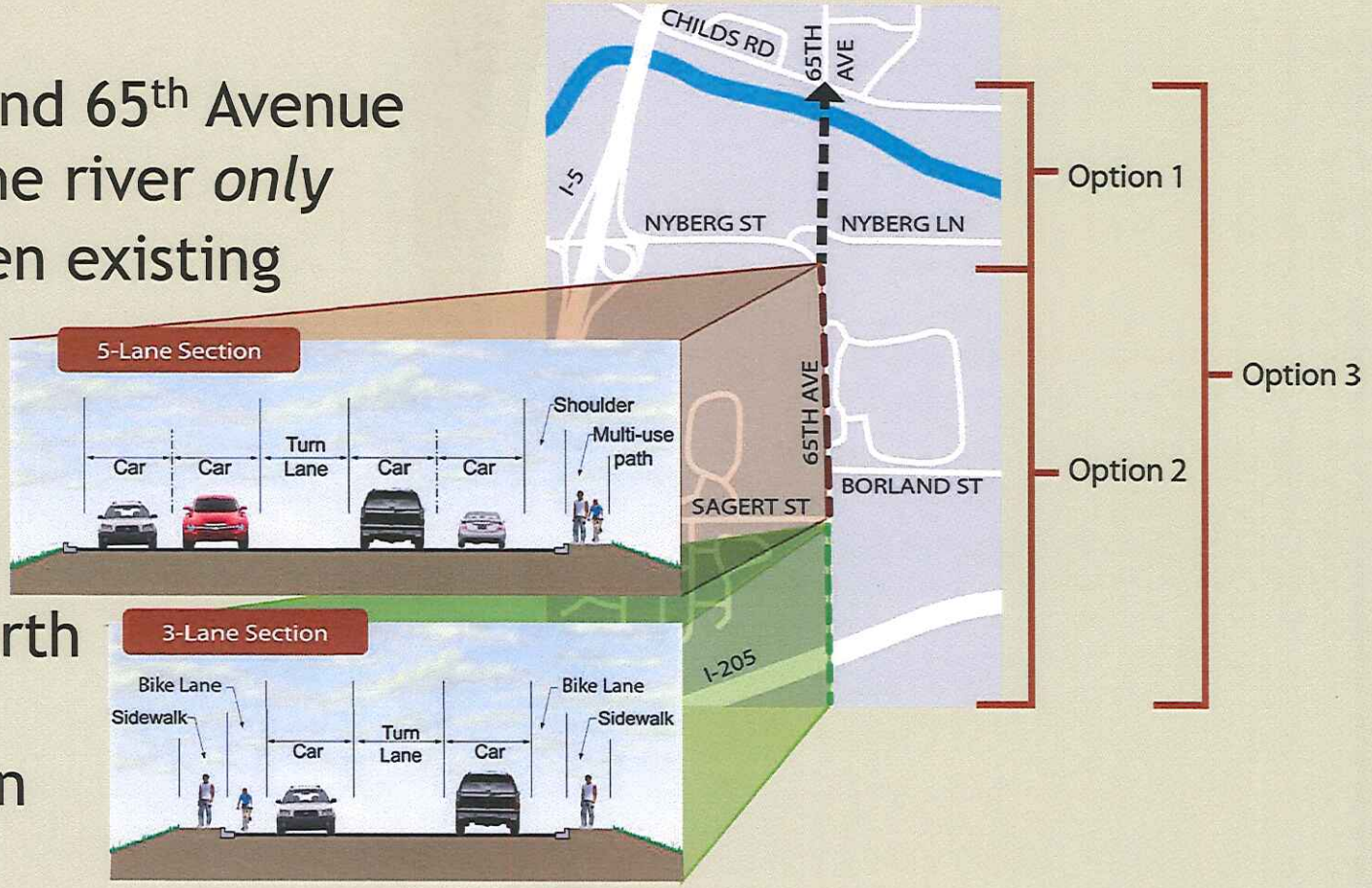
2. Address forecasted future congestion along 65th Avenue

Possible Solution

Option 1: Extend 65th Avenue north across the river *only*

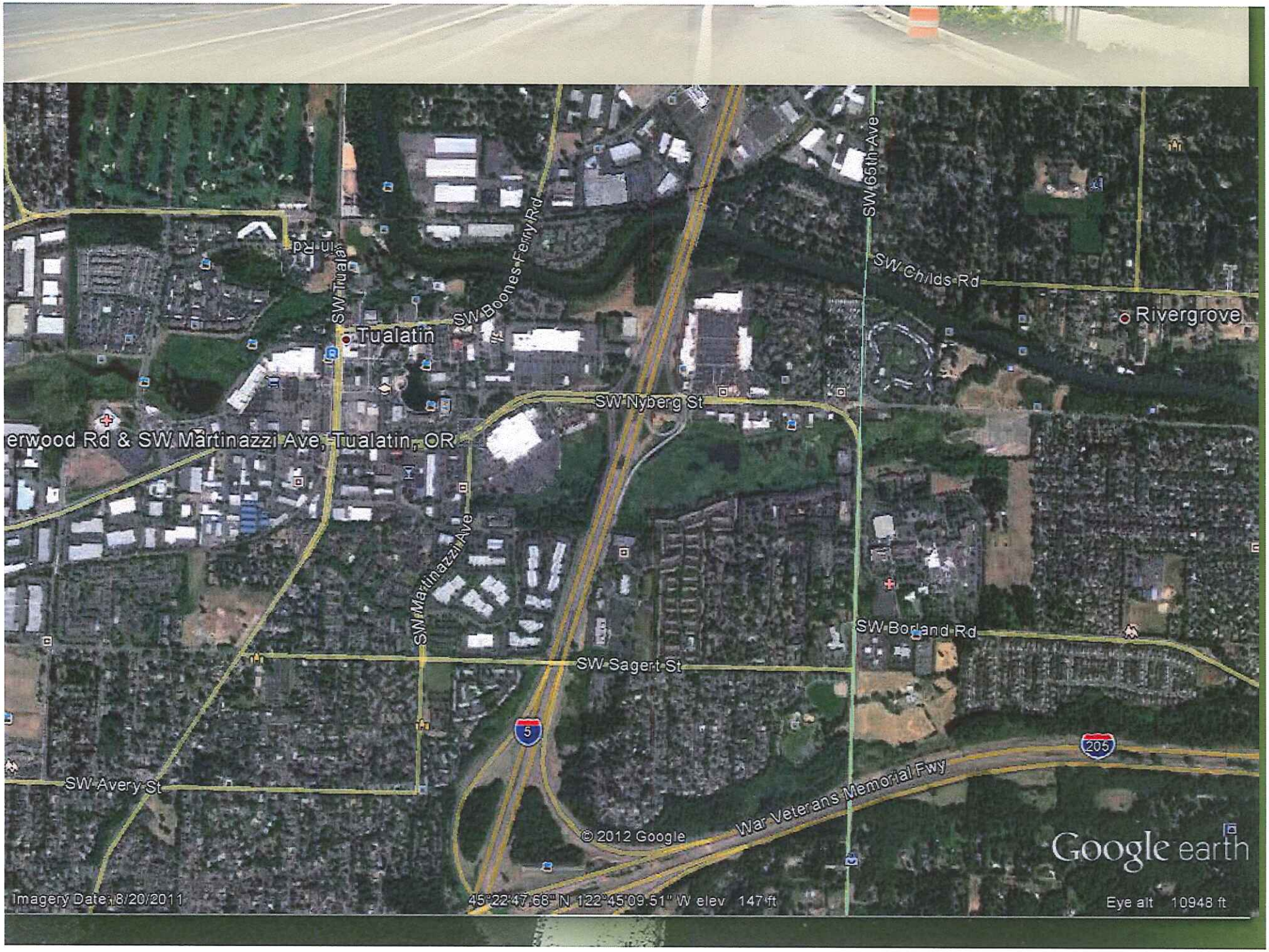
Option 2: Widen existing section of 65th Avenue *only*

Option 3: Extend 65th Avenue north <u>and</u> widen existing section



65th Avenue - Findings

Consideration Area	Comments	Score
Local traffic/safety	• Extension allows for ➢ Connectivity to north ➢ Potential for 1,000-1,200 vehicles during PM peak hour • Widening allows ➢ Capacity to service the future demand on the roadway and at intersections	
City-wide traffic	• Extension would ➢ Reduce traffic on I-5 and Boones Ferry Road ➢ Create slight increase in traffic on Tualatin Sherwood Road eastbound over the Nyberg interchange	


SW Tualatin Rd
SW Boones Ferry Rd
SW 65th Ave
SW Childs Rd
Rivergrove
Tualatin
SW Nyberg St
erwood Rd & SW Martinazzi Ave, Tualatin, OR
SW Martinazzi Ave
SW Borland Rd
SW Sagert St
5
205
SW Avery St
War Veterans Memorial Fwy
© 2012 Google
Google earth
Imagery Date: 8/20/2011
45°22'47.68" N 122°45'09.51" W elev 147 ft
Eye alt 10948 ft

65th Avenue - Findings

Consideration Area	Comments	Score
Design Constraints / Considerations	• Extension considerations: ➢ 40' ± right of way available from river to Childs ➢ Alignment could be designed to avoid lift station east/south of Nyberg Lane • Widening considerations: ➢ Widening Borland to Nyberg possible for bikes and peds with minor impacts until structure crossing Nyberg Creek and wetlands area ➢ Widening for lane/capacity involves more significant right of way and utility impacts ➢ Signal at Sagert less impactful than combining Sagert and Borland into one intersection	-
Environmental / Policy Considerations	• Multi-jurisdictional coordination needed • Impacts to Metro riparian class I-III habitat • Easements or right of way required to extend and/or widen 65th Avenue	●

Discussion

Technical team recommendation: Forward Option 3 (Extend 65th Avenue to north, widen existing section) on to summit

Refinement Area #3:

North to South Connectivity

Goal Statement

Improve north-south connectivity west of I-5

Possible Solution

Note: All options below extend north across the Tualatin River, west of I-5

- *Option 1:* Extend west of railroad tracks, east of country club
- *Option 2:* Widen Boones Ferry Road
- *Option 3:* Extend 90th to north (not shown)
- *Option 4:* Extend west of country club (not shown)

North-South Connectivity - Findings

Consideration Area	Comments	Score
Local traffic/safety	▪ Allows for better north-south connectivity ▪ New roadway potential to carry up to 1,000-1,500 vehicles in each direction during PM peak hour	
City-wide traffic	▪ Potential draw from Hwy 99W, Boones Ferry Road, and Interstate 5 ▪ Potential to affect Downtown roadways, potentially difficult tie-ins with existing street network, impact varies depending on alignment	

North-South Connectivity - Findings

Consideration Area	Comments	Score
Design Constraints / Considerations	• All options require significant right of way • All options require coordination with Oregon Department of Transportation Rail Division regarding rail crossings • Option to widen Boones Ferry Road has most impacts to existing buildings, followed by extension of 90th and extension west of country club	
Environmental / Policy Considerations	• Multi-jurisdictional coordination needed • Impacts to historic structures • Extension is included in Tigard TSP and Washington County TSP	

Discussion

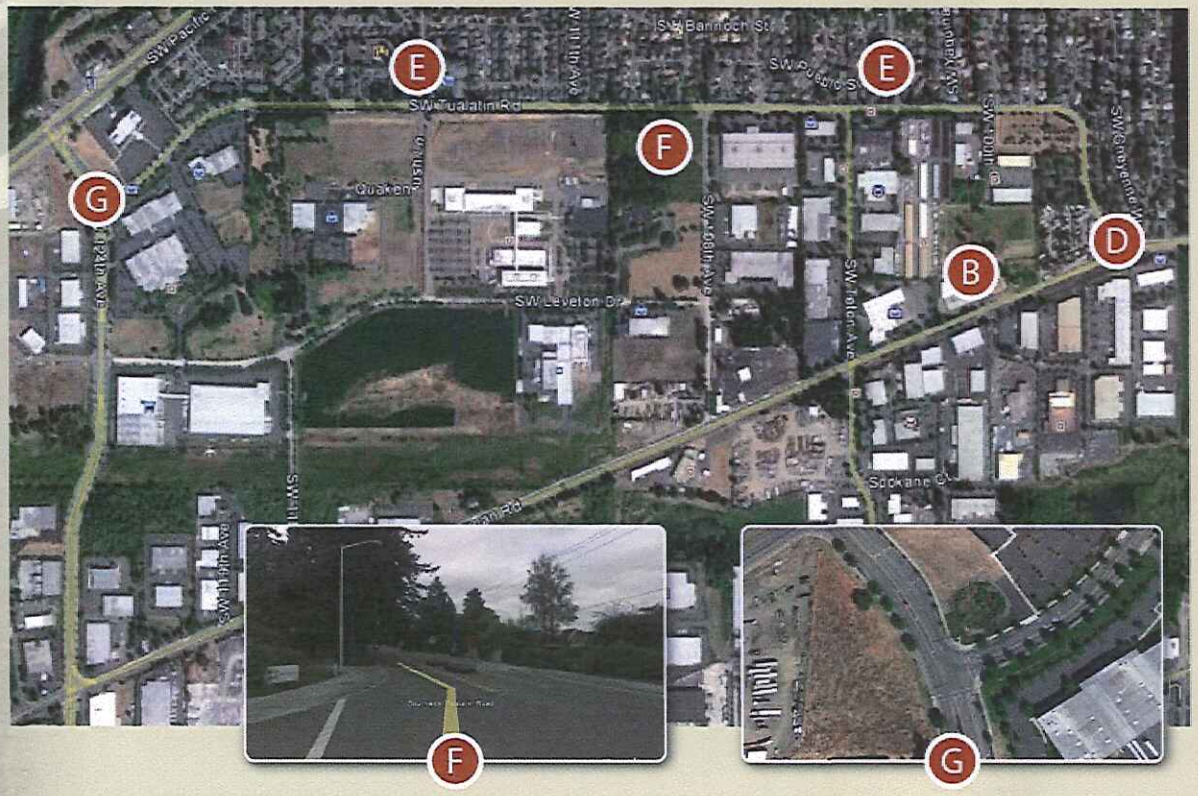
Technical Team Recommendation: None at this time. Obtain input from TTF, come back to August TTF to discuss what (if any) option is forwarded to summit

Refinement Area #4:
Herman Road and Tualatin Road

Goal Statement

Encourage through traffic to move onto Herman Road and off of Tualatin Road

Possible Solution



A. Reclassify Herman
B. Upgrade the remaining section of Herman
C. Lower speeds on Tualatin
D. Eliminate free right turn at Tualatin/Herman intersection, consider roundabout
E. Add signals at the east and west ends of Tualatin
F. Remove trees at Tualatin and 108th
G. Modify channelization of 124th and Tualatin, consider roundabout
H. Signage to indicate that Tualatin is for local traffic

Herman Road and Tualatin Road - Findings

Consideration Area	Comments	Score
Local traffic/safety	• Major effect is shifting of traffic from Tualatin Road to Herman Road • On the west end traffic is diverted to 124th • On the east end traffic is diverted to Herman • Small amount of traffic shifted to Tualatin-Sherwood Road • Some traffic diverted along Hwy 99W up to Durham Road	
City-wide traffic	• Minimal effects to city-wide traffic • Majority of effects are local	

Tualatin Road and Herman Road - Findings

Consideration Area	Comments	Score
Design Constraints / Considerations	• Traffic calming can be installed with minor impacts • Projects could be chicane type improvements (lane weave) or speed tables • Coordination with Tualatin Valley Fire and Rescue and Tualatin Police likely needed • Improvements to Herman and the intersection of Tualatin/ Herman require right of way • New locations for signals recommended at Jurgens and 115th have not been analyzed for warrants • Removal of tree(s) at Teton, at the SW quadrant improve sight distance but have impacts to natural resources	
Environmental / Policy Considerations	• Some adjacent land would be required north of Herman to widen to three lanes • Potential impact some landscaping and parking • Planter circles and speed table design standards would need to be added to the City's code	

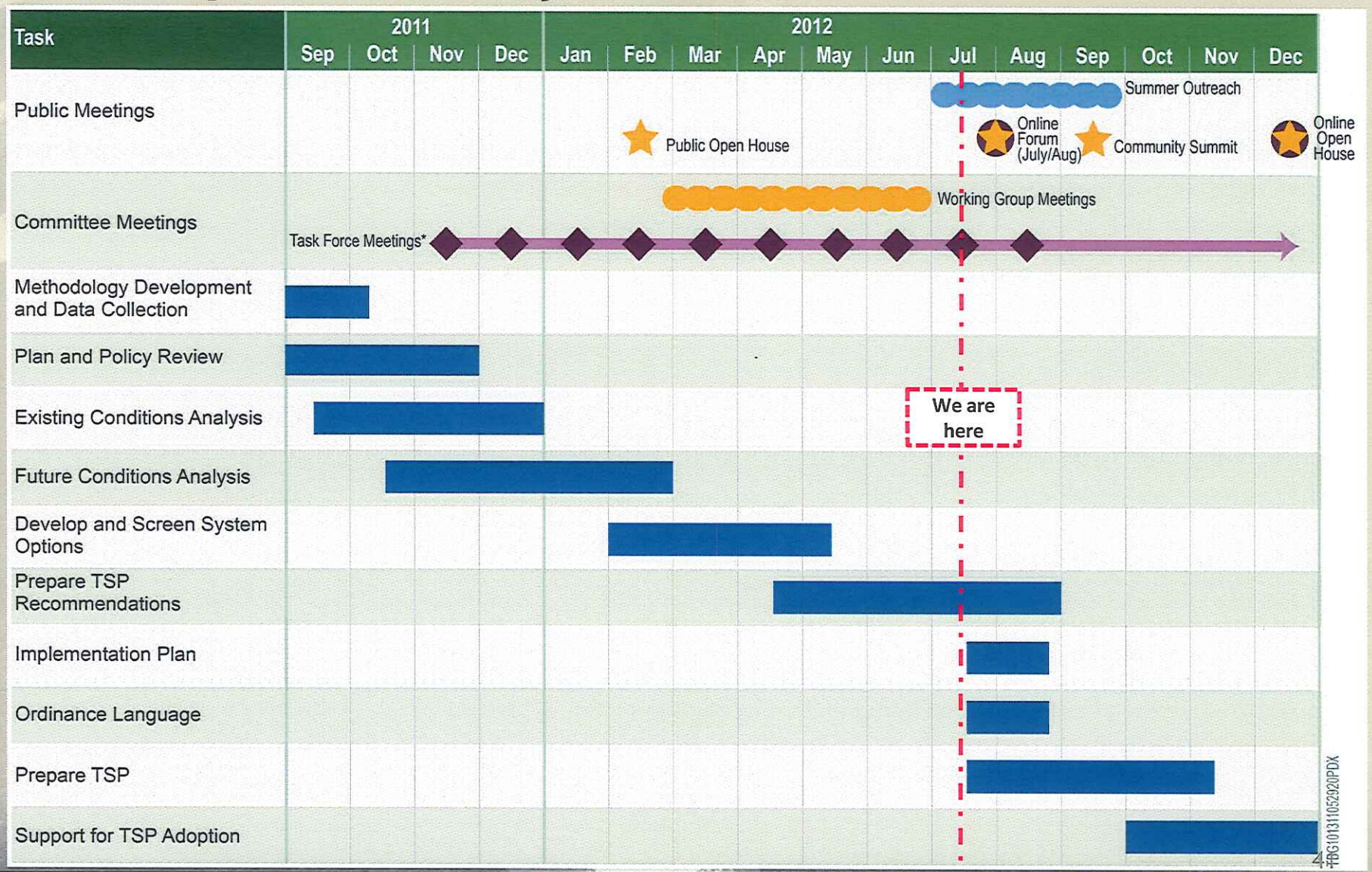
Discussion

Technical team recommendation:
Yes, move this option forward to Summit

What Happens Next?

- July – continue analysis and respond to TTF questions
- August 23 meeting – review/discuss findings for remaining refinement areas
  - What are the benefits?
  - What are the impacts?
  - What are we willing to accept?
- Transportation Community Summit in September (September 20th)

Transportation System Plan Timeline



Refinement Area #1: Nyberg Interchange

Concept Package #1: Safety-Focused Solutions

Goal Statement

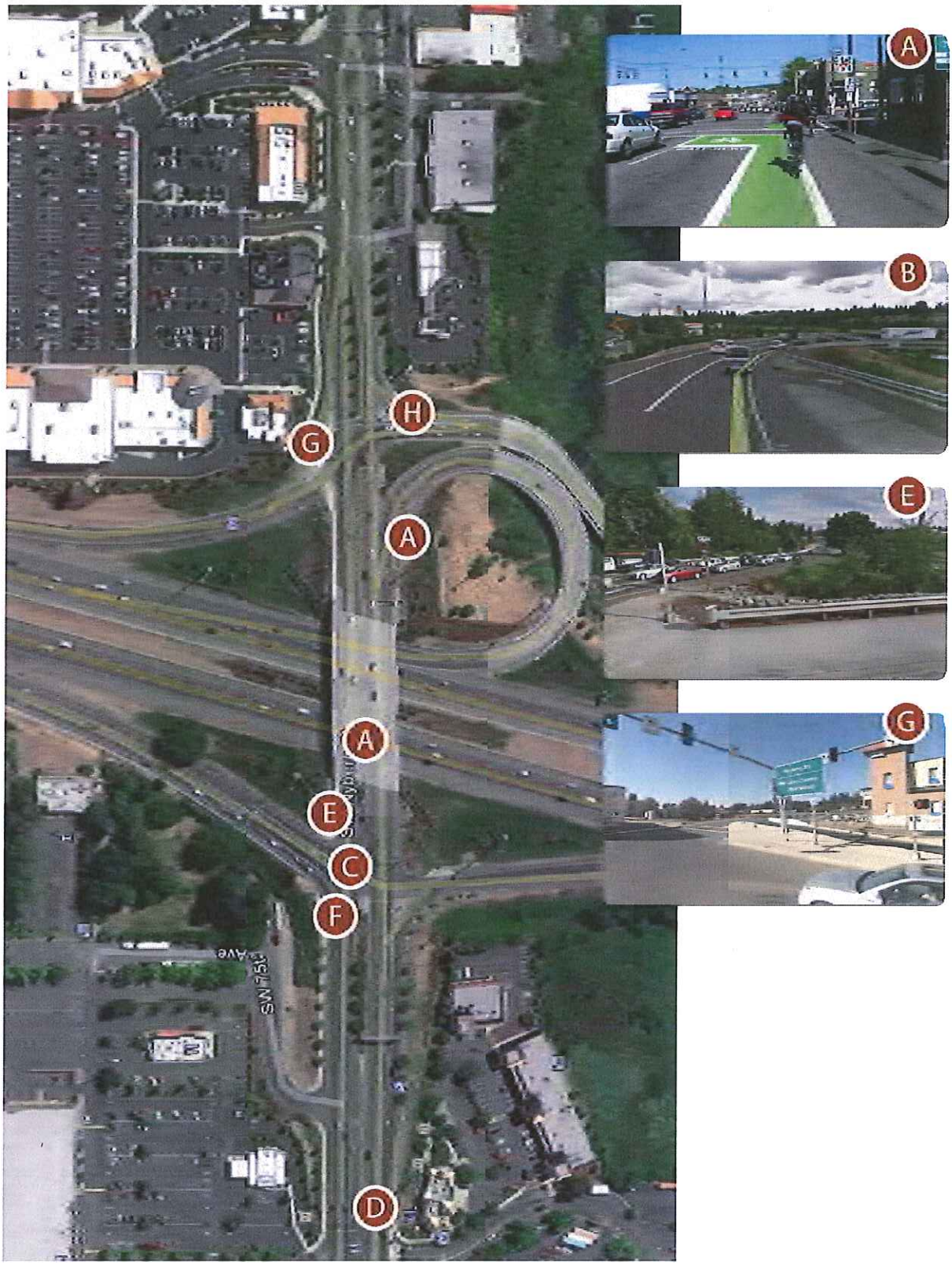
The primary goal for this refinement area is to address safety concerns at the Nyberg interchange, for all modes. The interchange serves as the main connection between Tualatin and the I-5 freeway, but also via Nyberg Road provides a main connection between downtown and east Tualatin. The interchange ramps have the highest crash rates in Tualatin, including several reported bicycle- and pedestrian-related crashes.

Possible Solution

The following solutions are put forth as one package at the Nyberg interchange area:

A. Paint the pavement through the interchange area to make the bicycle lane more visible and distinct from travel lanes
B. Redesign location of bicycle lane at the east end of interchange
C. Bring bicycle lane across and over at west end of interchange with skip striping
D. Improve lane signage west of the interchange to help vehicles be in the correct lane before entering interchange area
E. Move guardrail on southbound off ramp to improve sight distance
F. Disallow right turns on red from southbound off ramp
G. Redesign westbound-northbound movement to enhance safety
H. Redesign northbound off ramp to discourage traffic getting off and then right back onto I-5

Consideration Area	Comments	Score
How would this solution affect traffic and safety near the interchange?	• Minor effects on motor vehicle traffic • Moderate safety benefits from visible separation between bicycle and motor vehicle traffic	●
How would this solution affect traffic city-wide?	• Minimal effect on city-wide traffic	◒
Design Constraints / Considerations	• Striping revisions can be incorporated with minor impacts • Provides better delineation for traffic and bicyclists • Redesigns the northbound on ramp terminal to allow double rights • Discourages the northbound through traffic with minor impacts	●
Environmental / Policy Considerations	• Painted pavement would require ODOT review/approval • Recent precedent for painted bike lanes on ODOT facility • Minor changes to the interchange configuration will not impact the wetlands preservation district	◒

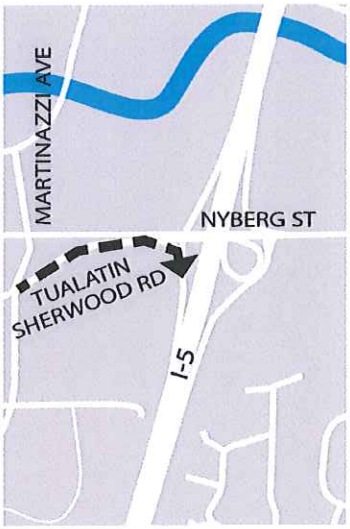

A
B
E
G
H
G
A
A
E
C
F
D
SW 75th Ave

Refinement Area #1: Nyberg Interchange

Concept Package #2: Adding lane to Tualatin-Sherwood Road from Martinazzi to I-5 (eastbound direction)

Goal Statement

Concept package #2 addresses a goal to reduce congestion on Tualatin-Sherwood Road for eastbound drivers between Martinazzi Avenue and I-5. Traffic backups have been reported at the southbound on ramps which have been verified through field visits. However, traffic analysis for the Nyberg interchange does not show congestion concerns either now (2012 traffic volumes) or in the future (forecasted 2035 traffic volumes). The southbound on-ramps with I-5 operate at a Level of Service (LOS) D now and anticipated in the future, and the northbound on-ramps with I-5 operate at LOS B now and anticipated LOS C in the future.



Potential Solution

Add a new lane on Tualatin-Sherwood Road in the eastbound direction from Martinazzi to I-5.

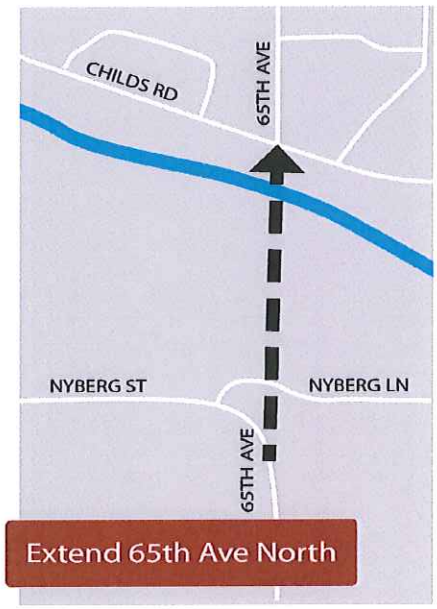
Consideration Area	Comments	Score
How would this solution affect traffic near the interchange?	• Minor increase in eastbound traffic accessing the freeway (50-100 vehicles during the PM peak hour) • Operations stay relatively consistent • Could detract from bicycle and pedestrian safety	◒
How would this solution affect traffic city-wide?	• This potential solution has minimal effect on city-wide traffic	◒
Design Constraints / Considerations	• Width of Tualatin-Sherwood Road/Nyberg Street from Martinazzi to the east is tight • No impacts forecasted to the Fred Meyer truck access road, though walls may be needed to ensure truck access retained • Requires removal of mature street trees • Possible solution would be to shift lanes and widen to the median • Past the Fred Meyer intersection, widening would likely require walls, structure widening and impacts to sensitive areas	◒
Environmental / Policy Considerations	• The area is already built • Only impacts are to the landscaping strip between the roadway and Fred Meyer	●

Refinement Area #2: 65th Avenue

Option 1: Extending North into River Grove Only

Goal Statement

This option provides an alternative to crossing the Tualatin River in a north-south direction east of I-5. The 65th Avenue corridor serves as a major north-south route. It serves residents and medical facilities located east and west of 65th Avenue, notably the Legacy Meridian Park hospital. 65th Avenue is owned and maintained by Washington County. Although current traffic levels are within accepted County and City standards, future traffic is of concern due to expected residential and business growth. 65th Avenue has sidewalk gaps and lacks bicycle lanes.



Potential Solution

Extend 65th Avenue north of its current terminus near Nyberg Road to 65th Avenue across the Tualatin River in River Grove. At its crossing over the Tualatin River, the bridge could be a narrower cross section as a turn lane would not be needed. Reconstruct intersection of 65th Avenue and Nyberg Street and consider a roundabout at this location.

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• New connection has the potential for 1,000 to 1,200 motor vehicles during the PM peak hour • Allows for connectivity to the north • Slight increase in traffic on Sagert Street, Borland Road, 50th Avenue, SW Wilke Road, and Nyberg Lane	◒
How would this solution affect traffic city-wide?	• Reduces traffic on I-5 and Boones Ferry Road • Slight increase in traffic on Tualatin Sherwood Road eastbound over the Nyberg interchange • Traffic would be impacted in River Grove and Lake Oswego	●
Design Constraints / Considerations	• Available right of way is 40' ± from river to SW Childs St • Alignment could be designed to avoid impacts to recently constructed lift station east/north of the bridge • Connection to the local roadway network north of the river	●
Environmental / Policy Considerations	• Solution requires multi-jurisdictional coordination • Adjacent to land zoned high density residential where transportation facilities are an allowed use • Impacts to Metro Riparian class Habitats I-III	◒

Refinement Area #2: 65th Avenue

Option 2: Widening to Existing Sections of 65th Avenue Only

Goal Statement

This option addresses forecasted future congestion on 65th Avenue. The 65th Avenue corridor serves as the major north-south route east of I-5. It serves residents and medical facilities located east and west of 65th Avenue, notably the Legacy Meridian Park hospital. 65th Avenue is owned and maintained by Washington County. Although current traffic levels are within accepted County and City standards, future traffic is problematic due to expected residential and business growth. This facility has some sidewalk gaps and lacks bicycle lanes.

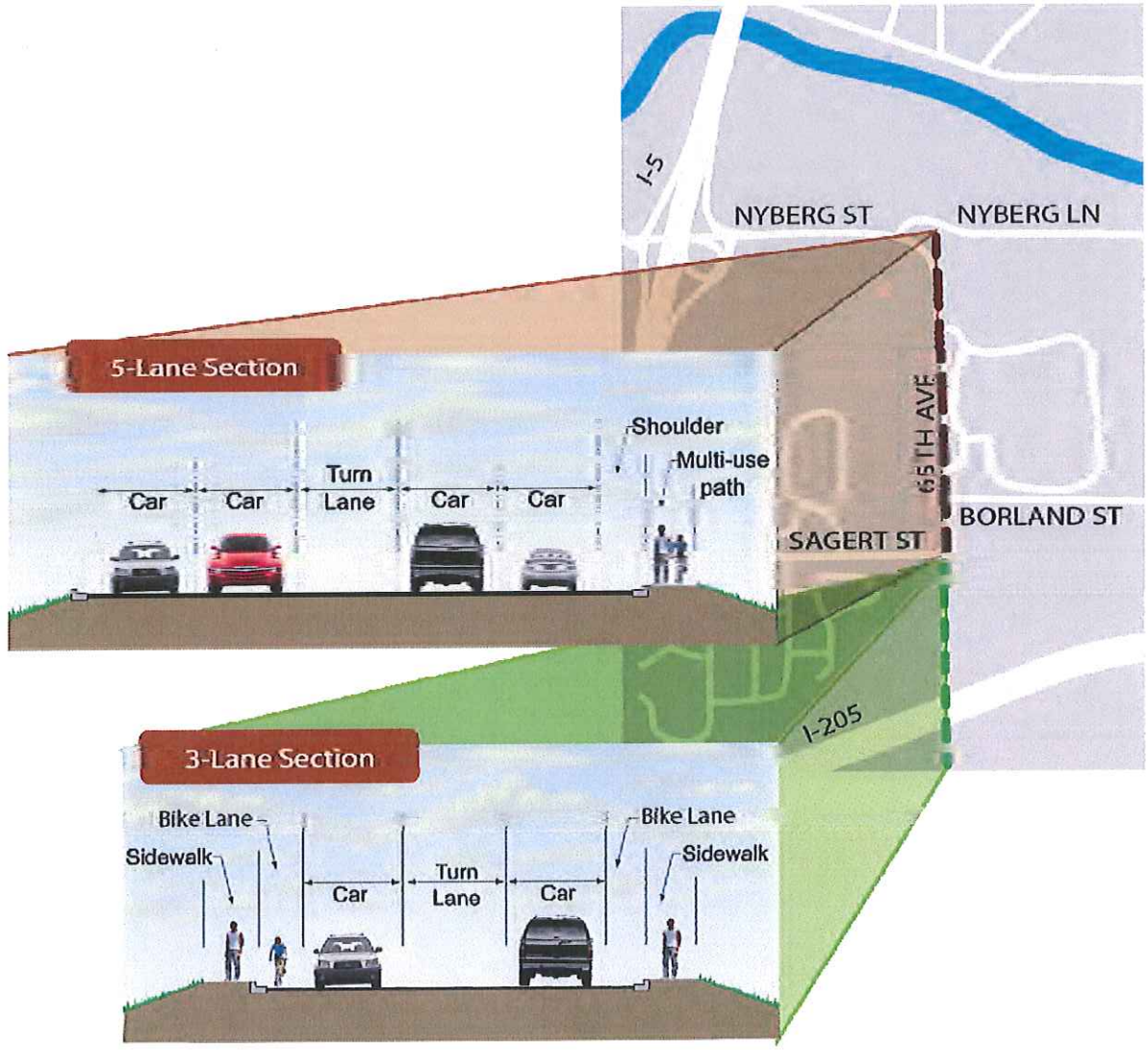
Potential Solution

This potential solution consists of the following:

- Widen 65th Avenue to 4 or 5 lanes between Nyberg Road and Sagert Street
- Widen the road to 3 lanes south of Sagert Street across I-205 to city limits
- Address the dips in the existing road
- Bicyclists and pedestrians would be accommodated via:
  - A separated bicycle and pedestrian multi-use path located near 65th Avenue, OR
  - Via continuous bicycle lanes and sidewalks on 65th Avenue
- New traffic signal at Sagert Street and 65th Avenue would operate in conjunction with the existing signal at 65th Avenue and Borland (traffic progresses through both intersections in one signal cycle) OR
- Realign intersections at Sagert Street/65th and 65th/Borland into one intersection

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Helps meet future motor vehicle demand along 65th Avenue • Little new vehicle activity attracted to the roadway (150-200 new PM peak hour vehicles) over what is expected without widening	
How would this solution affect traffic city-wide?	• Little effect realized city-wide	
Design Constraints / Considerations	• Widening north of Borland to Nyberg street to accommodate bicyclists or a multi-use path likely possible with minor impacts until the structure crossing Nyberg Creek and the wetlands area • Widening for lane/capacity likely to involve more significant right of way and utility impacts • Realignment of Borland/Sagert intersection to one location, likely the current location of Sagert/65th • Alignment dictates the extent of impacts, but could include the utility substation, or private structure	
Consideration Area	Comments	Score

Environmental / Policy Considerations	• Realigning the Sagert and Borland intersections would have right-of-way impacts • Widening the roadway would require some easements • Replacing the bridge over Nyberg Creek Greenway to accommodate bicyclists and pedestrians on the structure	



Refinement Area #2: 65th Avenue

Option 3: Extending North into River Grove AND Widening Existing Section

Goal Statement

This option provides an alternative to crossing the Tualatin River in a north-south direction east of I-5, as well as addresses forecasted future congestion on 65th Avenue. The 65th Avenue corridor serves as the major north-south route east of I-5. It serves residents and major medical facilities located east and west of 65th Avenue, notably the Legacy Meridian Park hospital. 65th Avenue is owned and maintained by Washington County. Although current traffic levels are within accepted County and City standards, future traffic is problematic due to expected residential and business growth. This facility has some sidewalk gaps and lacks bicycle lanes.

Potential Solution

- Extend 65th Avenue to the north as described in Option 1
- Widen the existing sections of 65th Avenue as described in Option 2

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Combination of extending 65th Avenue and widening the roadway is similar to the extension alone • Widening allows capacity to service the future demand on the roadway and at intersections	
How would this solution affect traffic city-wide?	• Similar effects as the 65th Avenue extension	
Design Constraints / Considerations	• See constraints/considerations from the two previous options	
Environmental / Policy Considerations	• Solution requires multi-jurisdictional coordination • Adjacent to land zoned high density residential where transportation facilities are an allowed use • Impacts to Metro Riparian class Habitats I-III • The City of Rivergrove does not have a TSP	

Refinement Area #3: North/South Connectivity

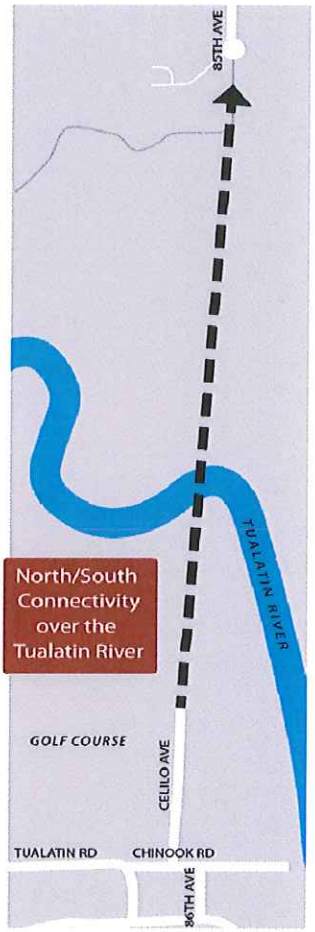
Option 1: Extension East of Country Club and West of Railroad Track

Goal Statement

This option improves connectivity in the north-south direction west of I-5. Connections in Tualatin west of I-5 are limited to Boones Ferry Road and 99W in the north-south direction, and Tualatin Road and Herman Road in the east-west direction. In the 2001 Tualatin TSP, there was a project to extend Tualatin Road to connect with Boones Ferry Road, and an extension to the north to connect with Hall Boulevard in Tigard.

Potential Solution

- An extension west of the railroad tracks, in the general vicinity of SW 86th Avenue east of the Country Club appears to be feasible
- Road would extend northward in the vicinity of SW Celilo Road and connect with SW 85th Avenue north of the Tualatin River



Consideration Area	Comments	Score
How would this solution affect traffic locally?	• New extension allows connectivity north/south across the Tualatin River • New roadway has the potential to carry up to 1,000 – 1,200 vehicles in each direction during PM peak hour • Will increase traffic on Boones Ferry Road in front of Tualatin Community Park – uncertain whether signal warrant would be met	

Consideration Area	Comments	Score
How would this solution affect traffic city-wide?	• Tualatin, Herman, 99W, and Boones Ferry Road (north of the Tualatin River) experience a moderate decrease in traffic • Boones Ferry Road immediately south of Celilo Road has an increase in traffic leading up to the extension	●
Design Constraints / Considerations	• Does not impact Tualatin Community Park • At least one, if not two railroad crossings would be upgraded and require crossing orders from ODOT Rail • North improvements to alignment would extend along the west edge of the tracks and tie into 85th Ave on the north side of the river	◒
Environmental / Policy Considerations	• An extension of Hall Boulevard into Tualatin is included in the Tigard TSP (long-term not fiscally constrained project list) and in the Washington County TSP	○

North-South Connectivity Option 1 Vicinity

Refinement Area #3: North/South Connectivity

Option 2: Widen Boones Ferry Road

Goal Statement

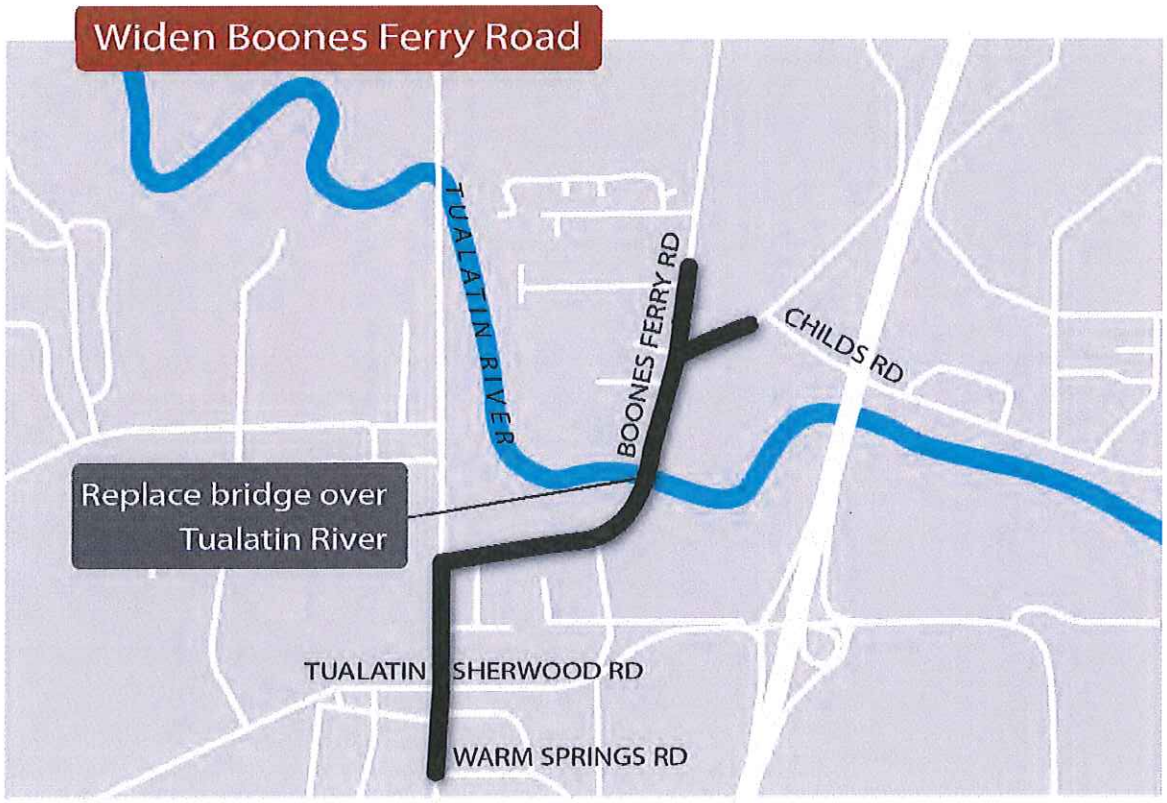
This option improves connectivity in the north-south direction west of I-5, by increasing capacity along the existing Boones Ferry Road between downtown and north of the river, towards the communities of Durham and Tigard. Connections in Tualatin west of I-5 are limited to Boones Ferry Road and 99W in the north-south direction, and Tualatin Road and Herman Road in the east-west direction. In the 2001 Tualatin TSP, there was a project to extend Tualatin Road to connect with Boones Ferry Road, and an extension to the north to connect with Hall Boulevard in Tigard. The extension of Tualatin Road project would have impacted Tualatin Community Park. After a robust community conversation the City decided not to pursue this project, and an amendment was voted in March 2011 to amend the City Charter (Chapter XI) to prevent the transfer, sale, vacation or major change in use of city parks without a public vote.

Potential Solution

- Widening Boones Ferry Road between the intersection of Lower Boones Ferry Road to the north and Warm Springs to the south
- Widening explored through:
  - Retaining a three-lane section with intersection improvements and coordinated signal timing
  - Widening to four lanes, limiting turning pockets to intersections
  - Widening to five lanes, with two travel lanes in each direction and a center-turn lane transitioning to a turn pocket at intersections
- All options assume replacement of the Tualatin River bridge

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Potential to shift traffic from Tualatin-Sherwood Road (east of Boones Ferry Road) and away from the Nyberg interchange	
How would this solution affect traffic city-wide?	• Moderate shift in traffic from Hwy 99W/Durham Road to Boones Ferry Road • Moderate shift in traffic from I-5 between the Boones Ferry Road and Nyberg interchanges to Boones Ferry Road	

Consideration Area	Comments	Score
Design Constraints / Considerations	• 4 lane and 5 lane options have significant impacts to right of way/access • All options likely require coordination and improvements to the railroad crossing north of the bridge • Widening at Boones Ferry Road and Tualatin-Sherwood Road south of the intersection is problematic • Constraints are railroad to the west and McDonald's drive thru to the east	○
Environmental / Policy Considerations	• ODOT is interested in a jurisdictional transfer from ODOT to the City if bridge is replaced • The City or ODOT could initiate the transfer process • The City would then be responsible for maintenance and upkeep on the new or modified bridge • The County would be required to approve the transfer • The existing bridge is within the Tualatin River Greenway	○



Refinement Area #3: North/South Connectivity

Other Options Considered but Dismissed

Extension west of Country Club

The team considered placing the northerly extension west of the Country Club, but dismissed this for the following reasons:

1. Traffic flows on the new arterial lessened traffic on 99w, but did not address congestion on Tualatin arterials, including Boones Ferry Road.
2. Disruption to the community in the Hazelbrook area, and especially for residents at its eastern edge including SW Shawnee Trail, and SW Cheyenne Way, was thought to be too great.
3. Geometrically, it was deemed difficult to place an arterial in this vicinity without creating an additional 90 degree turn. This in turn would create safety concerns associated with driver expectation, speed, and sight visibility.
4. This general location is aligned with a northward bend in the Tualatin River, which could make construction of a new river crossing difficult.
5. Connections with the roadway network in Tigard would be difficult. SW 92nd Avenue is the nearest roadway north of the river but connections to it are problematic, and it does not continue northward beyond SW Durham Road.

Extension north of SW 90th Avenue

The team explored extending SW 90th Avenue northward, but dismissed this concept for the following reasons:

1. It would bisect the Tualatin Country Club, a regional destination.

   The Tualatin Country Club serves patrons from throughout the south Metro area and is a major employer in Tualatin. Bisecting the club would make it difficult for it to continue its current operations as a golf course.

2. Connections with the roadway network in Tigard would be difficult. Extending SW 90th Avenue north across the Tualatin River connects with Cook Park in Tigard. It would be difficult to design an alignment that avoided impacts to this park, though it could be possible to align the river crossing so that it touched down east of the park's boundary.

   This alignment could be reconsidered in the future if the Country Club were to redevelop to another use.

Refinement Area #4: Herman Road and Tualatin Road

Goal Statement

The refinements along these two corridors aim to encourage some through traffic to move onto Herman Road, and off of Tualatin Road, as a way to improve safety and livability for residents north of Tualatin Road. Herman Road and Tualatin Road run parallel to each other in north Tualatin. Both provide connections to downtown at the east and to 99W at the west. Herman Road is located in Tualatin's industrial center, and Tualatin Road features some industrial and manufacturing to the south, but residential to the north.

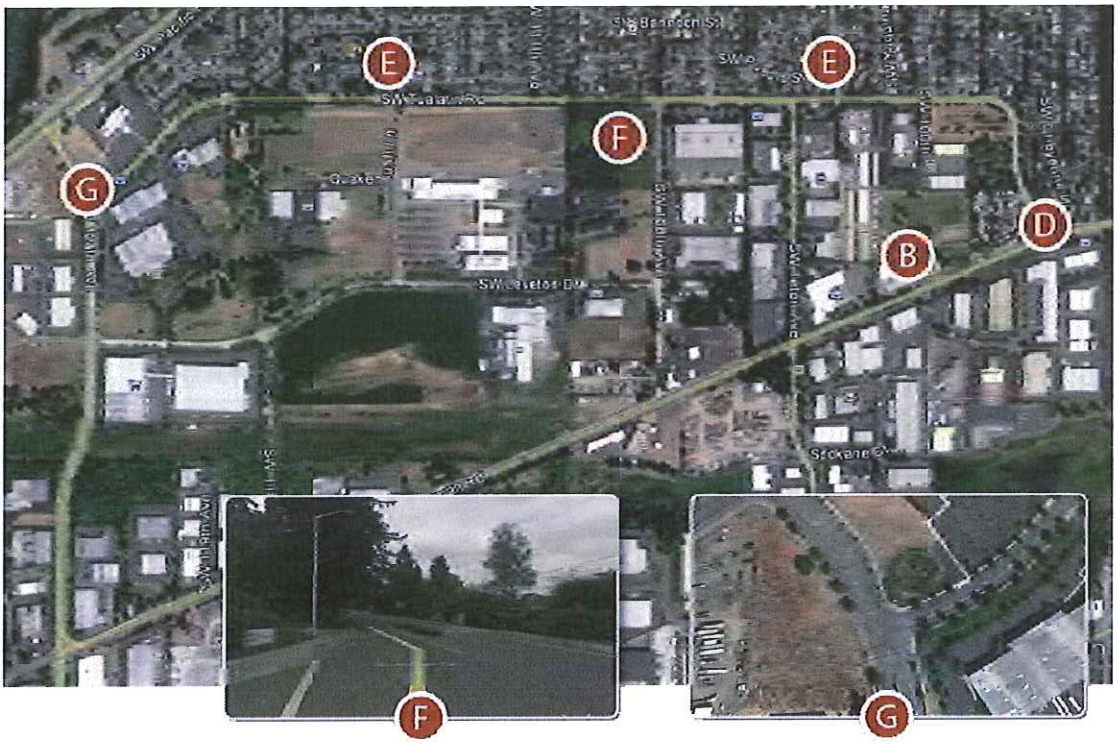
Potential Solution

The following projects have been explored as a package:

A. Reclassify Herman Road as a Minor Arterial, and retain Tualatin Road's classification as a Major Collector
B. Upgrade the remaining section of Herman Road as a 3-lane cross section between Tualatin Road and Teton Road
C. Lowering speeds on Tualatin Road
D. Eliminate the free right turn at Tualatin Road at the intersection with Herman Road, and consider a roundabout at this location
E. Add signals at the east and west ends of Tualatin Road, such as in the vicinity of 115th Avenue and Jurgens Avenue
F. Remove trees at intersection of Tualatin Road and 108th Avenue to improve sight distance at this location
G. Modify channelization of 124th Avenue and Tualatin Road to encourage traffic to proceed along 124th to the intersection with Herman Road. Consider a roundabout at this location
H. Signage that indicates that Tualatin Road is for local traffic

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Major effect is shifting of traffic from Tualatin Road to Herman Road • On the west end traffic is diverted to 124th Avenue • On the east end traffic is diverted to Herman Road • Small amount of traffic shifted to Tualatin-Sherwood Road • Some traffic diverted along Hwy 99W up to Durham Road	●
How would this solution affect traffic city-wide?	• Minimal effects to city-wide traffic • Majority of effects are local	●

Consideration Area	Comments	Score
Design Constraints / Considerations	• Traffic calming projects can be installed with minor impacts • Projects could be chicane type improvements (lane weave) or speed tables • Coordination with Tualatin Valley Fire and Rescue and Tualatin Police likely needed • Improvements to Herman Road and the intersection of Tualatin/Herman Road would require right of way but are straight forward with likely impacts to some access • Signal improvements at the intersection of Tualatin Rd/108th Ave were not met as recently as the last 5 years • New locations for signals recommended at Jurgens and 115th have not been analyzed for warrants • Removal of tree(s) at Teton, at the SW quadrant improve sight distance but have impacts to natural resources	●
Environmental / Policy Considerations	• Some adjacent land would be required north of Herman to widen to three lanes • Potential impact some landscaping and parking • Planter circles and speed table design standards would need to be added to the City's code	◒



City of Tualatin

Refinement Areas (Part 2)

Tualatin TSP

Presentation to
Tualatin Transportation Task Force
August 23, 2012

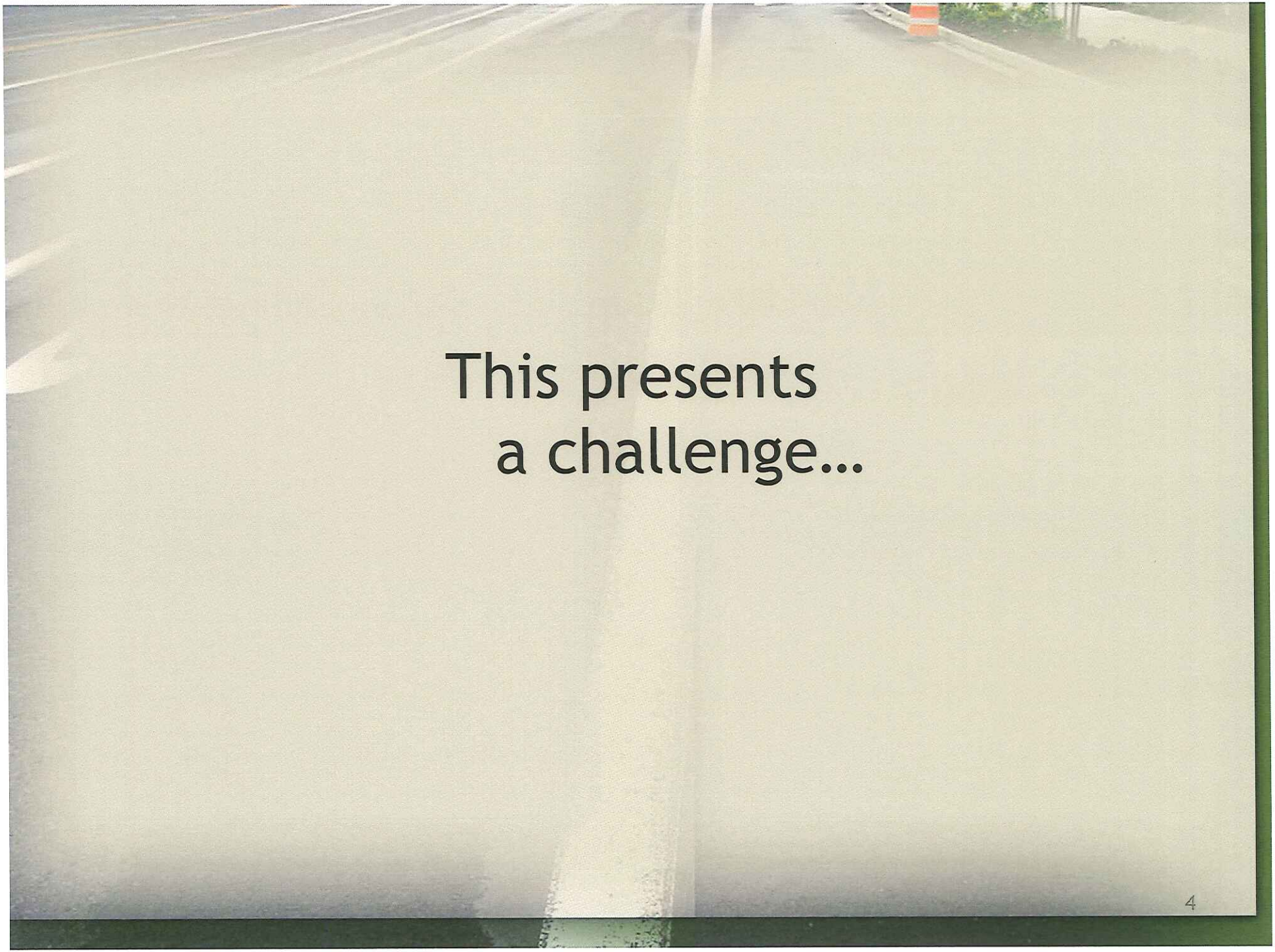
TualatinTSP_TBG061511105413SPDX 422992.PS.C1.HWn6/15/2011 kk

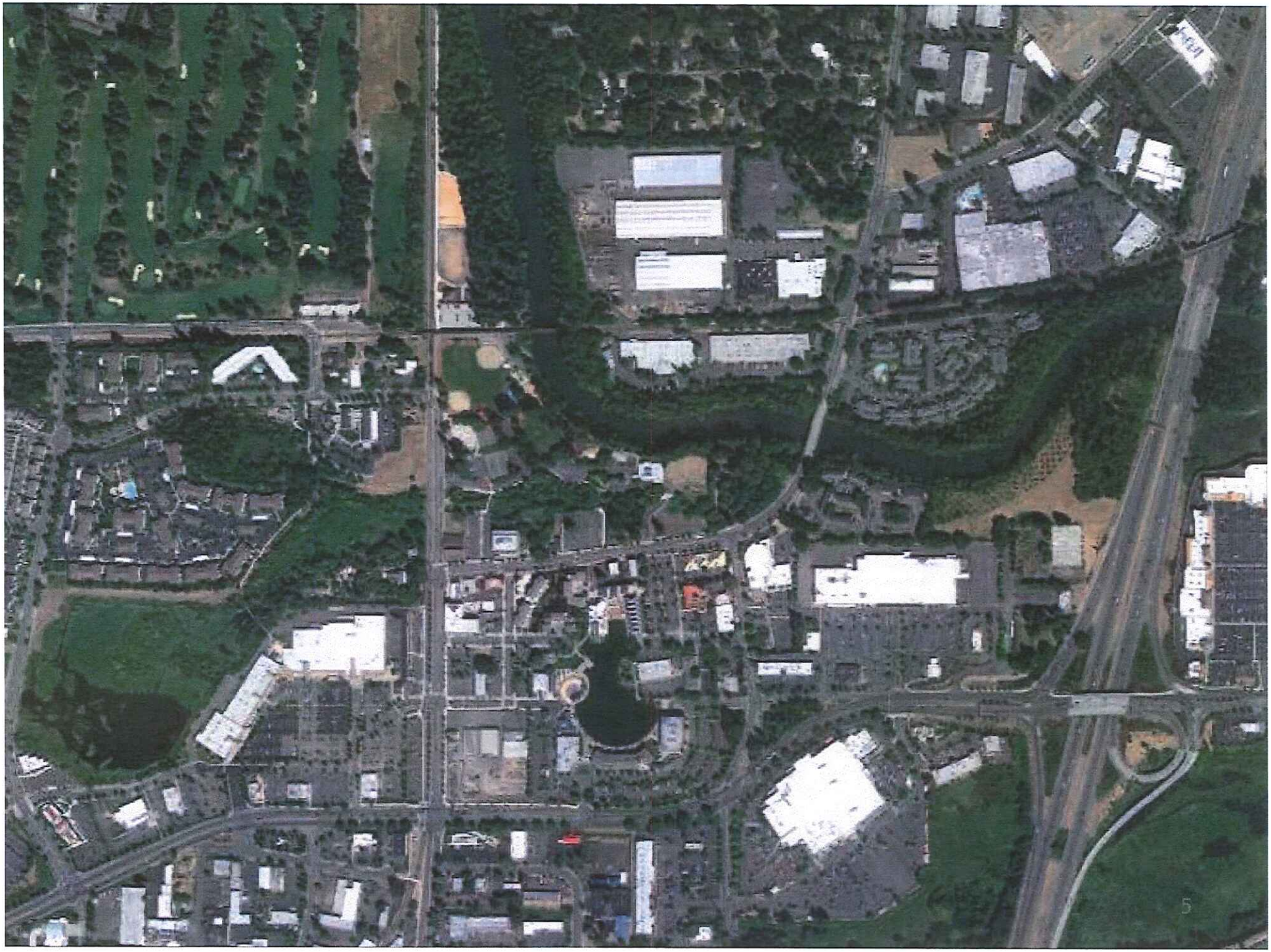
Goal of Tonight's Discussion

- **Discuss final refinement areas**
  - North-south connectivity
  - Tualatin-Sherwood Road
  - Boones Ferry Road
  - Downtown connectivity
- **Recommend what projects move forward for packaging and discussion at Transportation Summit**

Last Week's Meeting

- **We heard a few things from you**
  - Provide more details about our analysis – this helps you weigh the tradeoffs
  - Be creative – think outside the box
  - Be sensitive – to parks, homes/businesses, historic properties


This presents
a challenge...



Your Team's Goals for Tonight

1. Provide as many details as we can
2. Put forward some ideas that address the challenges
3. Be sensitive to the constraints that exist

A Reminder of our Goals and Objectives

No.	Goal	Representative Criteria
1.	Access and Mobility	Provide efficient and quick travel between point A and B, Provide connectivity within the City between popular destinations and residential areas
2.	Safety	Address known safety locations, address geometric deficiencies
3.	Vibrant Community	Support a livable community with family-friendly neighborhoods, maintain a small town feel
4.	Equity	Promote a fair distribution of benefits and burdens, consider access to transit for all users
5.	Economy	Support a vibrant City Center and community, Consider positive and negative effects of alternatives on adjacent residential and business areas
6.	Health/Environment	Provide interconnected networks for bicyclists and pedestrians, protect park land and create an environmentally sustainable community
7.	Ability to be Implemented	Promote fiscal responsibility, strive for broad community and political support

Refinement Area #3:
North to South Connectivity

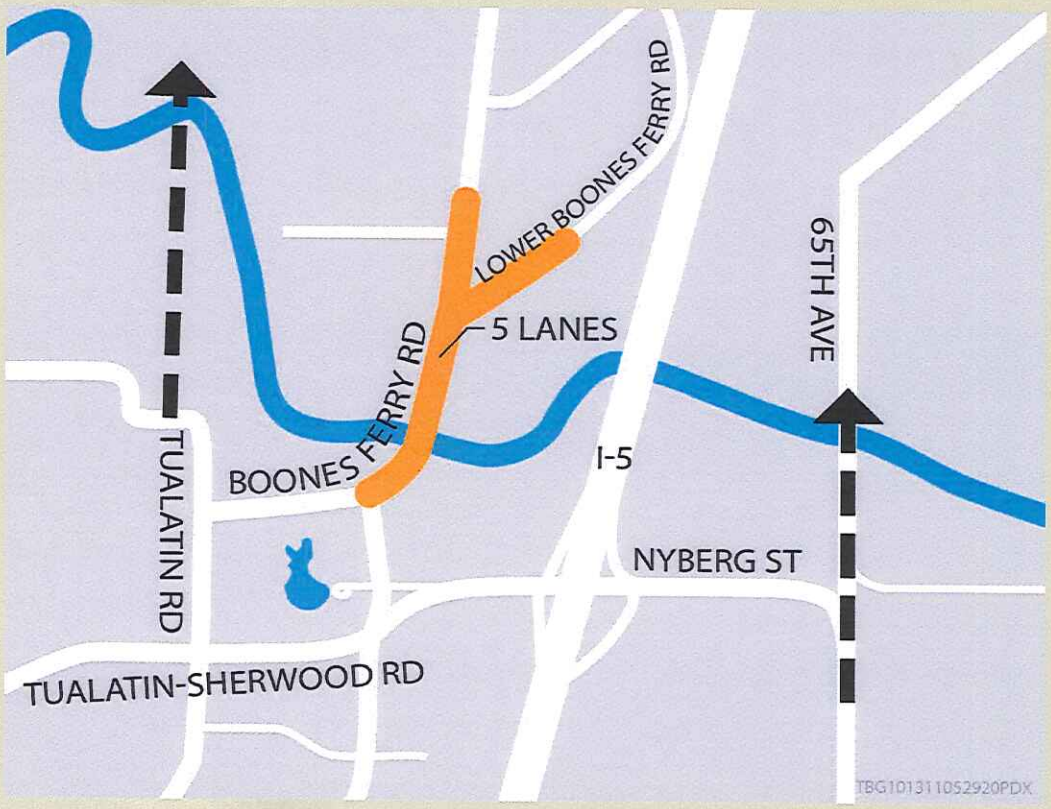
Goal Statement

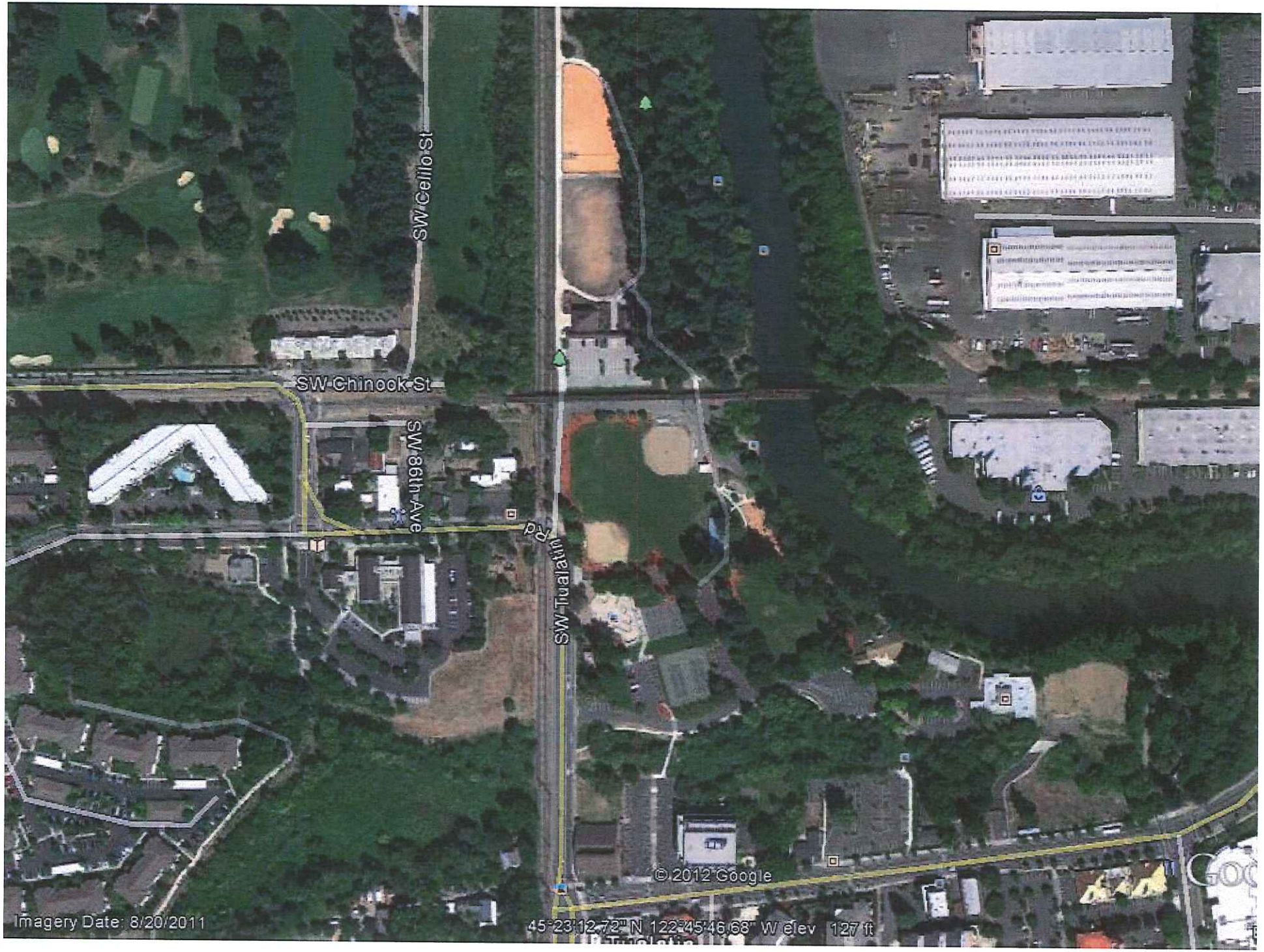
Improve north-south connectivity west of I-5

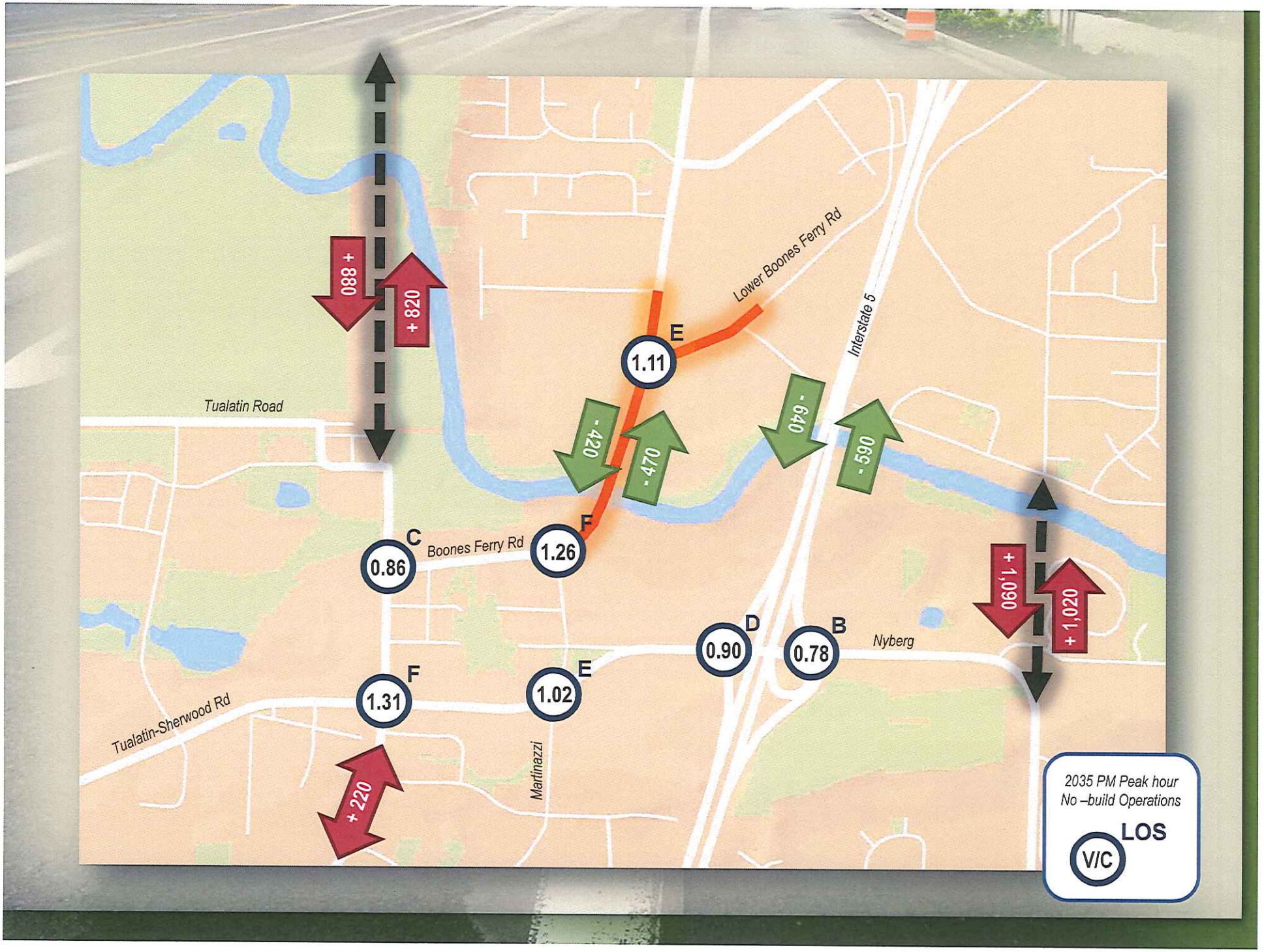
From our July Meeting...

Look at a hybrid option that:

- Constructs a two-lane road connecting from Tualatin Road to Hall Boulevard north of the river
- Widens Boones Ferry Road to five lanes between Martinazzi and Lower Boones Ferry
- Assumes extension of 65th Avenue




SW Cellio St
SW Chinook St
SW 86th Ave
SW Tualatin Rd
© 2012 Google
Imagery Date: 8/20/2011
45°23'12.72" N 122°45'46.68" W elev 127 ft


+ 880
+ 820
Tualatin Road
Lower Boones Ferry Rd
Interstate 5
E
1.11
- 420
- 470
- 640
- 590
F
1.26
C
0.86
Boones Ferry Rd
+ 1,090
+ 1,020
D
0.90
B
0.78
Nyberg
F
1.31
E
1.02
Tualatin-Sherwood Rd
Martinazzi
+ 220
2035 PM Peak hour
No –build Operations
LOS
V/C

What Does This Do For Tualatin?

Area	Benefits	Impacts
Traffic	• Decreases traffic on 99W, Boones Ferry Road (east of Tualatin Road), I-5 • Decreases traffic on Herman and Tualatin Roads	• Increases traffic into downtown and onto Tualatin-Sherwood Road
Design	• Removes one 90 degree turn on Tualatin Road	• Requires significant right of way • Additional at-grade crossing of RR tracks might be difficult
Environmental / Policy	• Extension included in Tigard and Washington County TSPs • Does NOT impact Sweek House • If local connection is made at Tualatin Community Park, helps circulation into park	• Additional environmental analysis would be needed related to river crossing, crossing of trail(s), and noise and air quality assessments

Discussion

Technical Team Does NOT Offer a Recommendation:

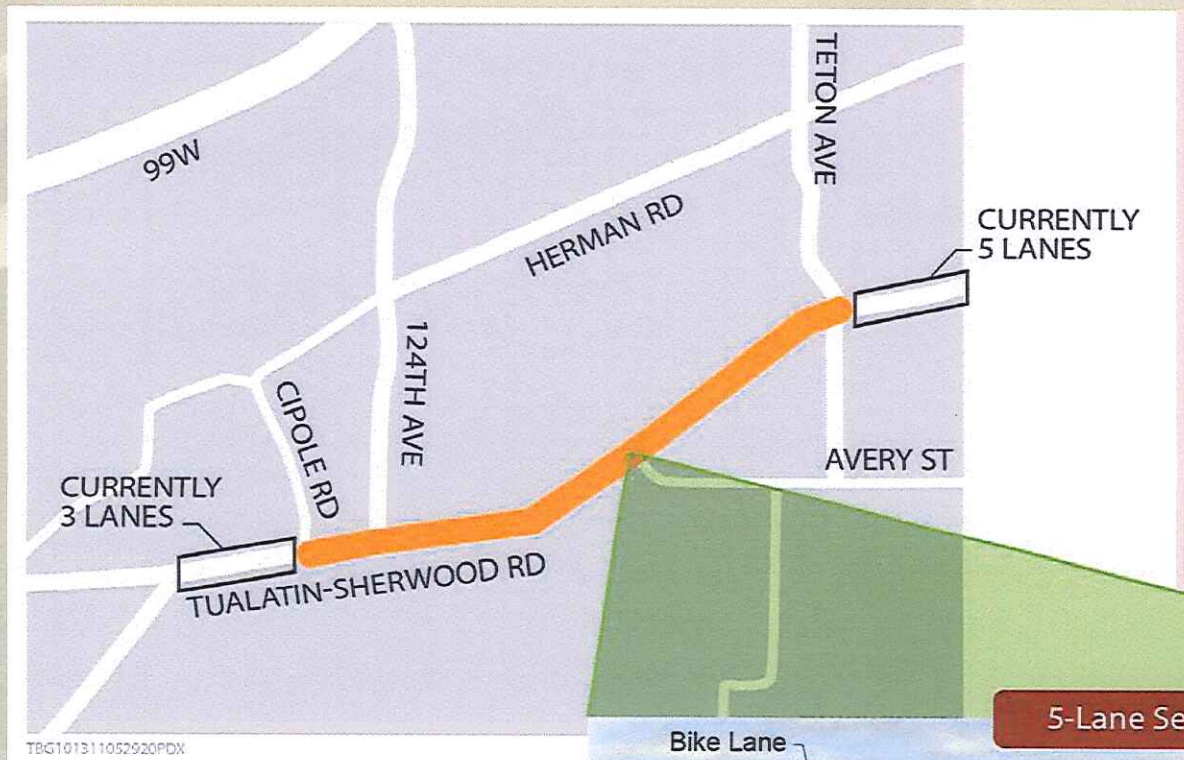
Ultimately, this needs to be a Community Decision

Refinement Area #5:
Tualatin-Sherwood Road

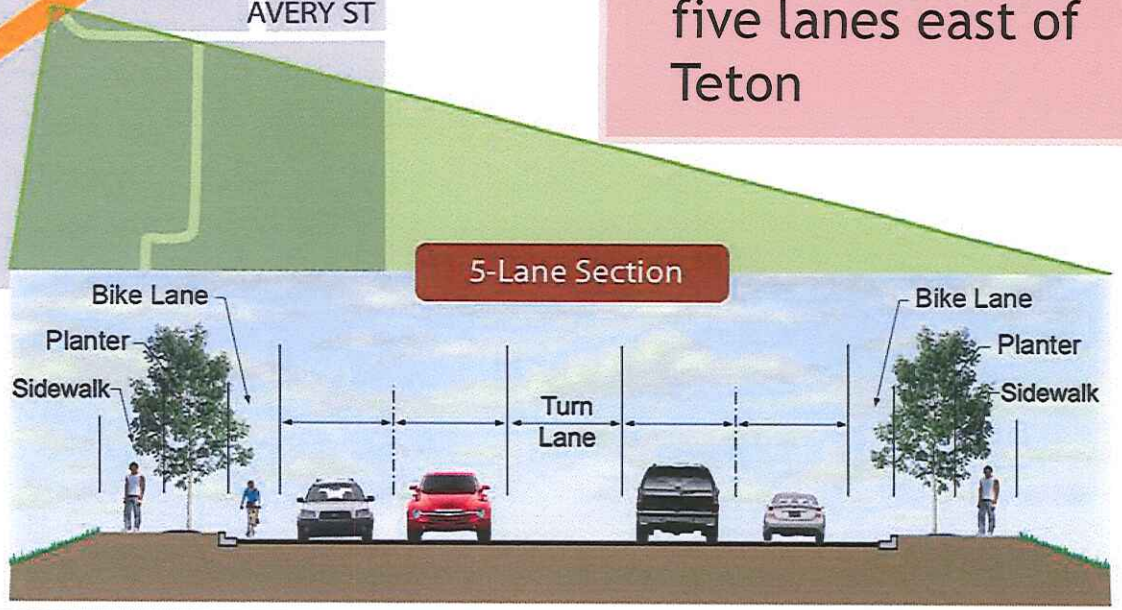
Goal Statement

Relieve congestion and improve safety for all modes

Option #1: Complete Five Lane Section



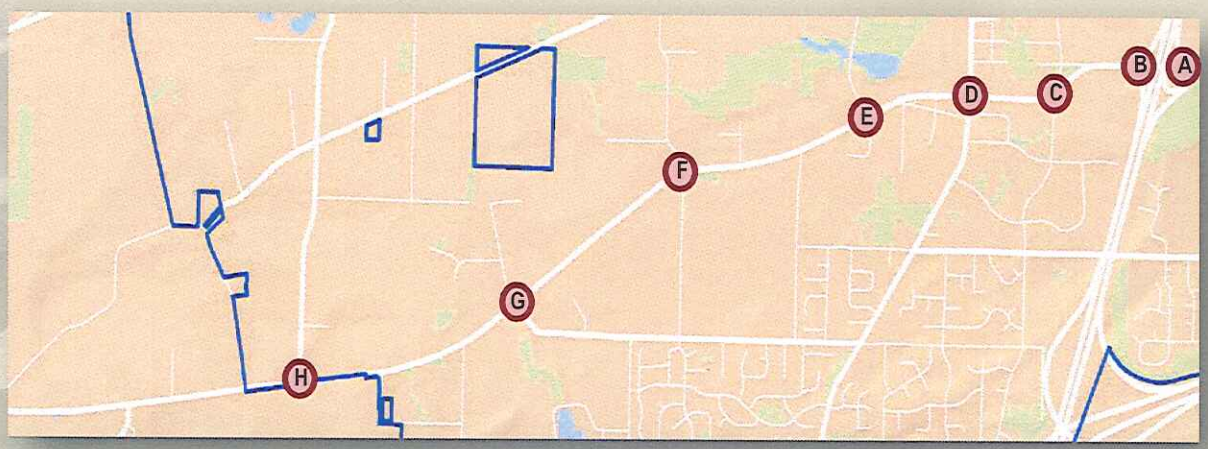
- Widens Tualatin-Sherwood Road to five lanes between Martinazzi and Lower Boones Ferry
- Road is currently five lanes east of Teton



Option #2: Retain Three Lane Section

- One travel lane in each direction
- Center turn lane
- Retains shoulder bicycle lanes and sidewalks
- Coordinated signal timing
- Spot improvements at key intersections

What Do These Options Do For Traffic?



PM Peak Hour Operations

Tualatin-Sherwood Road &	2011 Existing	Retain Three Lane Cross Section	Widen to Full Five-Lane Cross Section
A I-5 Northbound	0.68 (B)	0.78 (B)	0.78 (B)
B I-5 Southbound	0.79 (D)	0.90 (D)	0.90 (D)
C Martinazzi Ave	0.94 (D)	1.02 (E)	1.02 (E)
D Boones Ferry Road	0.93 (D)	1.31 (F)	1.31 (F)
E 90th Avenue	0.60 (C)	0.78 (C)	0.78 (C)
F Teton Avenue	0.79 (D)	0.95 (E)	0.95 (E)
G Avery St	0.71 (B)	0.99 (E)	0.92 (D)
H 124th Avenue	0.60 (C)	1.33 (F)	0.92 (C)

V/C ratio (Level-of-Service)

Other Connectivity Options

Option	West of Boones Ferry Rd	East of Boones Ferry Road
65th Extension	+50 vehicles ⇧	+180 vehicles ⇧
North/South Connection	+170 vehicles ⇧	-50 vehicles ⇩
Hybrid (both 65th and North/South)	+130 vehicles ⇧	+80 vehicles ⇧
TSM Option	Negligible	Negligible

What are the Other Benefits to Tualatin?

Area	Five-Lane	Three-Lane
Design Constraints	• Setbacks appear to allow widening with minor impacts to properties • Some drainage/water quality basins may require relocation	• None – this largely retains existing cross section. Widening at key intersections could be accommodated with no major design concerns
Environmental / Policy	• Project is included in Washington County TSP	• This option is not consistent with the Washington County TSP

Discussion

Technical team recommendation:

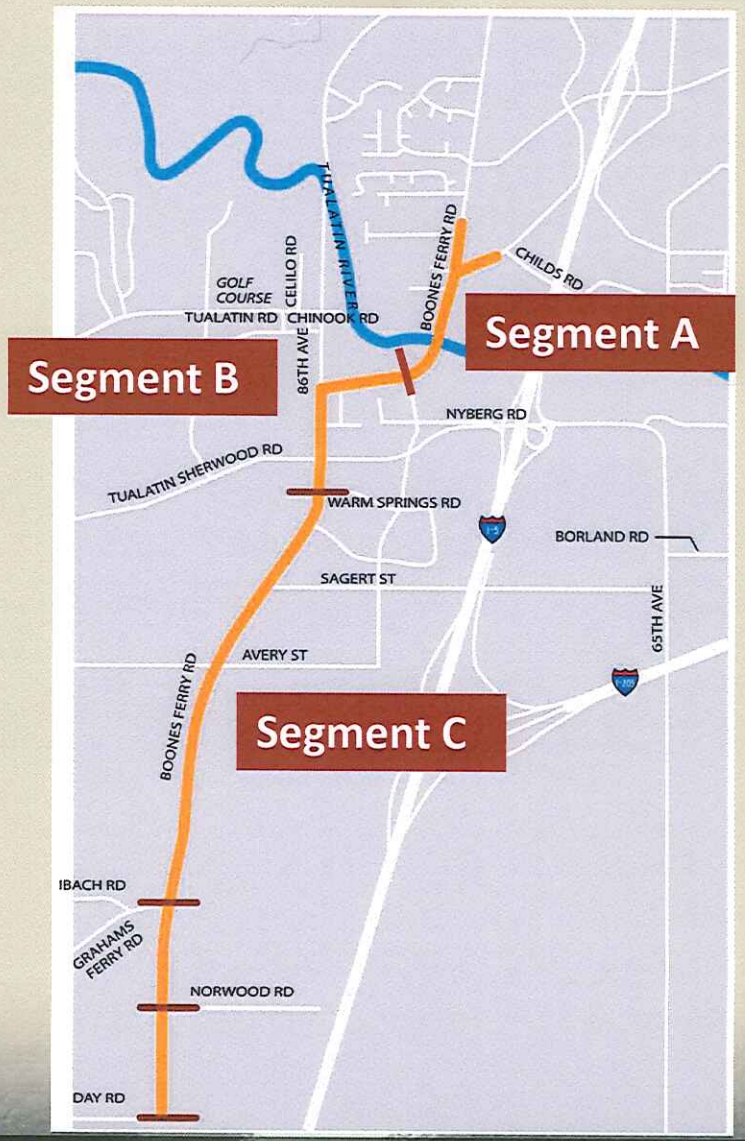
Move five-lane option forward to summit

Refinement Area #6:
Boones Ferry Road

Goal Statement

Reduce congestion and improve safety on Boones Ferry Road throughout Tualatin

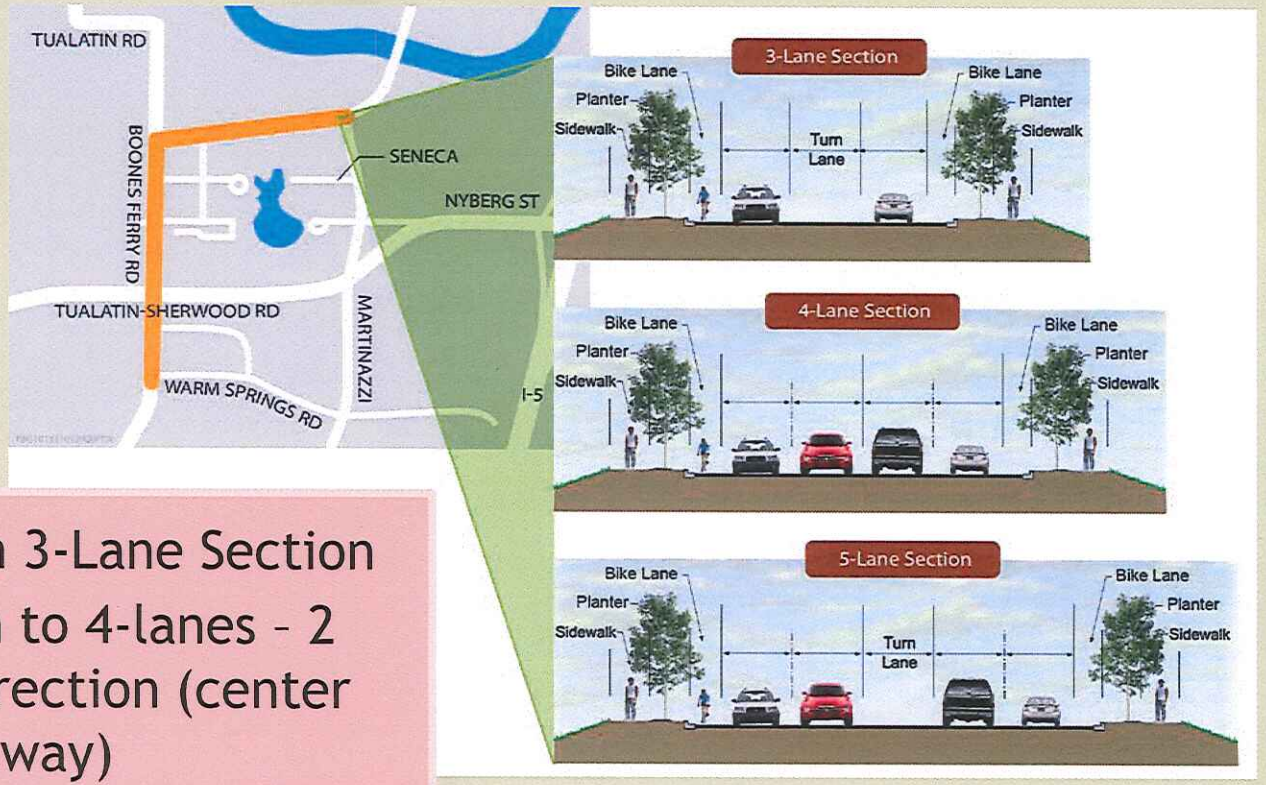
Three Segments of Boones Ferry Road



Segment A: North of Martinazzi

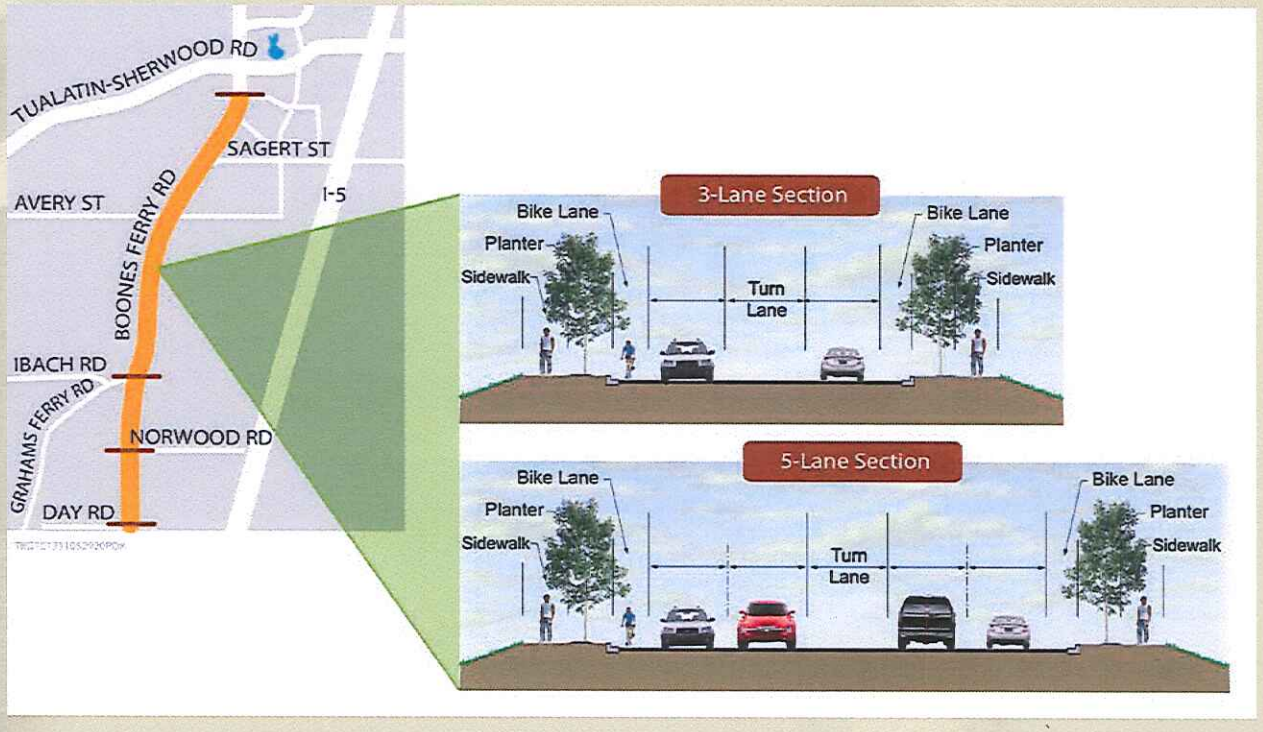
- Widen to five lanes from intersection with Lower Boones Ferry to bridge
- Replace current bridge, widen to four lanes with bike lanes and sidewalks
- Transition to three lanes south of bridge with transition at Martinazzi (left turn lane)

Segment B: Through Downtown



- Option 1: Retain 3-Lane Section
- Option 2: Widen to 4-lanes – 2 lanes in each direction (center turn lane goes away)
- Option 3: Widen to 5-lanes – 2 lanes in each direction with center turn lane

Segment C: South of Warm Springs



- Option 1: 3-lane section with widening at key intersections, coordinated signal timing
- Option 2: 5-lane section (2 travel lanes in each direction with center turn lane)

Boones Ferry Road Traffic: All Options

PM Peak Hour Operations

Boones Ferry Road &	2011 Existing	2035 No-Build	Widen South of Tualatin-Sherwood Rd to Norw ood	Widen North of Martinazzi to Lower Boones
A Lower Boones Ferry	0.76 (C)	1.11 (E)	1.11 (E)	0.89 (C)
B Martinazzi Ave	0.89 (D)	1.26 (F)	1.26 (F)	1.33 (F)
C Tualatin Road	0.62 (B)	0.86 (C)	0.86 (C)	0.92 (C)
D Tualatin-Sherwood Rd	0.93 (D)	1.31 (F)	1.30 (F)	1.31 (F)
E Sagert St	0.75 (C)	1.11 (E)	0.84 (C)	1.11 (E)
F Avery St	0.87 (C)	1.15 (F)	0.96 (D)	1.15 (F)
G Ibach St	0.70 (B)	0.98 (D)	0.88 (C)	0.98 (D)

V/C ratio (Level-of-Service)

Other Connectivity Options

Option	South of Tualatin-Sherwood Rd	TSR to Martinazzi Rd	North of Martinazzi
65th Extension	- 70 vehicles ↓	-180 vehicles ↓	-440 vehicles ↓
North/South Connection	+ 520 vehicles ↑	-270 vehicles ↓	-570 vehicles ↓
Hybrid (both 65th and North/South)	+220 vehicles ↑	-500 vehicles ↓	-890 vehicles ↓

What are the Benefits for Tualatin?

Area		Segment A	Segment B	Segment C
Design	3-lane	• No impacts	• No impacts	• No impacts
	4-lane	• N/A	• Would require ROW • Access impacts	• N/A
	5-lane	• Minor impacts • Little ROW needed • Railroad coordination needed	• Would require additional ROW • Would require reconstructed accesses	• Could improve curves and grade for sight distance improvements • Some structures close to ROW line
Environmental/ Policy	3-lane	• None	• None	• None
	4-lane	• N/A	• Business impacts • Difficult turning movements	• N/A
	5-lane	• Some landscaping impacts adjacent to road	• Impacts businesses in this segment	• Impacts setbacks and landscaping (no houses) • Near Woodrose Nature Park

Discussion

Technical team recommendation:

Move forward with

Segment A: Five lanes

Segment B: Three lanes

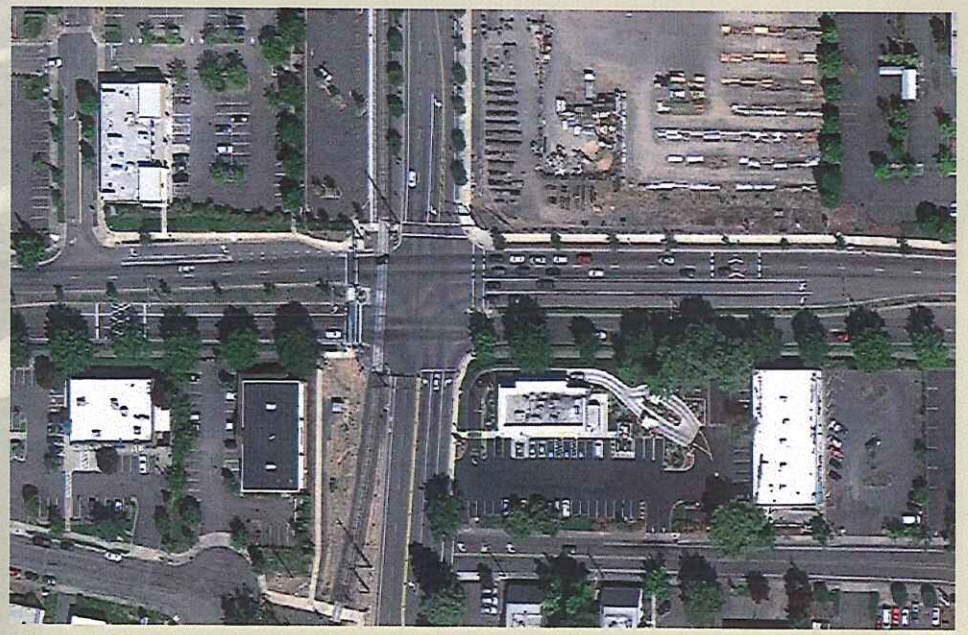
Segment C: Three lanes

To the summit

Refinement Area #7:

Downtown Connectivity

Tualatin-Sherwood Road/Boones Ferry Road Intersection



Notes:

- Signal timing is already optimized at this intersection, but other phasing/timing/ coordination alternatives may be tested
- Changing the signal timing to 120 seconds could improve the V/C ratio from 1.30 (F) to 1.22 (F)
- Intersection is well over capacity, even a test of 140 second signal cycle with right turns on every approach yields a V/C of 1.06 (E)

PM Peak Hour Operations

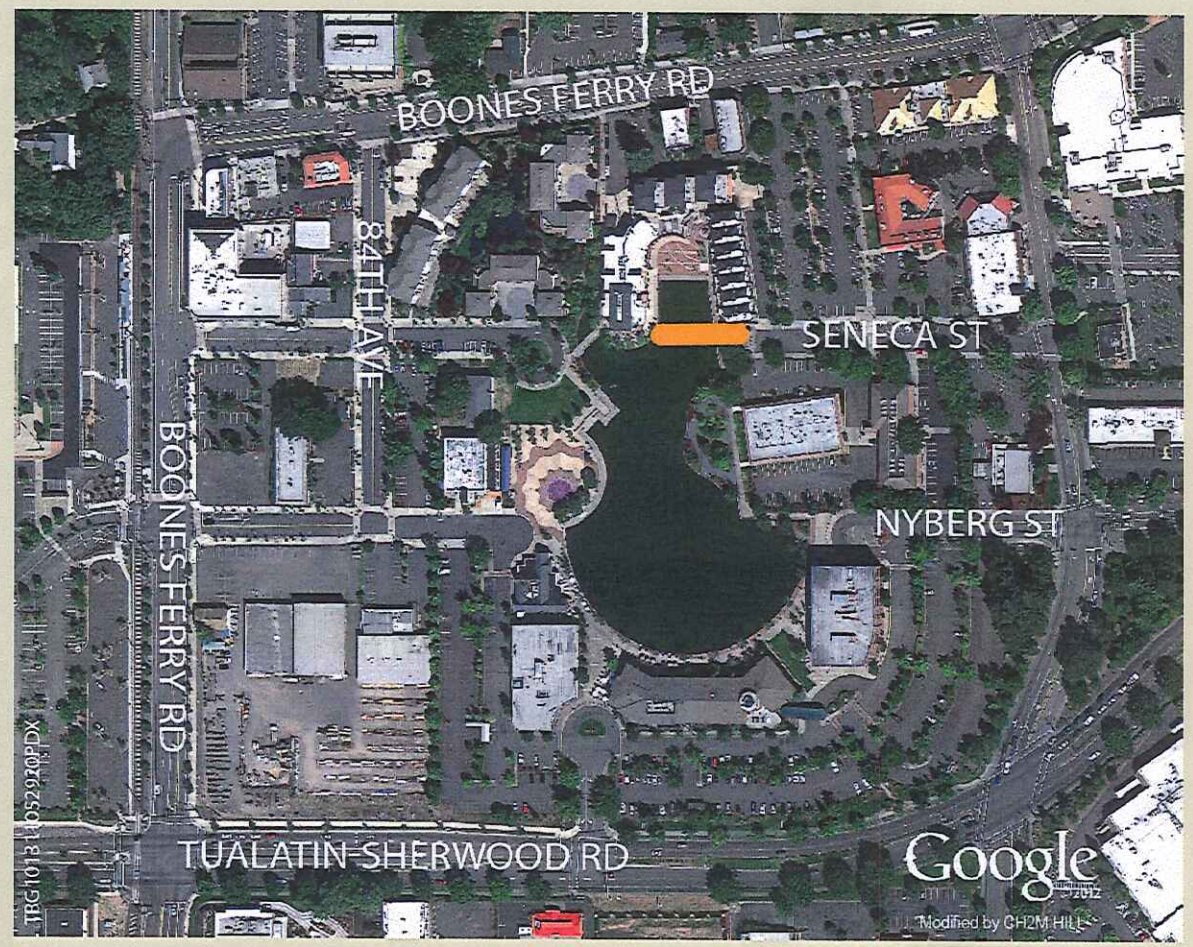
	Tualatin-Sherwood Road/Boones Ferry Road
Existing Conditions	0.93 (D)
2035 No-Build	1.31 (F)
Added Eastbound Right Turn Pocket	1.18 (E)
Added Westbound Right Turn Pocket	1.31 (F)
Added Southbound Right Turn Pocket	1.18 (E)

V/C ratio (Level-of-Service)

Other Connectivity Options

Option	West of Boones Ferry Rd	East of Boones Ferry Road	North of TSR	South of TSR
65th Extension	+ 50 vehicles ↑	+180 vehicles ↑	-60 vehicles ↓	- 70 vehicles ↓
North/South Connection	+ 170 vehicles ↑	-50 vehicles ↑	+420 vehicles ↑	+ 520 vehicles ↑
Hybrid (both 65th and North/South)	+130 vehicles ↑	+80 vehicles ↑	+280 vehicles ↑	+220 vehicles ↑
TSM Option	Negligible	Negligible	Negligible	Negligible

Connectivity in the Downtown Core



- Bridge over the lake was screened out
- Tunnel under the lake was screened out
- At least we can improve connectivity for bicyclists and pedestrians

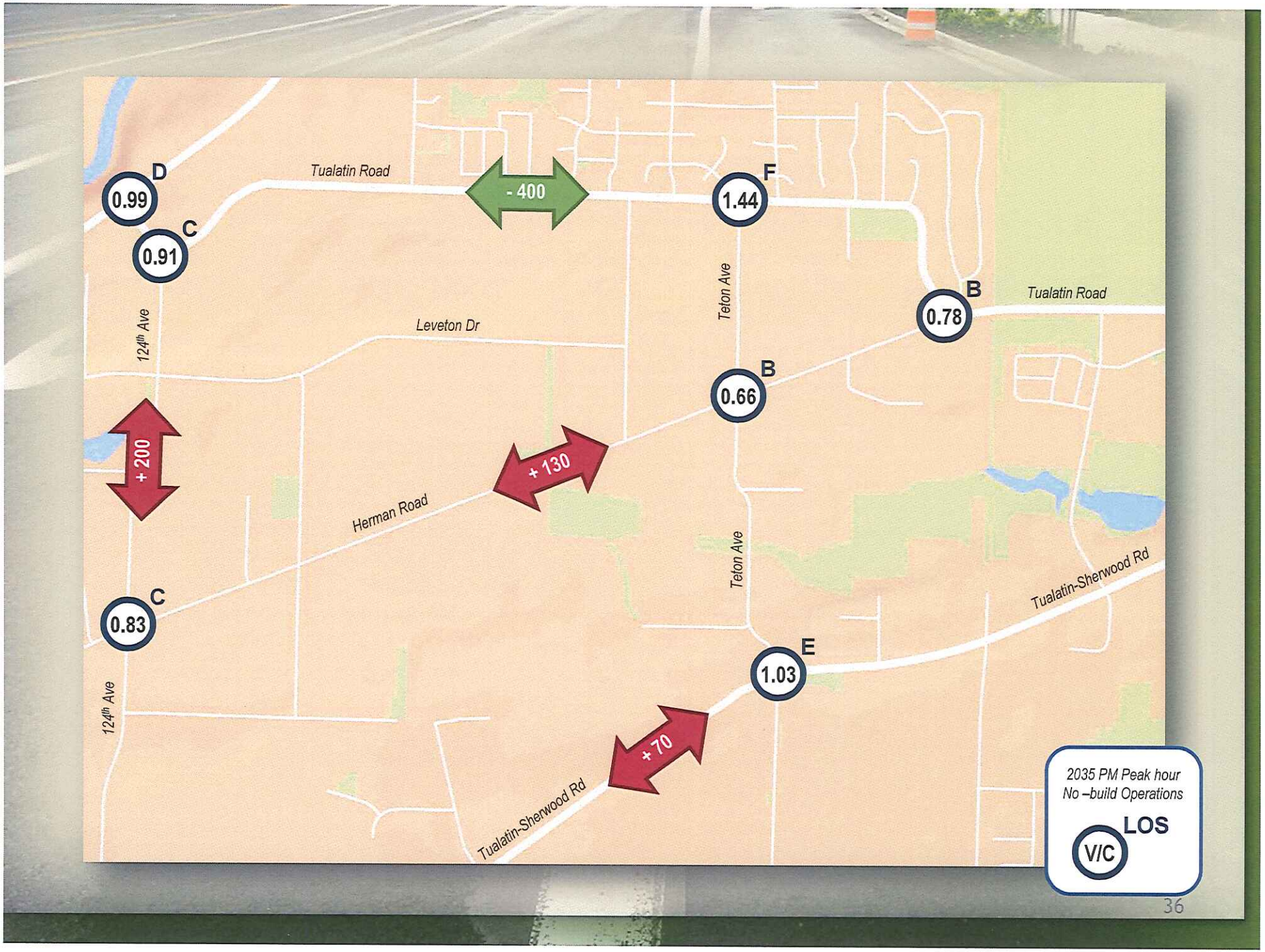
Revisiting Refinement Area #4:

Herman Road and Tualatin Road

Refined Solution

Add something on teton

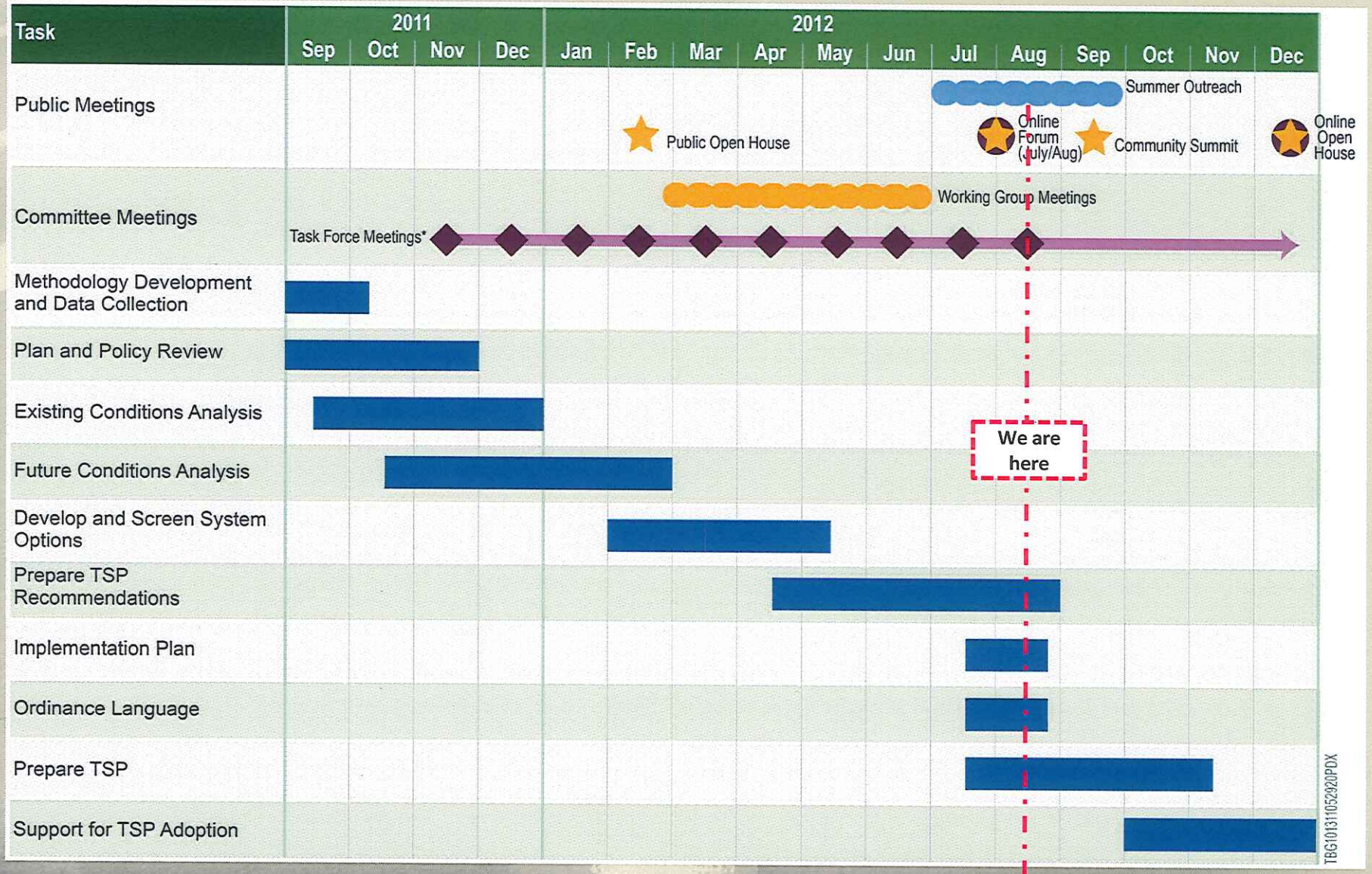
A. Reclassify Herman to a minor arterial
B. Upgrade section of Herman to 2 lanes
C. Lower speeds on Tualatin
D. Eliminate free right turn at Tualatin/Herman intersection, consider roundabout
E. Add signals at the east and west ends of Tualatin
F. Remove trees at Tualatin and 108th
G. Modify channelization of 124th and Tualatin, consider roundabout
H. Signage to indicate that Tualatin is for local traffic


Tualatin Road
- 400
D
0.99
C
0.91
F
1.44
B
0.78
Tualatin Road
124th Ave
Leveton Dr
Teton Ave
B
0.66
+ 200
+ 130
Herman Road
C
0.83
Teton Ave
Tualatin-Sherwood Rd
E
1.03
124th Ave
+ 70
Tualatin-Sherwood Rd
2035 PM Peak hour
No –build Operations
LOS
V/C

Thank You! What Happens Next?

- Package all the recommendations
- Traffic analysis of the system together
  - Does it work?
  - What are we benefits to Tualatin?
  - What are the benefits to the region?
  - What are the costs?
- Transportation Community Summit in September (September 20th)

Transportation System Plan Timeline



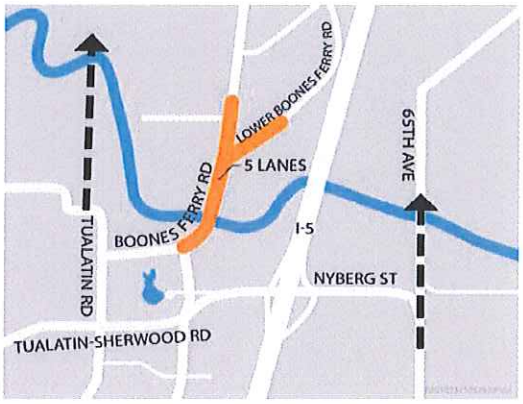
Thank you!

Refinement Area #3: North/South Connectivity

Option 3: Hybrid. Two-lane local road connecting to Hall Boulevard, extending 65th Avenue across the Tualatin River, and Widening Boones Ferry Road.

Goal Statement

This option improves connectivity in the north-south direction west of I-5. Connections in Tualatin west of I-5 are limited to Boones Ferry Road and 99W in the north-south direction, and Tualatin Road and Herman Road in the east-west direction. In the 2001 Tualatin TSP, there was a project to extend Tualatin Road to the north to connect with Hall Boulevard in Tigard.



Potential Solution

- An extension west of the railroad tracks, in the general vicinity of SW 86th Avenue east of the Country Club
- Road would extend northward in the vicinity of SW Celilo Road and connect with SW 85th Avenue north of the Tualatin River
- Combine extending to Hall Boulevard with widening Boones Ferry Road, and extending SW 65th Avenue north over the River

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• New extension allows connectivity north/south across the Tualatin River • New two lane local roadway could carry up to 800-900 vehicles in each direction during the 2035 PM peak hour • Will increase traffic on Boones Ferry Road in front of Tualatin Community Park – uncertain whether signal warrant would be met • Tualatin-Sherwood Rd and Boones Ferry Rd V/C deteriorates slightly from 1.30, LOS F to 1.37, LOS F • Connections would increase PM Peak hour intersection volume by 400 vehicles, primarily north/south through vehicles.	

Consideration Area	Comments	Score
How would this solution affect traffic city-wide?	• Tualatin, Herman, 99W, and Boones Ferry Road (north of the Tualatin River) experience a moderate decrease in traffic • Boones Ferry Road immediately south of Celilo Road has an increase in traffic leading up to the extension	●
Design Constraints / Considerations	• Does not physically impact Tualatin Community Park • At least one, if not two railroad crossings would need crossing improvements and would require coordination with the Railroad and ODOT Rail. • North improvements to alignment would extend along the west edge of the tracks and tie into 85th Ave on the north side of the river	◒
Environmental / Policy Considerations	• An extension of Hall Boulevard into Tualatin is included in the Tigard TSP (long-term not fiscally constrained project list) and in the Washington County TSP • Potential impacts (likely temporary) to the Tualatin River and adjacent natural resources. • Potential impacts to wetlands/sensitive areas west of the existing railroad tracks north of Tualatin Road.	○

Refinement Area #5: Tualatin-Sherwood Road

Option 1: Five-Lane Section Teton to Cipole

Goal Statement

Relieve congestion and improve safety for all modes along Tualatin-Sherwood Road within the City of Tualatin.

Tualatin-Sherwood Road serves as the major east-west arterial through Tualatin. It connects residents, employees, and visitors to the I-5 freeway system, to the community of Sherwood, and areas west. Tualatin-Sherwood Road is owned and maintained by Washington County. West of 124th Avenue average daily traffic volumes are higher than 26,000 vehicles.

Though there are continuous sidewalks and bicycle lanes throughout the corridor, including a buffered bicycle lane west of downtown, the team has heard from the community that the traffic volumes still make this corridor feel unsafe from the vantage point of a bicyclist. Crossing this arterial at key intersections can be difficult for a pedestrian.

Potential Solution

Widen Tualatin-Sherwood Road to five lanes, retaining continuous buffered bicycle lanes and sidewalks between Teton to the east and Cipole to the west.

Consideration Area	Comments	Score

How would this solution affect traffic locally?	• Serves future demand that is beginning to be seen today
	• Minor to moderate increases in traffic seen on Avery Street, 124th Avenue, and new connection between 112th and Myslony
	• Widening Tualatin-Sherwood Road from 3 to 5 lanes changes V/C and LOS at the following intersections:
	  ○ Improves 124th Ave: from 1.33, LOS F to 0.92, LOS C
	  ○ Improves Avery St: from 0.99, LOS E to 0.92, LOS D
	  ○ Teton Ave deteriorates slightly: from 0.95, LOS E to 1.03, LOS E	

How would this solution affect traffic city-wide?	• Draws traffic away from Hwy 99W, Tualatin Road, Herman Road, and the Cipole Rd extension • New traffic on Tualatin-Sherwood Road forecasted to be approximately 200-350 vehicles in each direction during afternoon rush hour	

Consideration Area	Comments	Score
Design Constraints / Considerations	• Right-of-way setbacks likely allow widening with minor impacts to properties from Teton west to Cipole • Some drainage/water quality basins that would likely need to be relocated • Major design complications not anticipated	
Environmental / Policy Considerations	• Most widening impacts would be to landscaping • Project is included in Washington County TSP • Any widening west of Cipole would require coordination with Sherwood.	

Refinement Area #5: Tualatin-Sherwood Road

Option 2: Transportation System Management

Goal Statement

Relieve congestion and improve safety for all modes along Tualatin-Sherwood Road within the City of Tualatin.

Tualatin-Sherwood Road serves as the major east-west arterial through Tualatin. It connects residents, employees, and visitors to the I-5 freeway system, to the community of Sherwood, and areas west. Tualatin-Sherwood Road is owned and maintained by Washington County. West of 124th Avenue average daily traffic volumes are higher than 26,000 vehicles. The intersection of Tualatin-Sherwood Road and Boones Ferry Road is the most congested intersection in the community of Tualatin, and serves as a activity hub, with the WES Commuter Rail station and commercial businesses on all four corners. Crossing this arterial at key intersections can be difficult for a pedestrian.

Potential Solution

The team explored keeping Tualatin-Sherwood Road as a three-lane section west of Teton, improving travel conditions via coordinated signal timing and intersection-specific treatments that would reduce overall conflicts and delay.

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• There could be a modest shift of traffic to utilize Tualatin-Sherwood Road if TSM type enhancements occur and make the corridor more efficient. • Likely shift in traffic would come from Herman Road, Tualatin Road, and Avery Street.	
How would this solution affect traffic city-wide?	• Most impacts would be local with little city-wide effect.	
Design Constraints / Considerations	• N/A.	N/A
Environmental / Policy Considerations	• None	

Refinement Area #5: Tualatin-Sherwood Road

Drilling Down on the Tualatin-Sherwood Road / Boones Ferry Road Intersection

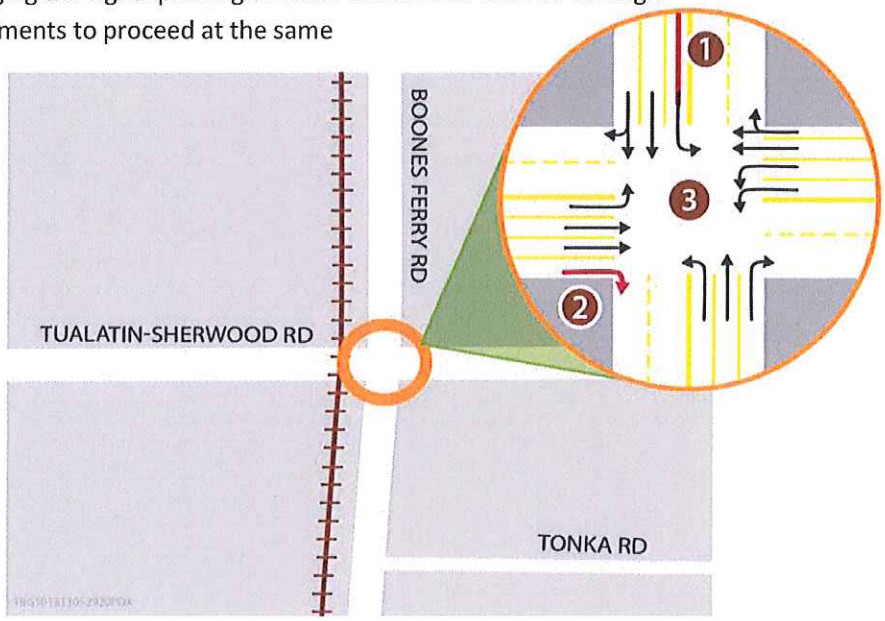
Goal Statement

The intersection of Tualatin-Sherwood Road and Boones Ferry Road is one of the busiest in the City. It is the junction of two major arterials, serves traffic moving north-south and east-west, has commercial businesses on all four corners, and is the location of WES commuter rail service. The intersection is already wide and intimidating to pedestrians. Right-of-way is limited for further widening.

Potential Solution

The team looked into several treatments that would improve conditions at this intersection while minimizing further widening.
These include:

1. Lengthening the southbound left turn pocket on Boones Ferry Road
2. Adding a right turn pocket on Tualatin-Sherwood Road
3. Changing the signal phasing to allow westbound left and through movements to proceed at the same time.



Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Overall intersection operation improvements allow for better east/west traffic flow. • Capacity improvements on side streets could allow for a signal timing shift on Tualatin-Sherwood Road. • The intersection is still likely to be over capacity by 2035 (PM peak hour).	◒
How would this solution affect traffic city-wide?	• Most impacts would be local with little city-wide effect.	●
Design Constraints / Considerations	• Lengthening the southbound left turn pocket would have impacts to the northbound turn pocket at Nyberg Street and the Hagens parking lot. • Adding a right turn pocket on Tualatin-Sherwood Road would require improvements to the signal and railroad crossing and sidewalk/planter on Tualatin-Sherwood Road and available right-of-way width would need to be reviewed for adequacy.	◒
Environmental / Policy Considerations	• Drainage ditch impacts from the right turn pocket on eastbound Tualatin-Sherwood Rd. • Adding a turn pocket would move Tualatin-Sherwood Road closer to the business at that corner.	◒

Refinement Area #6: Boones Ferry Road

Five-lane option North of Martinazzi Avenue

Goal Statement

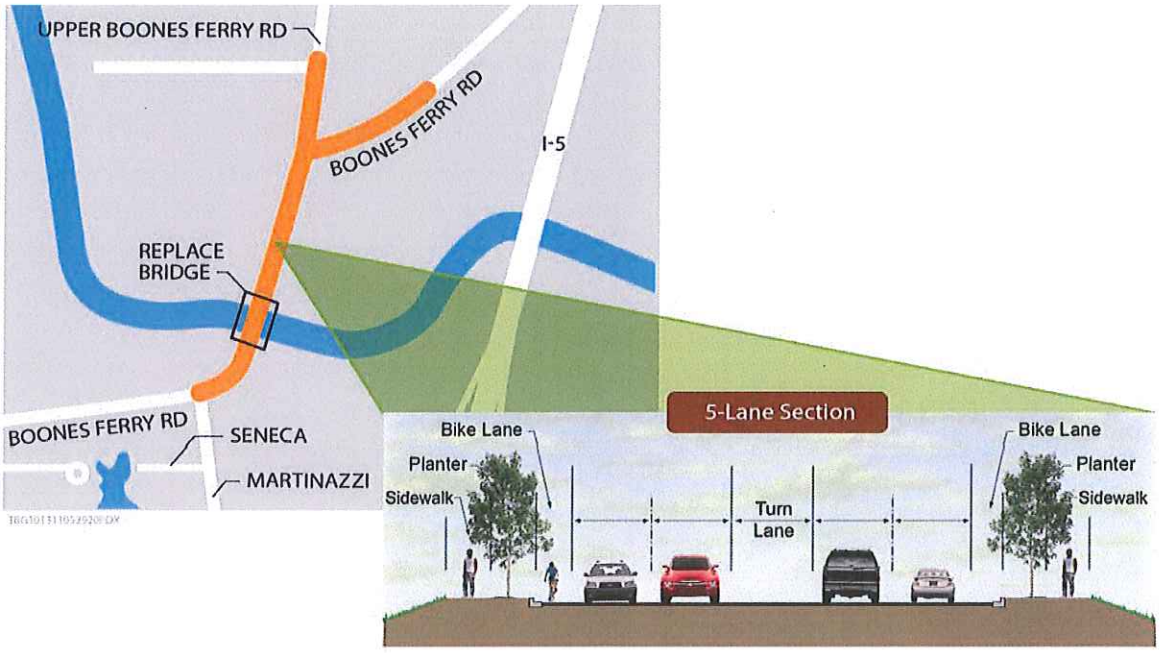
Boones Ferry Road serves as the main north-south arterial in Tualatin west of I-5. It connects Tualatin with Wilsonville to the south and Durham and Tigard to the north. Because of its length, Boones Ferry Road serves different needs – to the south it serves the many residents of south Tualatin, and the Byrom Elementary and Tualatin High Schools. Between Warm Springs and the Tualatin River, Boones Ferry Road is one of the major streets serving the core of downtown.

North of the river it transitions to Upper Boones Ferry Road to Durham and Tigard, and Lower Boones Ferry Road to serve the Bridgeport Village Regional Center. Our team's analysis has found the intersection of Boones Ferry Road and Lower Boones Ferry Road is one of the more congested intersections in the City. Overall the corridor has seen four reported crashes involving bicyclists, and two involving pedestrians, in the last three years.

Solution

The team explored widening Boones Ferry Road between the intersection of Lower Boones Ferry Road to the north and Martinazzi to the south, as well as keeping that section three-lanes. Assumes replacement of the Tualatin River bridge.

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• Could potentially shift traffic from Tualatin-Sherwood Road (east of Boones Ferry Road) and away from the Nyberg interchange.	
How would this solution affect traffic city-wide?	• Would shift traffic from Hwy 99W/Durham Road, and from Interstate 5 between the Boones Ferry Road and Nyberg interchanges onto Boones Ferry Road	
Design Constraints / Considerations	• Would have minor (likely temporary) impacts on natural resources. • Would require little, if any right-of-way. However accesses would be affected and would need to be reconstructed. • The railroad crossing between the bridge and Lower Boones Ferry Road would require coordination with ODOT Rail and the Railroad.	
Environmental / Policy Considerations	• Widening Boones Ferry Road would not impact any structures, mainly landscaping adjacent to the roadway.	


UPPER BOONES FERRY RD
BOONES FERRY RD
I-5
REPLACE BRIDGE
BOONES FERRY RD
SENECA
MARTINAZZI
5-Lane Section
Bike Lane
Planter
Sidewalk
Turn Lane
Bike Lane
Planter
Sidewalk

Refinement Area #6: Boones Ferry Road

Options between Martinazzi Avenue and Warm Springs Avenue

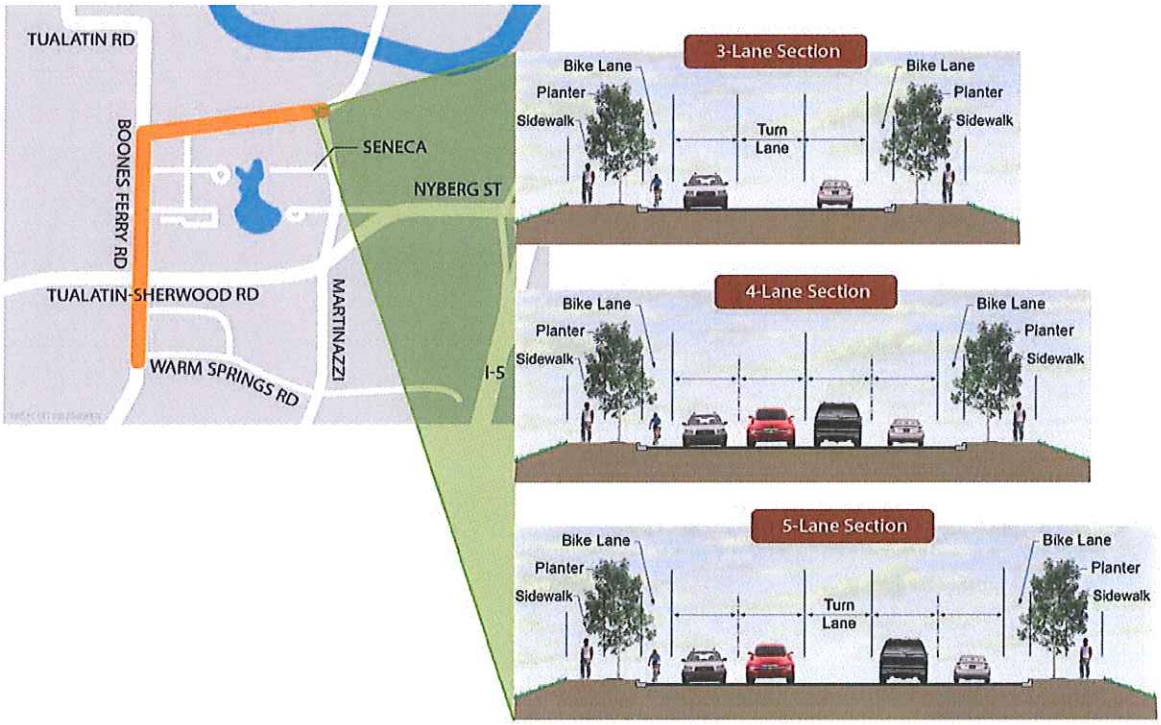
Goal Statement

Boones Ferry Road serves as the main north-south arterial in Tualatin west of I-5. It connects Tualatin with Wilsonville to the south and Durham and Tigard to the north. Because of its length, Boones Ferry Road serves different needs – to the south it serves the many residents of south Tualatin, and the Byrom Elementary and Tualatin High Schools. Between Warm Springs and the Tualatin River, Boones Ferry Road is one of the major streets serving the core of downtown. The intersection of Tualatin-Sherwood and Boones Ferry Roads is one of the most congested intersections in the city. The intersection of Tualatin-Sherwood Road and Boones Ferry road is also the site of 50 crashes in the last five years and has been flagged by Washington County as a location of safety concern. Overall the corridor has seen four reported crashes involving bicyclists, and two involving pedestrians, in the last three years.

Potential Solution

The team explored three options between Martinazzi and Warm Springs:

a) Retaining a three-lane section with intersection improvements and coordinated signal timing;
b) Widening to four lanes, limiting turning pockets to intersections; and
c) Widening to five lanes, with two travel lanes in each direction and a center-turn lane transitioning to a turn pocket at intersections.



Consideration Area	Three-Lane Section with Intersection Improvements and Signal Timing		Four-Lane Section with Turn Pockets at Intersection		Five-lane Section with Center Turn lane	
How would this solution affect traffic locally?	• Signal timing improvements alone have a minor improvement, but there would still be intersection deficiencies.	◒	• Would improve operations along the corridor to better meet demand, while shifting traffic from Interstate 5 and away from the Nyberg interchange. • Could add delay on the corridor due to turning vehicles in the travel lane	◒	• Would improve operations along the corridor to better meet demand, while shifting traffic from Interstate 5 and away from the Nyberg interchange.	●
How would this solution affect traffic city-wide?	• Effects are mostly local with signal timing improvements.	◒	• The effects are mostly local • Shifts traffic away from I-5 and the Nyberg Interchange	◒	• The biggest effect is the shift from traffic away from Interstate 5 and the Nyberg interchange.	◒
Design Constraints / Considerations	• Would not impact natural resources. • Minor impacts associated with intersection improvements.	●	• Would have minor (likely temporary) impacts on natural resources. • Would require right-of-way, and would impact accesses.	◒	• Would have minor impacts on natural resources. • Would require additional right-of-way and reconstructed accesses.	◒
Environmental / Policy Considerations	• Few impacts – maintains the existing cross-section	●	• Would impact businesses and parking between Martinazzi and Warm Springs • Would make it more difficult for turning vehicles to access driveways in this section.	◒	• Would impact businesses and parking between Martinazzi and Warm Springs.	○

Refinement Area #6: Boones Ferry Road

Options South of Warm Springs

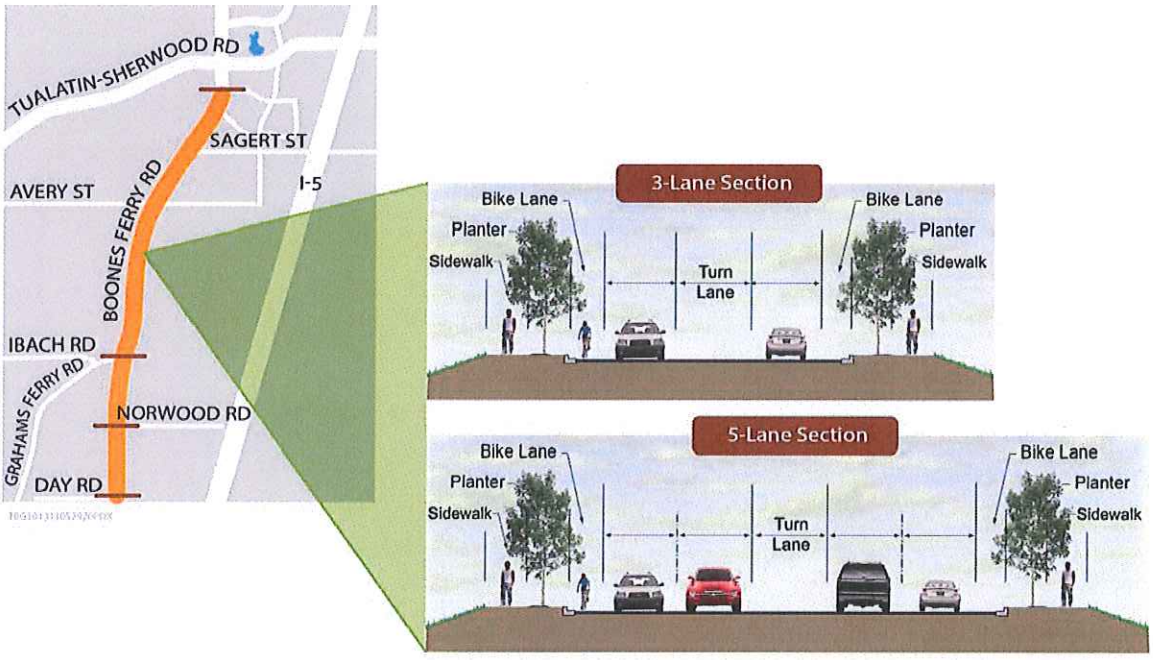
Goal Statement

Boones Ferry Road serves as the main north-south arterial in Tualatin west of I-5. It connects Tualatin with Wilsonville to the south and Durham and Tigard to the north. Because of its length, Boones Ferry Road serves different needs – to the south it serves the many residents of south Tualatin, and the Byrom Elementary and Tualatin High Schools. Overall the corridor has seen four reported crashes involving bicyclists, and two involving pedestrians, in the last three years.

Potential Solution

The team explored widening Boones Ferry Road to five lanes between Warm Springs and Ibach, and between Ibach and Norwood. Between Norwood and Day Boones Ferry Road will be expanded to three lanes (this latter project is planned for construction by Washington County).

The other option is to keep Boones Ferry Road at three lanes and improve signal timing and make targeted improvements at intersections.



Consideration Area	Three Lane Cross Section		Five Lane Cross Section	

How would this solution affect traffic locally?	• The three lane section would slightly improve intersection operations
	• Would not add additional vehicles on the roadway
		○	• The 5 lane option would address 2035 PM peak hour capacity and operational deficiencies along Boones Ferry Road.
			• Widening would add approximately 200-300 vehicles in each direction along Boones Ferry Road.
			• Widening Boones Ferry Road from 3 to 5 lanes changes V/C and LOS at the following intersections:
			  ○ Improves Sagert St: from 1.11, LOS E to 0.84, LOS C
			  ○ Improves Avery St: from 1.15, LOS F to 0.96, LOS D
			  ○ Improves Ibach St: from 0.98, LOS D to 0.88, LOS C
				◒

How would this solution affect traffic city-wide?	• Would have little effect on city-wide traffic	○	• Moderate levels of traffic would shift from the new 124th Avenue extension, 65th Avenue, and 105th Avenue/Blake Street (a local roadway) to Boones Ferry Road.	◒
Design Constraints / Considerations	• Would have few impacts on right-of-way as the roadway is already 3 lanes wide. • Intersection improvements could require additional room to add turn lanes, etc, though few impacts are anticipated	●	• Widening to 5-lanes is relatively straight forward from Warm Springs to Norwood. • There may be some opportunities to improve vertical profiles and horizontal curves for sight distance. • Right of way varies throughout the corridor with some newer developments having full width for 5-lanes, while other areas have structures up to the ROW line.	◒
Environmental / Policy Considerations	• None	●	• Some houses are very close to Boones Ferry Road between Warm Springs and Norwood. Widening Boones Ferry Road in this area would impact setbacks and landscaping; though no houses would be impacted. • Widening the roadway could have some small impacts to Little Woodrose Nature Park, depending on the design of the widening. There are no other environmental concerns as the area is already built-up residential.	○

Refinement Area #7: Downtown Connectivity

Connections for Nyberg and Seneca

Goal Statement

Connectivity within the downtown core is limited by the Lake at the Commons, the railroad line, and high traffic volumes along the Boones Ferry Road and Tualatin-Sherwood Road corridors.

Potential Solution

Connect both sides of Seneca Street via a pedestrian and bicycle bridge over the lake. Connect to existing path around the lake, providing a connection for through east-west bicycle and pedestrian traffic.

Consideration Area	Comments	Score
How would this solution affect traffic locally?	• No effects on local traffic	N/A
How would this solution affect traffic city-wide?	• No effects on city-wide traffic	N/A
Design Constraints / Considerations	• Impacts to lake are temporary and minor	●
Environmental / Policy Considerations	• Tualatin Commons and Tualatin Commons Park are City-owned parks • The lake is human-made and a bridge and is not expected to impact habitat	●

City of Tualatin

Putting it all Together

Tualatin TSP

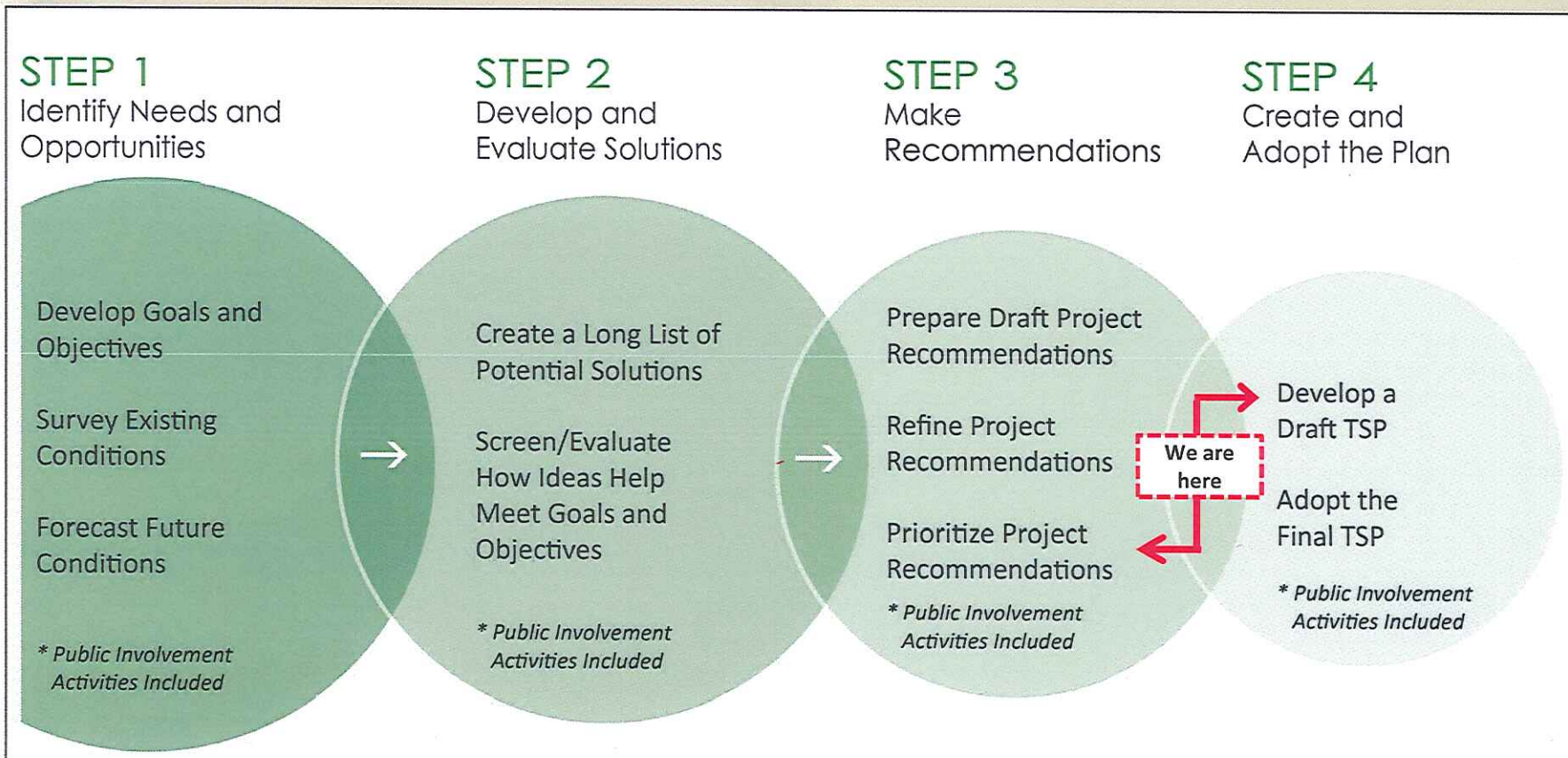
Presentation to
Tualatin Transportation Task Force
September 20, 2012

TualatinTSP_TBG061511054135PDX 422992.PS.C1.HWn6/15/2011 kk

Presentation Outline

- Review highlights from modal plans
  - Transit
  - Bicycle, Pedestrian, and Trail
  - Roadway
    - Intersections
    - Street Upgrades and Extensions
  - Freight
- Review traffic findings from key scenarios

Where We Are In the TSP Process



Progress Since our August 23rd Meeting…

1. We met with City Council on September 10th
   - ✓ Direction to not model North-South Connectivity option for tonight's meeting
2. We developed the transit, roadway, bicycle, pedestrian, and trail modal plans
3. We have prepared cost estimates, funding sources, and prioritization

What We're Asking of You Tonight

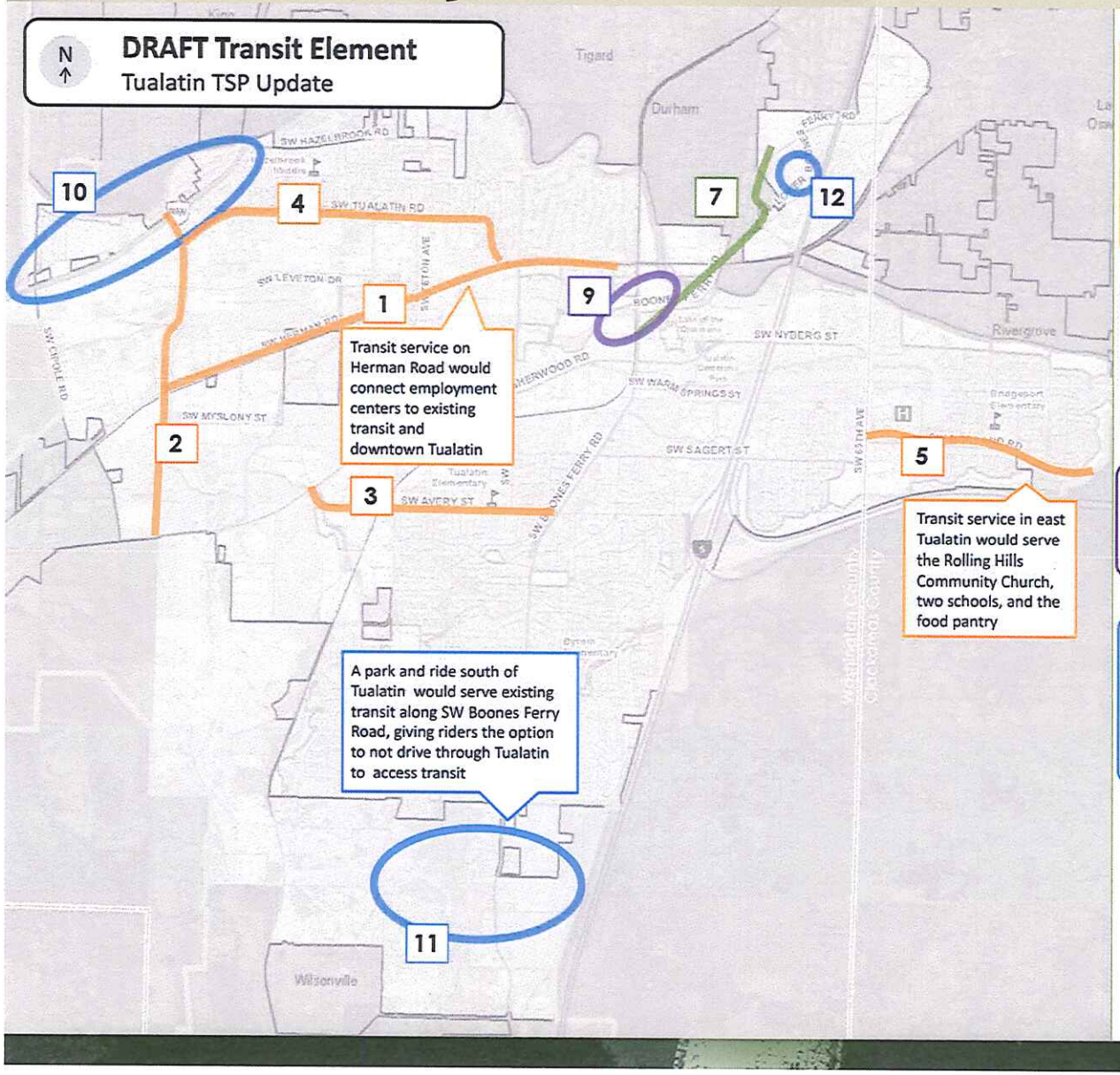
- Do the modal plans reflect Tualatin's goals and objectives for its TSP?
- Do we have the priorities right?
- Talk about the traffic implications of doing nothing, vs.
  - Expanding capacity of the existing network
  - Extending 65th Avenue
  - Expanding Boones Ferry Road north of downtown

A Reminder of our Goals and Objectives

No.	Goal	Representative Criteria
1.	Access and Mobility	Provide efficient and quick travel between point A and B, Provide connectivity within the City between popular destinations and residential areas
2.	Safety	Address known safety locations, address geometric deficiencies
3.	Vibrant Community	Support a livable community with family-friendly neighborhoods, maintain a small town feel
4.	Equity	Promote a fair distribution of benefits and burdens, consider access to transit for all users
5.	Economy	Support a vibrant City Center and community, Consider positive and negative effects of alternatives on adjacent residential and business areas
6.	Health/Environment	Provide interconnected networks for bicyclists and pedestrians, protect park land and create an environmentally sustainable community
7.	Ability to be Implemented	Promote fiscal responsibility, strive for broad community and political support

Transit Modal Plan

Transit Projects



Expansions of Fixed-Route Bus Transit Service

1. Provide bus transit service on Herman Rd
2. Provide bus transit service on 124th St
3. Provide bus transit service on Avery St
4. Provide bus transit service on Tualatin Rd between downtown Tualatin and 99W
5. Extend bus service further east in Tualatin
6. General – need extended service for all transit (not shown on map)

Expansions of the Shuttle Service

7. Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
8. General - Create an on-call shuttle for industrial & manufacturing workers during the day – consider charging fares (not shown on map)

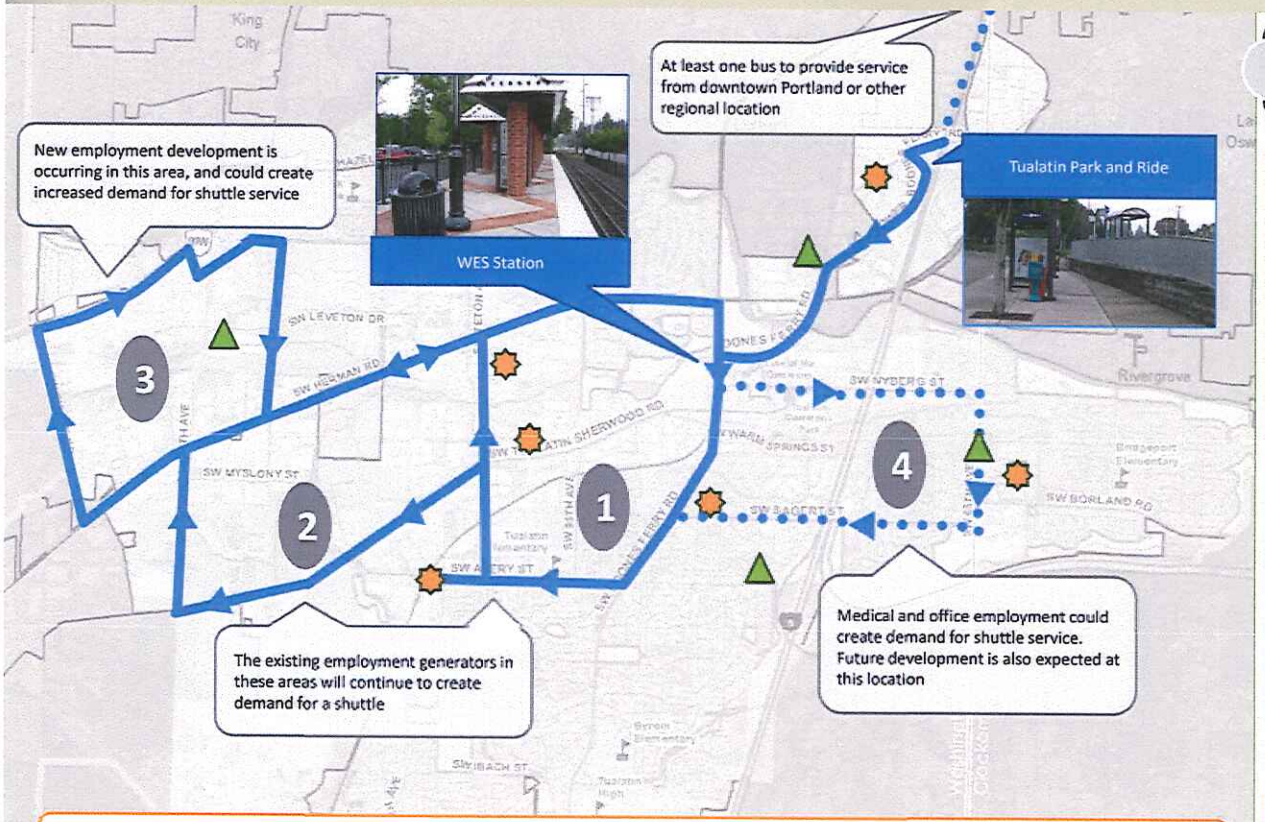
WES

9. Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Expansions of the Park-and-ride System

10. Look for potential park-and-ride locations in west Tualatin
11. Look for potential park-and-ride locations south of Bridgeport Village (Wilsonville area)
12. Add parking capacity at Tualatin Park-and-Ride (near Bridgeport Village)

Shuttle Circulator Route



Legend

- Partial fixed route for Van 1
- Potential future route as demand grows
- Employment centers served by shuttle (existing, potential)
- 1 — Directional for partial fixed routes
- Residential centers served by shuttle

Note: Van 2 would retain a flexible, on-call route connecting residential areas with employment

DRAFT

Tualatin Shuttle

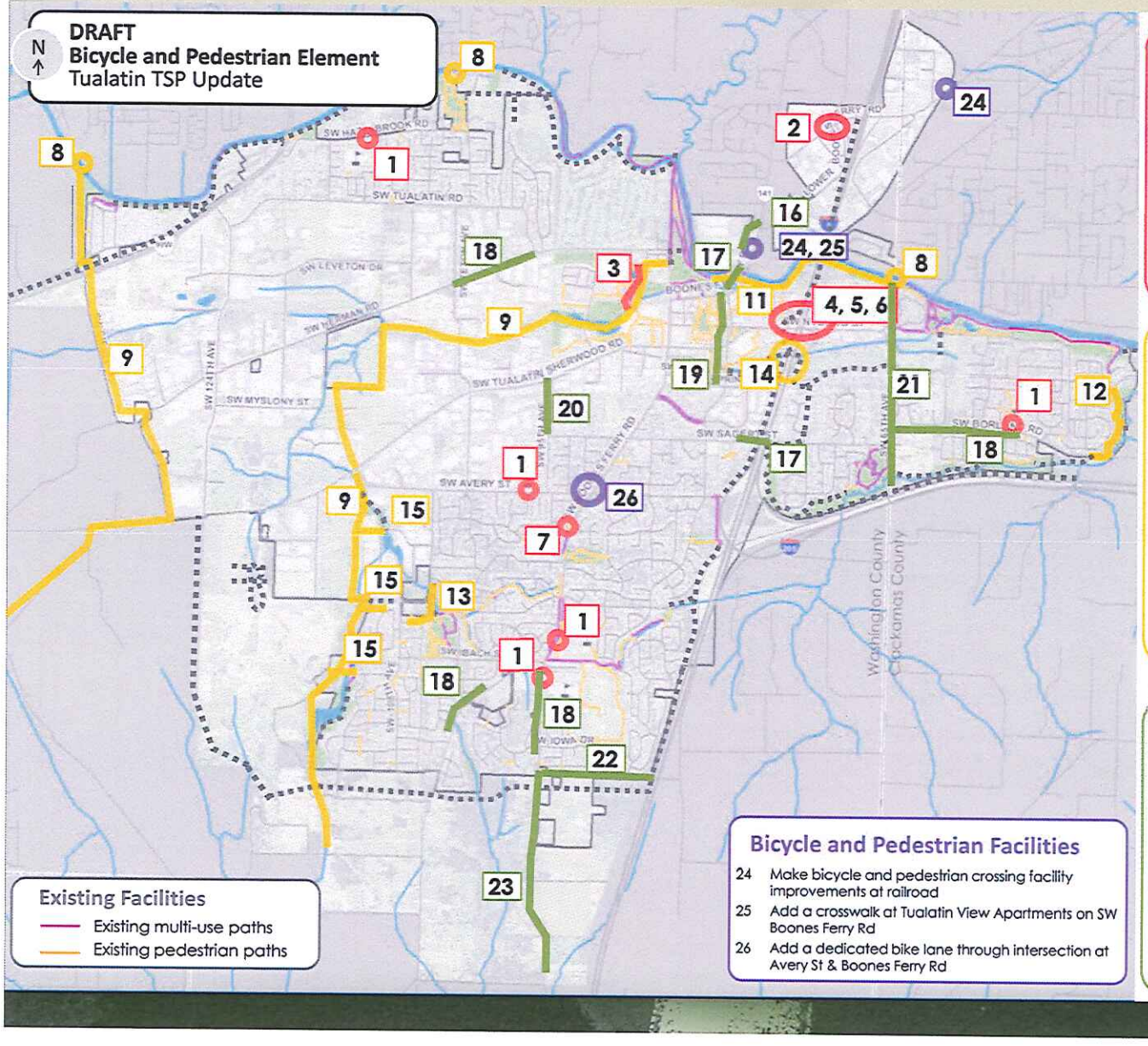
The Tualatin shuttle runs weekdays in the morning and afternoon rush hours, connecting people coming from regional transit and residential areas to jobs in Tualatin's employment centers. Its operations are managed by the Tualatin Chamber of Commerce. At least one shuttle bus provides service from downtown Portland.

Proposed improvements to the shuttle service include:

- ✓ Apply for funding to support a second shuttle in the afternoon, and to expand service hours
- ✓ Implement a partially fixed route for Van 1 that works in a counter-clockwise loop and serves the Tualatin Park and Ride and the downtown WES station every 30 minutes
- ✓ Print a route map and schedule, and display on board and at employment areas, station locations, and Chamber of Commerce
- ✓ Advertise service, on WES trains and bus routes serving Tualatin

Bicycle, Pedestrian, and Trail Modal Plan

Bicycle, Pedestrian, and Trail Map



Safety Improvements

1. Add wayfinding signs for Safe Routes to School at all public schools
2. Add colored bike lanes on Bridgeport Road near Bridgeport Village
3. Upgrade bridge surface along the path behind the Haggen shopping center
4. Add a colored bike lane through the ramps at Nyberg Interchange
5. Add striping for the bicycle lane across the I-5 southbound off-ramp
6. Redesign bike lane on the east side of the Nyberg Interchange
7. Improve visibility and illumination at crosswalk at Siletz Dr & Boones Ferry Rd

Multi-Use Trails

8. Build bridges for pedestrian and bicycle access over the Tualatin River near Cipole Road, 108th Avenue, and 65th Avenue
9. Build the Tonquin Trail
10. Build multi-use paths from the previously adopted Tualatin Pedestrian, Bikeway, and Greenway Plans (indicated by ▪▪▪▪)
11. Build trail along Tualatin River from the Community Park, extend to Tualatin River Greenway
12. Fill gaps in the multi-use path as part of the Tualatin River Greenway
13. Add a trail on the east side of SW 105th Avenue, SWS Blake Street, and SW 108th Avenue through Ibach Park to accommodate bicyclists and pedestrians
14. Add I-5 multi-use undercrossing – connect to existing multi-use paths
15. Connect Tonquin trail with neighborhoods

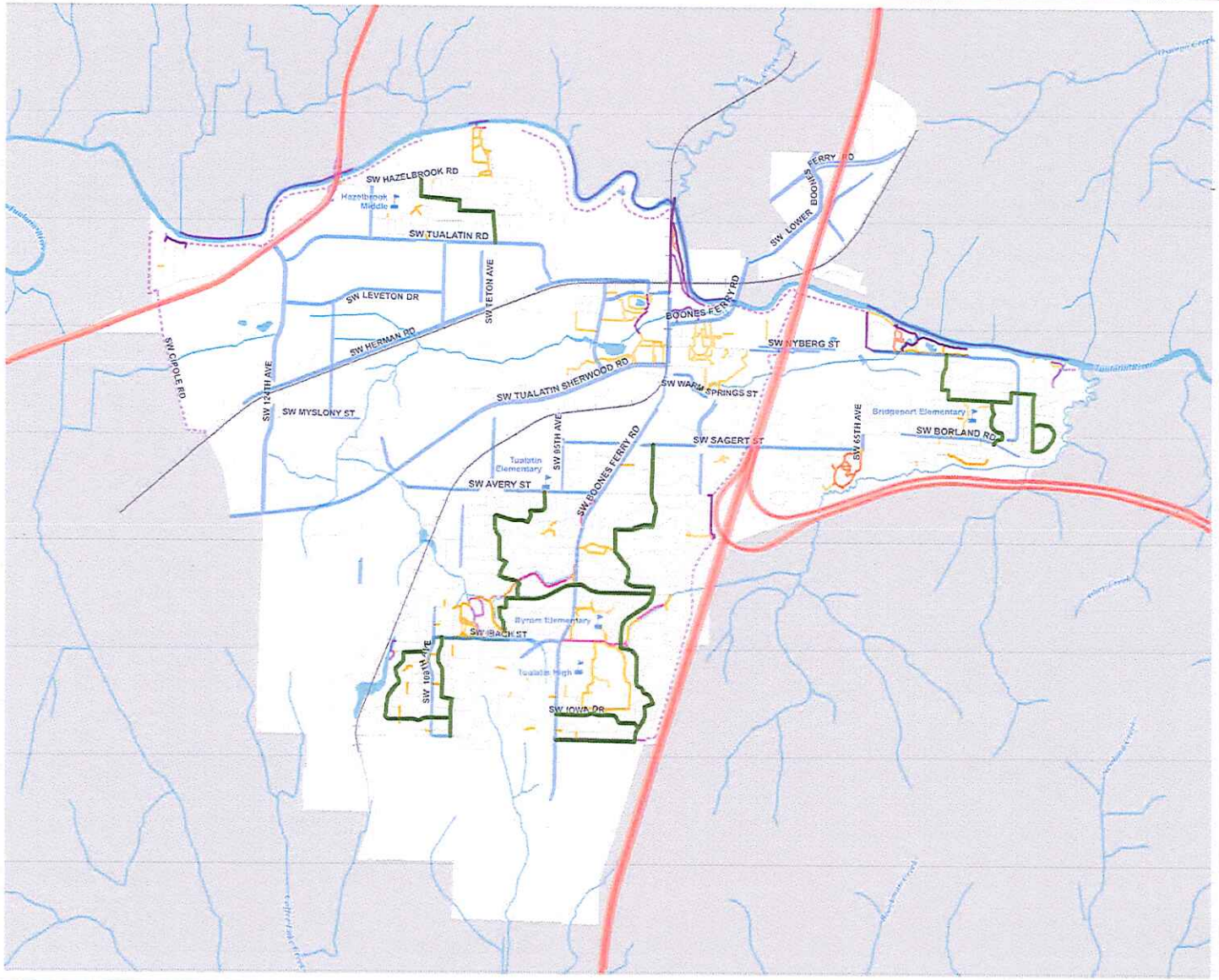
Bicycle and Pedestrian Urban Upgrades

16. Fill sidewalk gaps and add colored bicycle lanes at SW Boones Ferry and SW Lower Boones Ferry Roads
17. Add a separate bicycle and pedestrian bridge adjacent to SW Boones Ferry Road, add sidewalks to the SW Sagert Street bridge
18. Fill sidewalk gaps on SW Boones Ferry Road, SW Borland Road, SW Grahams Ferry Road, and SW Herman Road
19. Add bicycle lanes on Martinazzi Avenue
20. Add bicycle lanes on SW 95th Avenue
21. Add a multi-use path along SW 65th Avenue between I-205 and the Tualatin River
22. Add a multi-use path (or sidewalks and bicycle lanes) on SW Norwood Road
23. Add bicycle lanes on Boones Ferry Rd to Day Rd

Bicycle and Pedestrian Facilities

24. Make bicycle and pedestrian crossing facility improvements at railroad
25. Add a crosswalk at Tualatin View Apartments on SW Boones Ferry Rd
26. Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd

Bicycle Boulevard System



LEGEND

- Study Area
- City Boundaries
- County Boundaries
- Railroad
- Regional Road Network
- Bicycle Boulevard Route
- Local Streets
- Bike Lanes
- Existing multi-use path
- Planned multi-use path
- Local pedestrian path

N

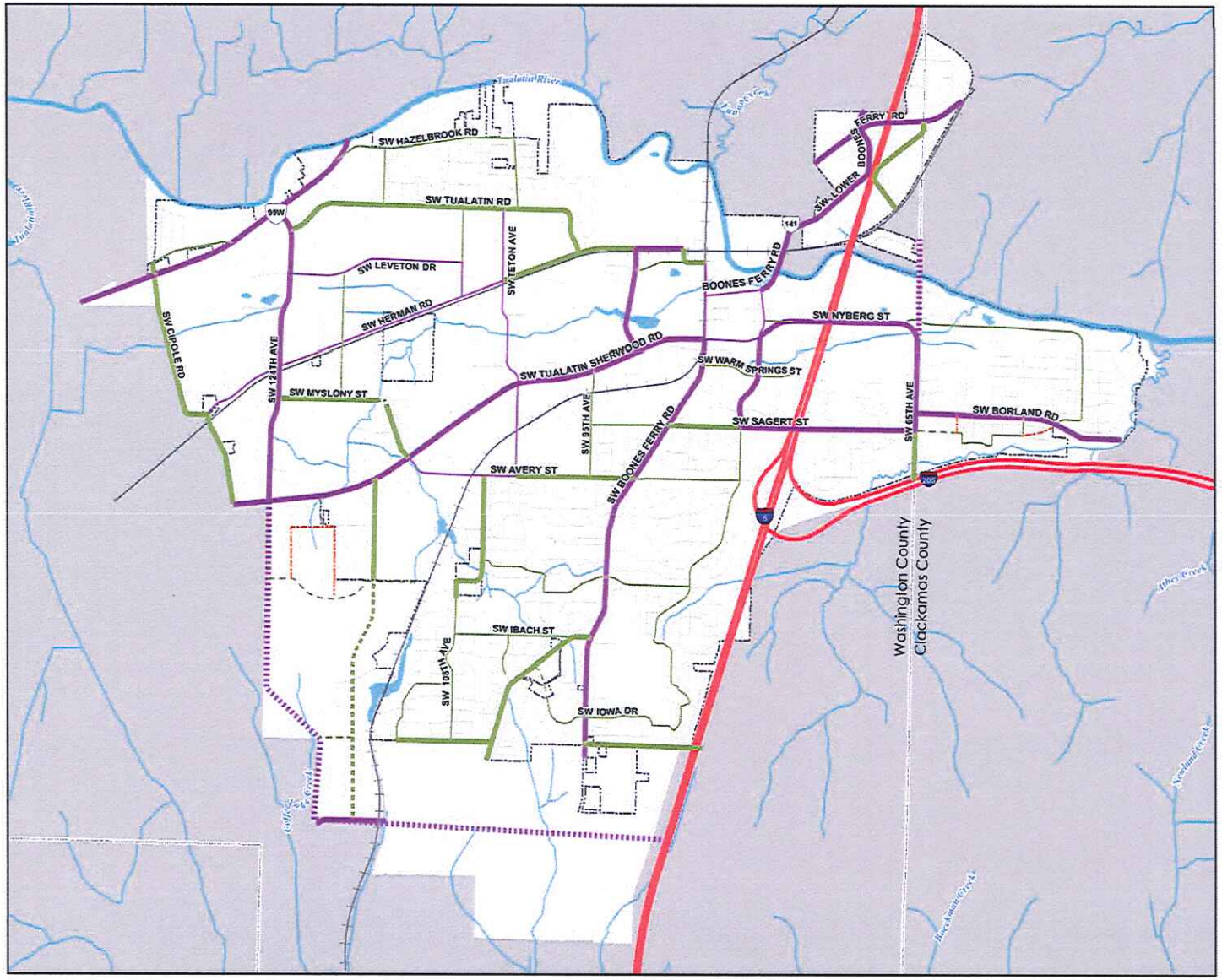
0 0.5 1
Miles

DRAFT FIGURE
Bicycle Boulevard Routes
Bicycle and Pedestrian Element
City of Tualatin Transportation System Plan

CH2MHILL.

Roadway Modal Plan

Functional Classification Network



LEGEND

- Study Area
- Principal Arterial
- Major Arterial
- Future Major Arterial
- Minor Arterial
- Major Collector
- Future Major Collector
- Minor Collector
- Future Minor Collector
- Future Local Road
- City Boundaries
- County Boundaries
- Railroad

Note:
Future roadway alignments are approximate and subject to additional engineering and design.

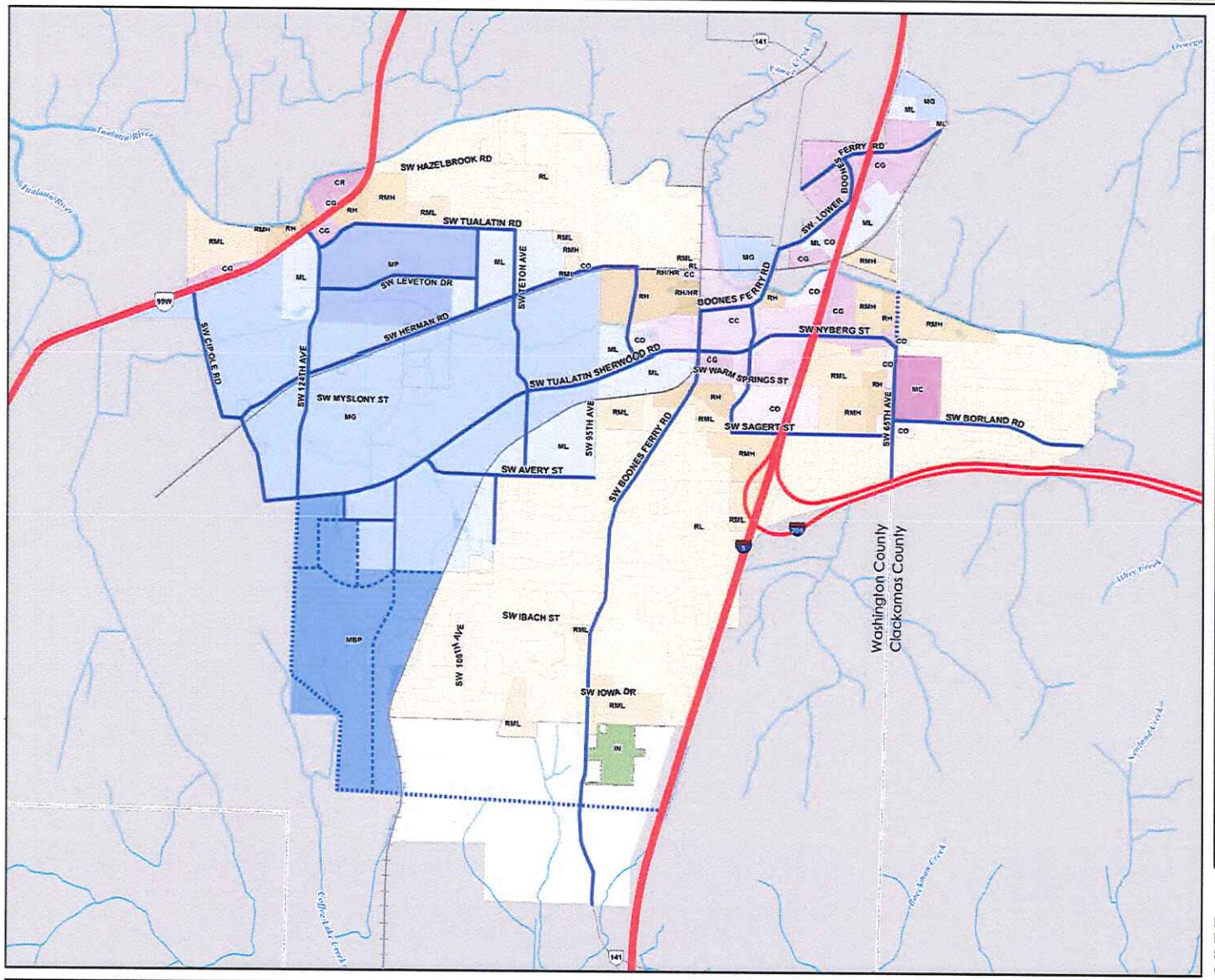
N

0 0.5 1
Miles

DRAFT FIGURE 1
Recommended Functional Classification
Functional Classification Element
City of Tualatin Transportation System Plan

CH2MHILL

Freight Element



LEGEND

Study Area

0 0.5 1 Miles

Regional Transportation System

Freight Routes
- Existing Roadways
- Future Roadways

City Boundaries

County Boundaries

Railroad

Institutional
- IN - Institutional

Commercial
- CO - Office
- CC - Central
- CG - General
- CR - Recreational
- MC - Medical

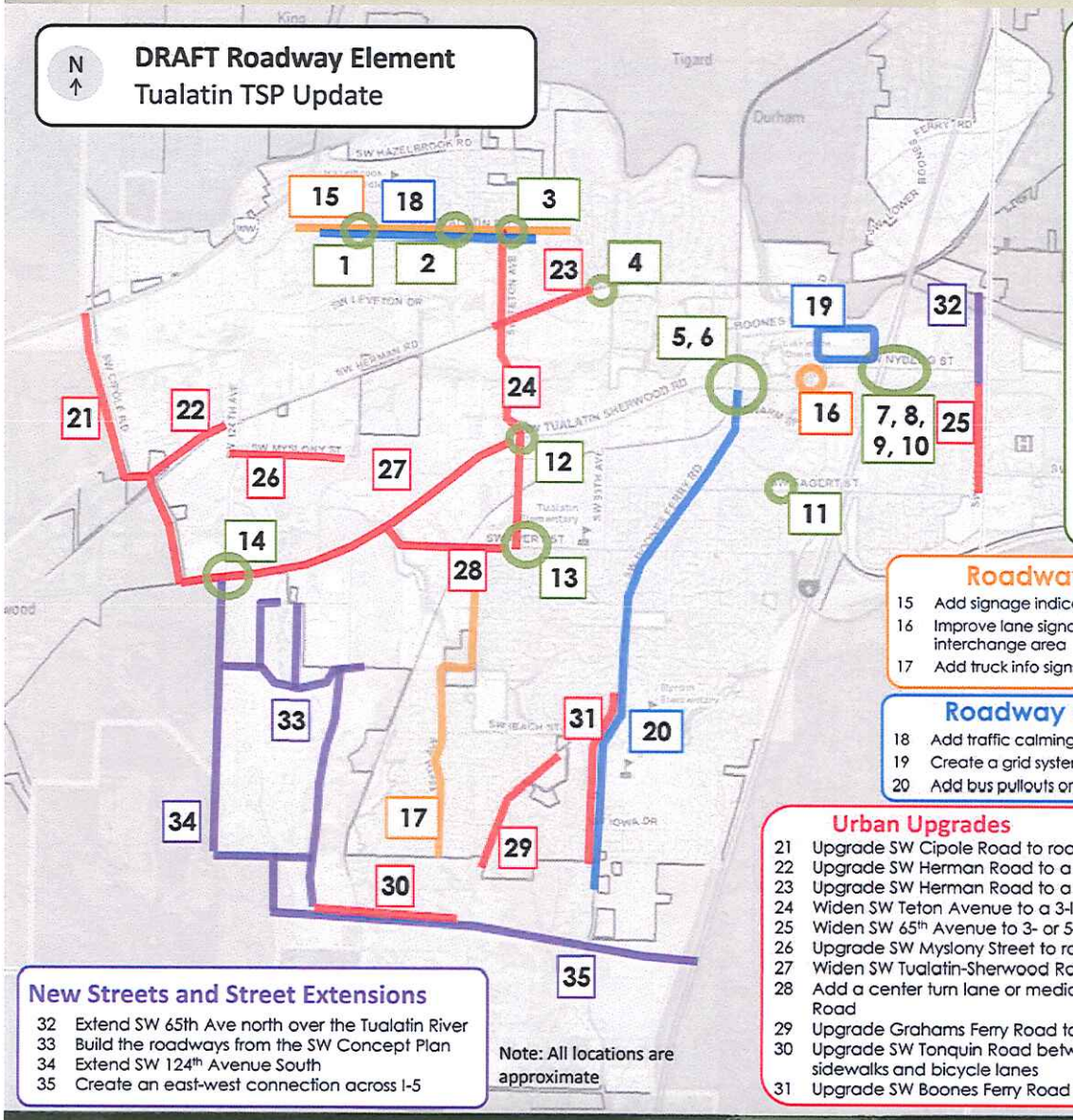
Manufacturing
- ML - Light
- MG - General
- MP - Park
- MBP - Business Park

Residential
- RL - Low Density
- RML - Medium Low Density
- RMH - Medium High Density
- RH - High Density
- RH/HR - High Density High Rise

DRAFT FIGURE
Freight Routes
Street Element
City of Tualatin Transportation System Plan

CH2MHILL

Roadway Element Map



Intersection Improvements

1 Add signal at SW Tualatin Road and SW 115th Avenue
2 Remove trees at intersection of SW Tualatin Road and SW 108th Avenue to improve sight distance
3 Add signal at SW Tualatin Road and SW Teton Avenue
4 Remove the free right turn at SW Tualatin Road at the intersection of SW Herman Road. Consider a roundabout.
5 Add an eastbound right turn lane on SW Tualatin-Sherwood Road at SW Boones Ferry Road
6 Extend the southbound left turn pocket on SW Boones Ferry Road at SW Tualatin-Sherwood Road
7 Move guardrail on southbound off ramp to improve sight distance
8 Northbound I-5 on- ramp: reduce pedestrian island, add an additional lane
9 Add signage at the northbound off ramp to discourage traffic getting off and then back onto I-5
10 Redesign SW Nyberg Street and Fred Meyer intersection and improve pedestrian crossing. Add striping and a pedestrian island.
11 Add a signal or roundabout at Sagert St and Martinazzi Ave
12 Add a dedicated right turn lane on southbound SW Teton Avenue and SW Tualatin-Sherwood Road
13 Improve intersection at SW Avery Street and SW Teton Avenue – add southbound right turn pocket
14 Add a right turn lane from westbound SW Tualatin-Sherwood Road to northbound SW 124th Avenue

Roadway Signs

15 Add signage indicating that Tualatin Road is for local traffic
16 Improve lane signage west of the Nyberg interchange to indicate lanes passing through the interchange area
17 Add truck info signs along 108th/105th Avenues to indicate that these roads are for local traffic

Roadway Changes

18 Add traffic calming on SW Tualatin Road
19 Create a grid system near Kmart upon redevelopment with a connection to SW Seneca Street
20 Add bus pullouts on SW Boones Ferry Road at existing bus stops where possible

Urban Upgrades

21 Upgrade SW Cipole Road to roadway standards (widen travel lanes, add bicycle lanes and sidewalks)
22 Upgrade SW Herman Road to a 3-lane cross section between SW 124th Avenue and SW Cipole Road
23 Upgrade SW Herman Road to a 2-lane urban cross section between SW Tualatin Road and SW Teton Avenue
24 Widen SW Teton Avenue to a 3-lane cross section
25 Widen SW 65th Avenue to 3- or 5-lanes
26 Upgrade SW Myslony Street to roadway standards
27 Widen SW Tualatin-Sherwood Rd to 5 lanes between SW Teton Avenue and SW Cipole Road
28 Add a center turn lane or median on SW Avery Street between SW Teton Avenue and SW Tualatin-Sherwood Road
29 Upgrade Grahams Ferry Road to roadway standards (widen travel lanes, add bicycle lanes and sidewalks)
30 Upgrade SW Tonquin Road between SW Waldo Way and SW Grahams Ferry Road (widen travel lanes, add sidewalks and bicycle lanes
31 Upgrade SW Boones Ferry Road to a 3 lane cross section throughout.

New Streets and Street Extensions

32 Extend SW 65th Ave north over the Tualatin River
33 Build the roadways from the SW Concept Plan
34 Extend SW 124th Avenue South
35 Create an east-west connection across I-5

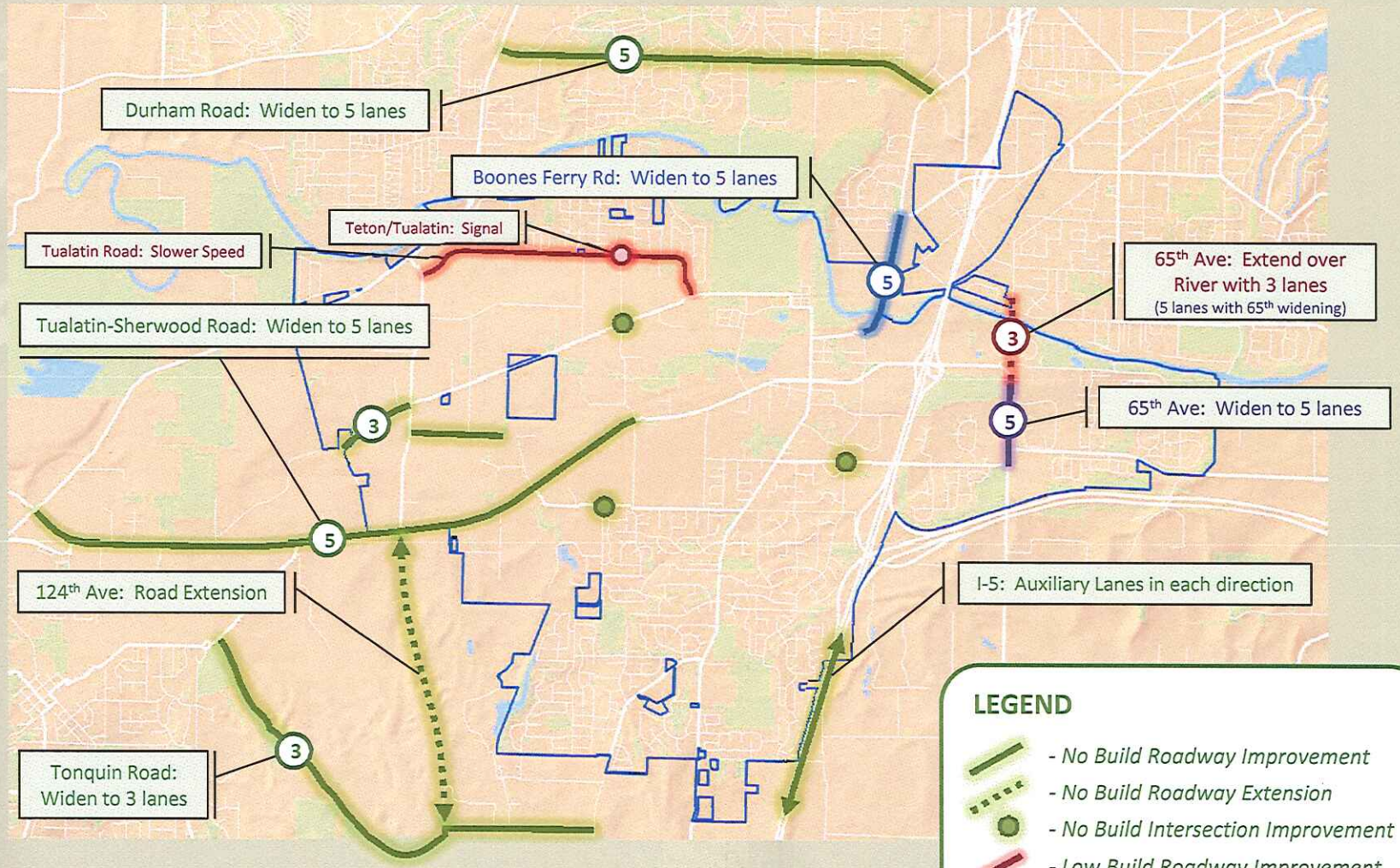
Note: All locations are approximate

Scenarios

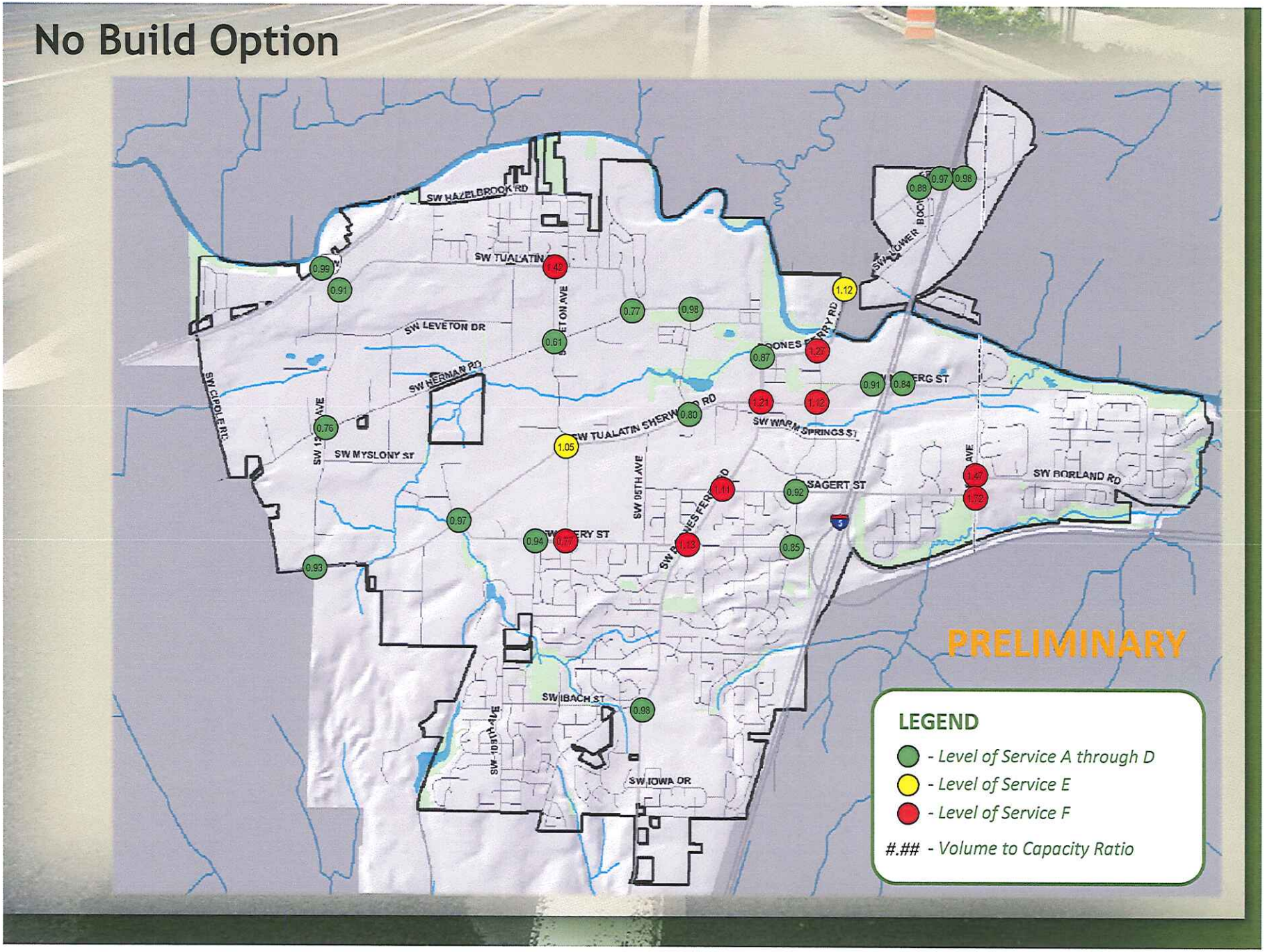
Scenarios Rely on TTF Guidance

1. Includes compilation of guidance from 7 refinement areas
2. Looked at various options for 65th Avenue
   a. No extension
   b. 2-lane bridge extension
   c. 5-lane widening of 65th with 4-lane bridge extension
3. Looked at widening Boones Ferry Road north of Martinazzi

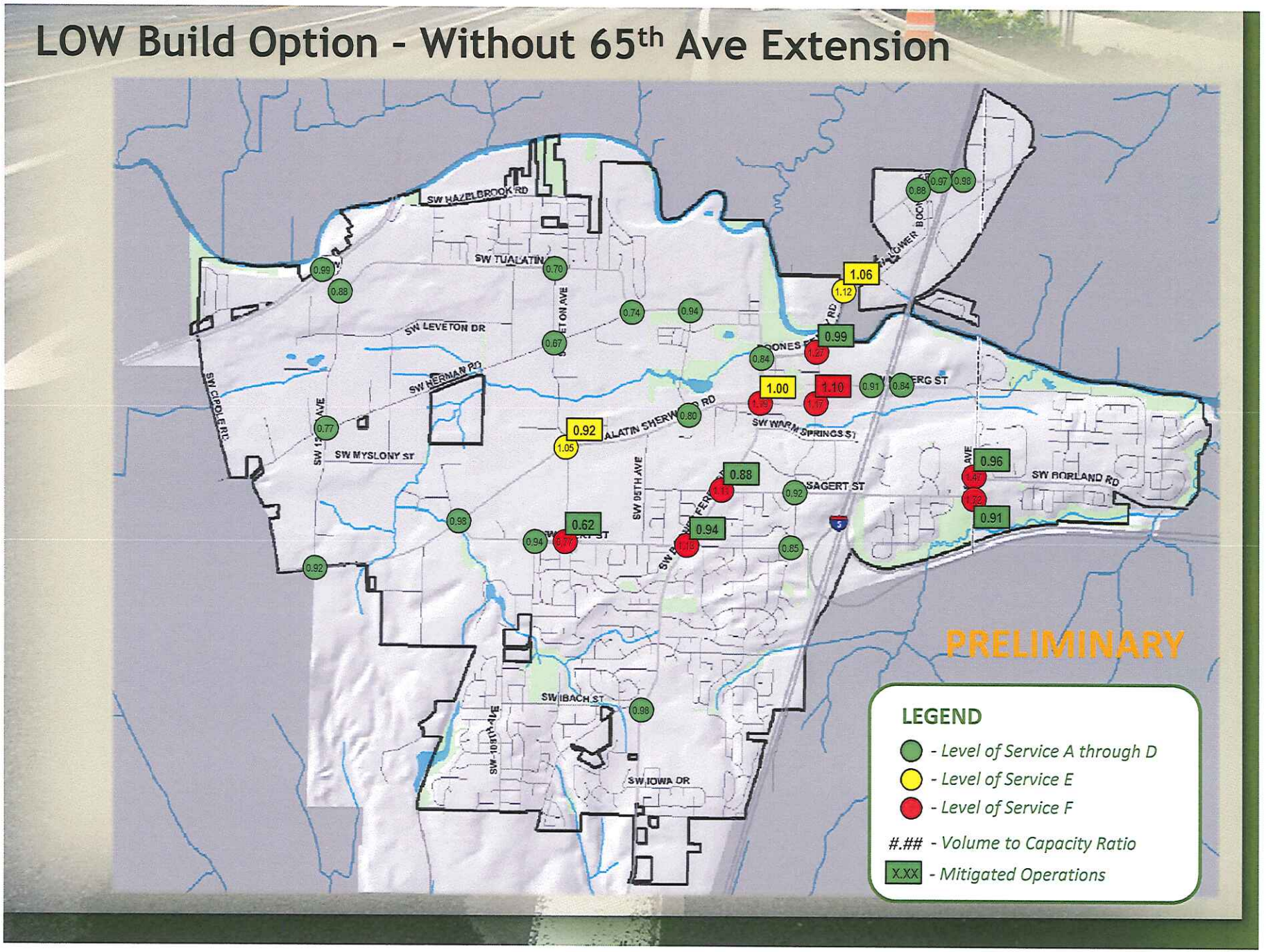
Assumed Future 2035 Scenarios and Roadway Projects



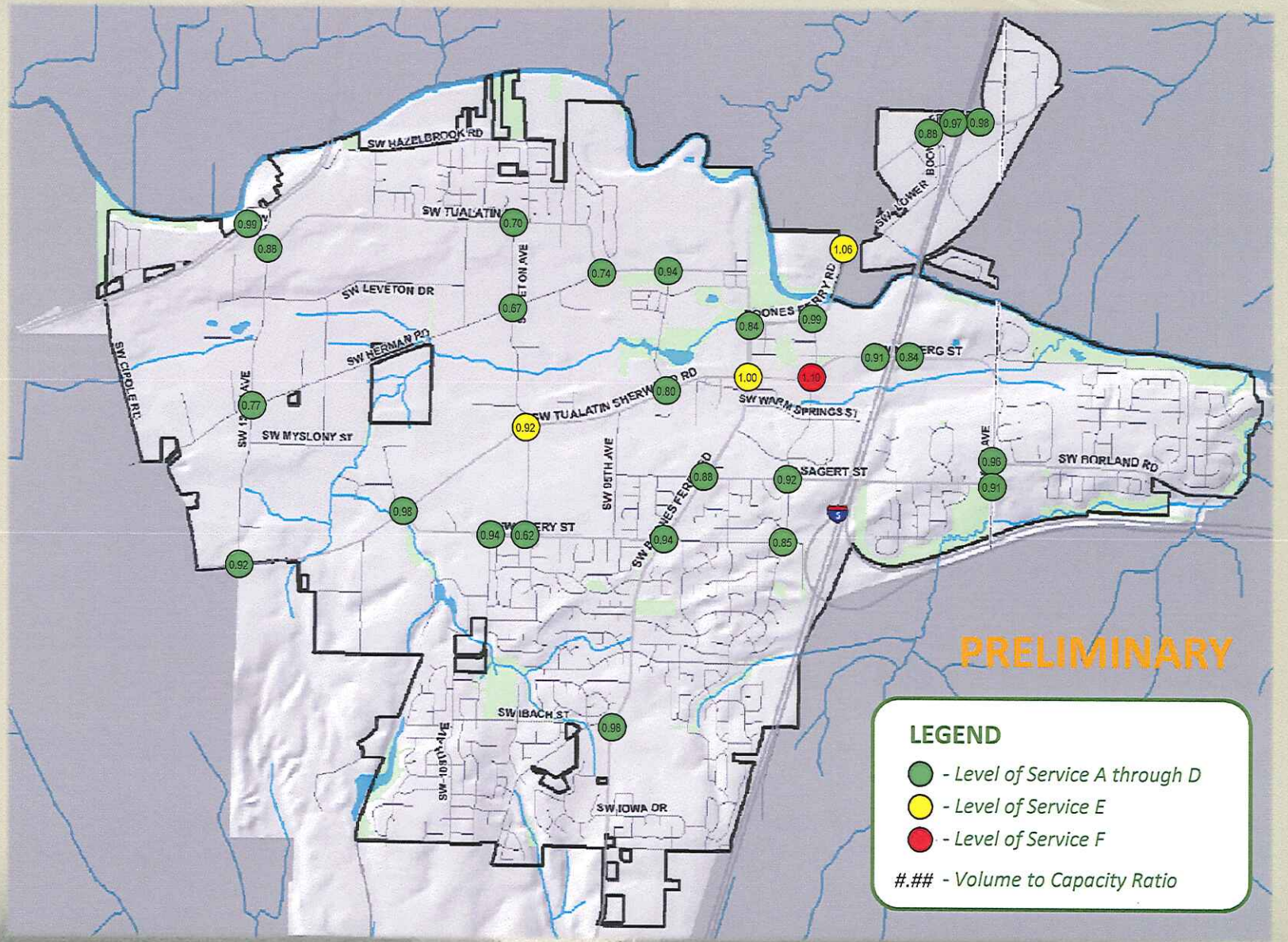
No Build Option



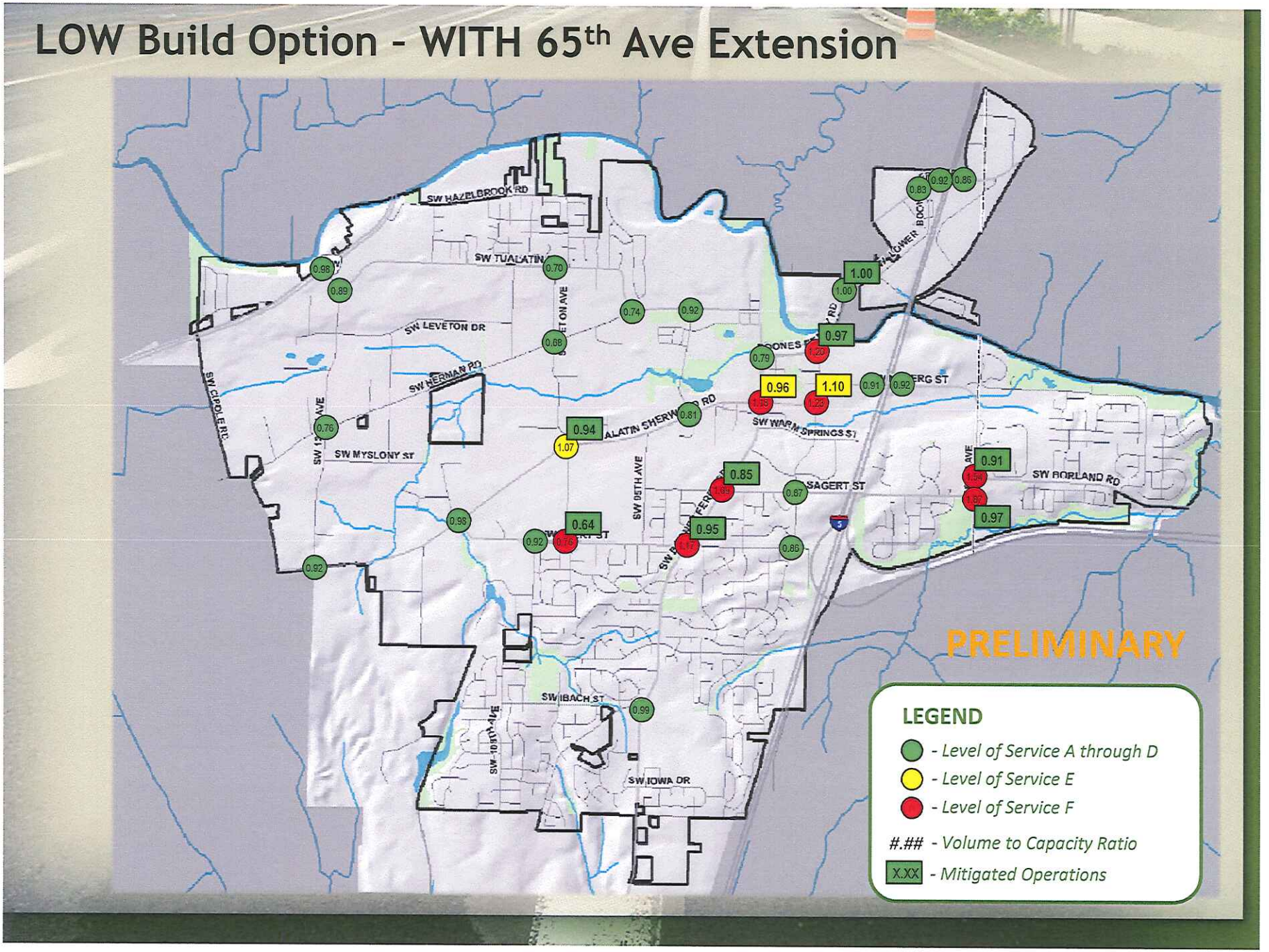
LOW Build Option - Without 65th Ave Extension



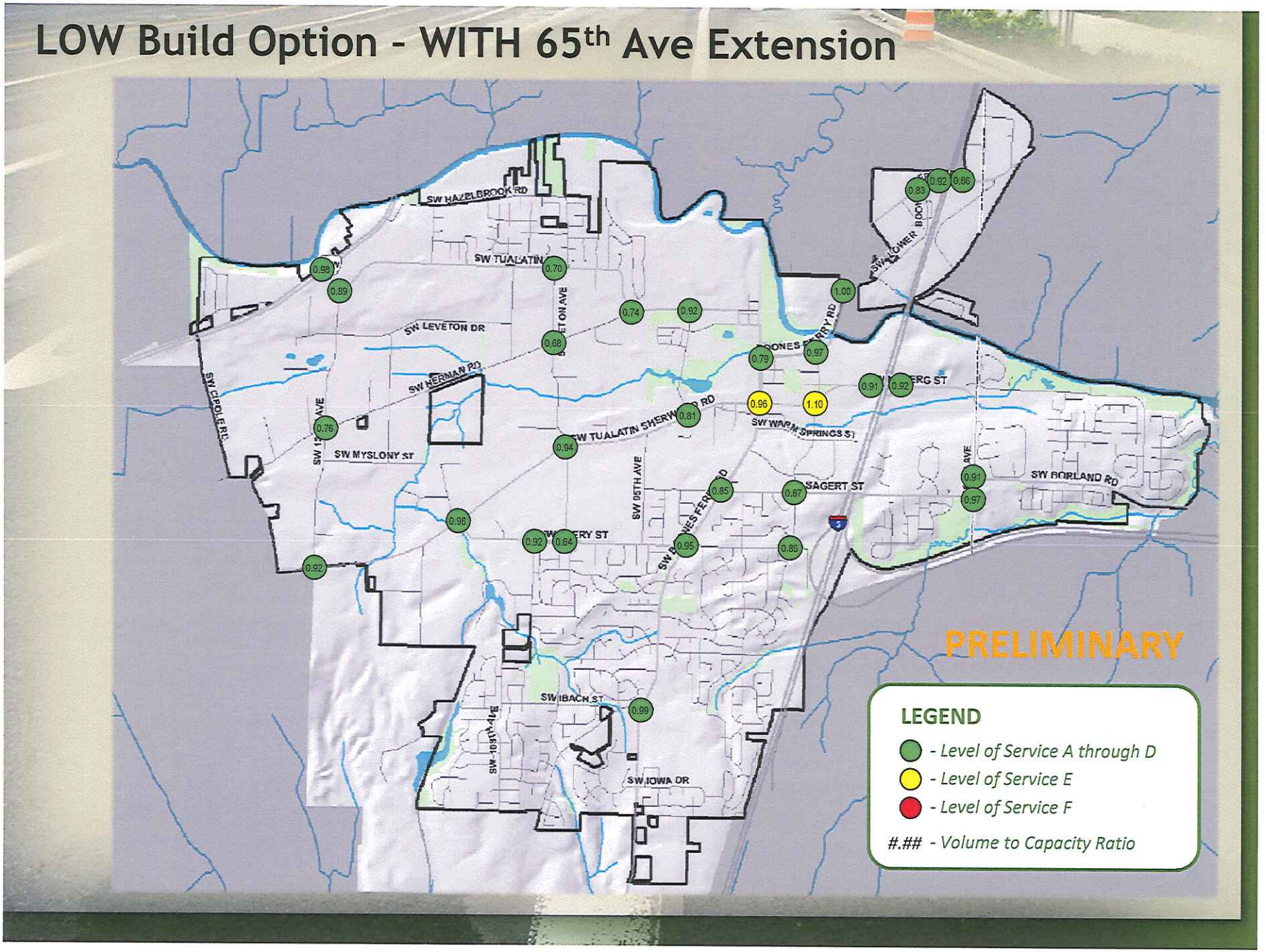
LOW Build Option - Without 65th Ave Extension



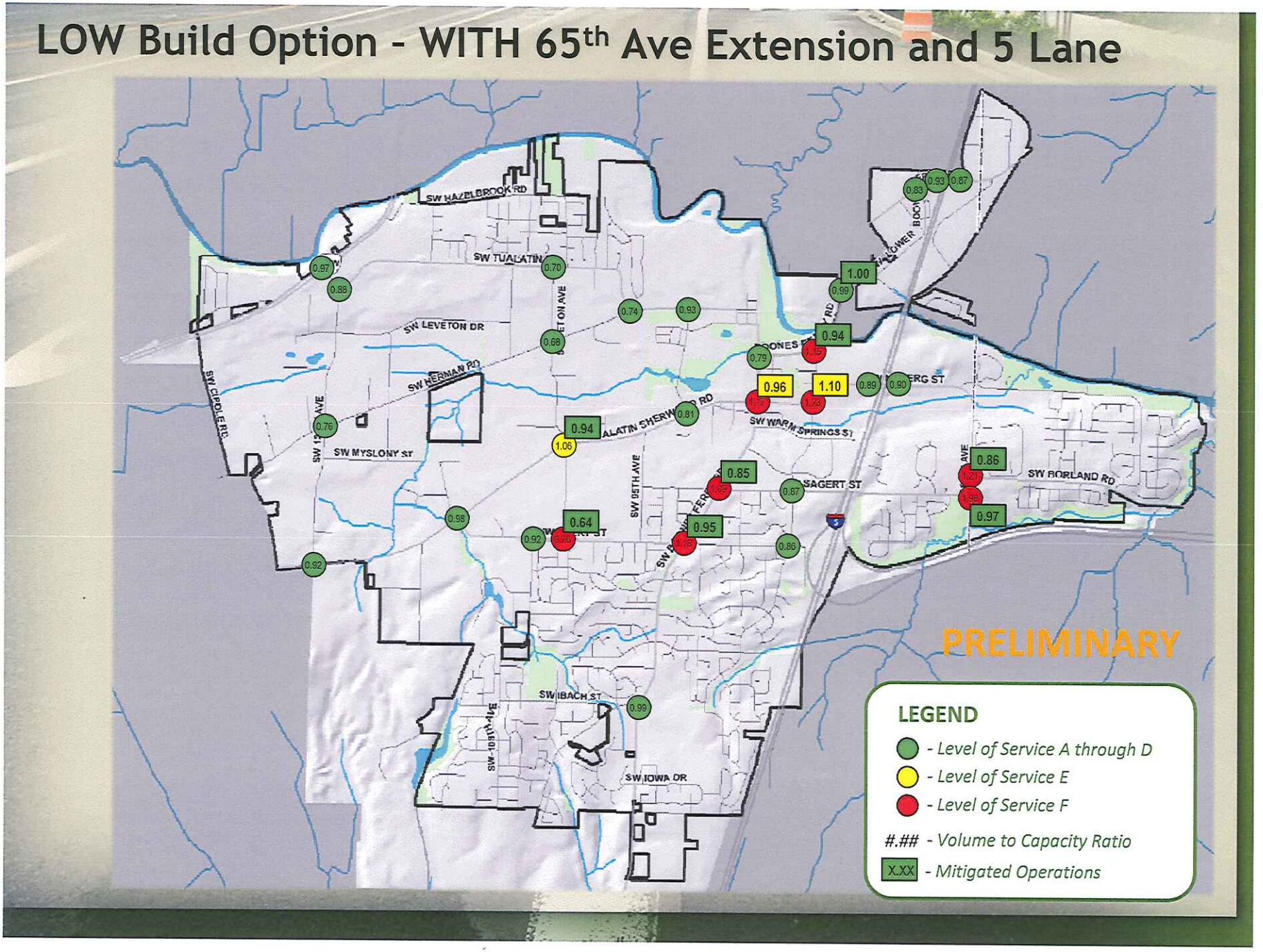
LOW Build Option - WITH 65th Ave Extension



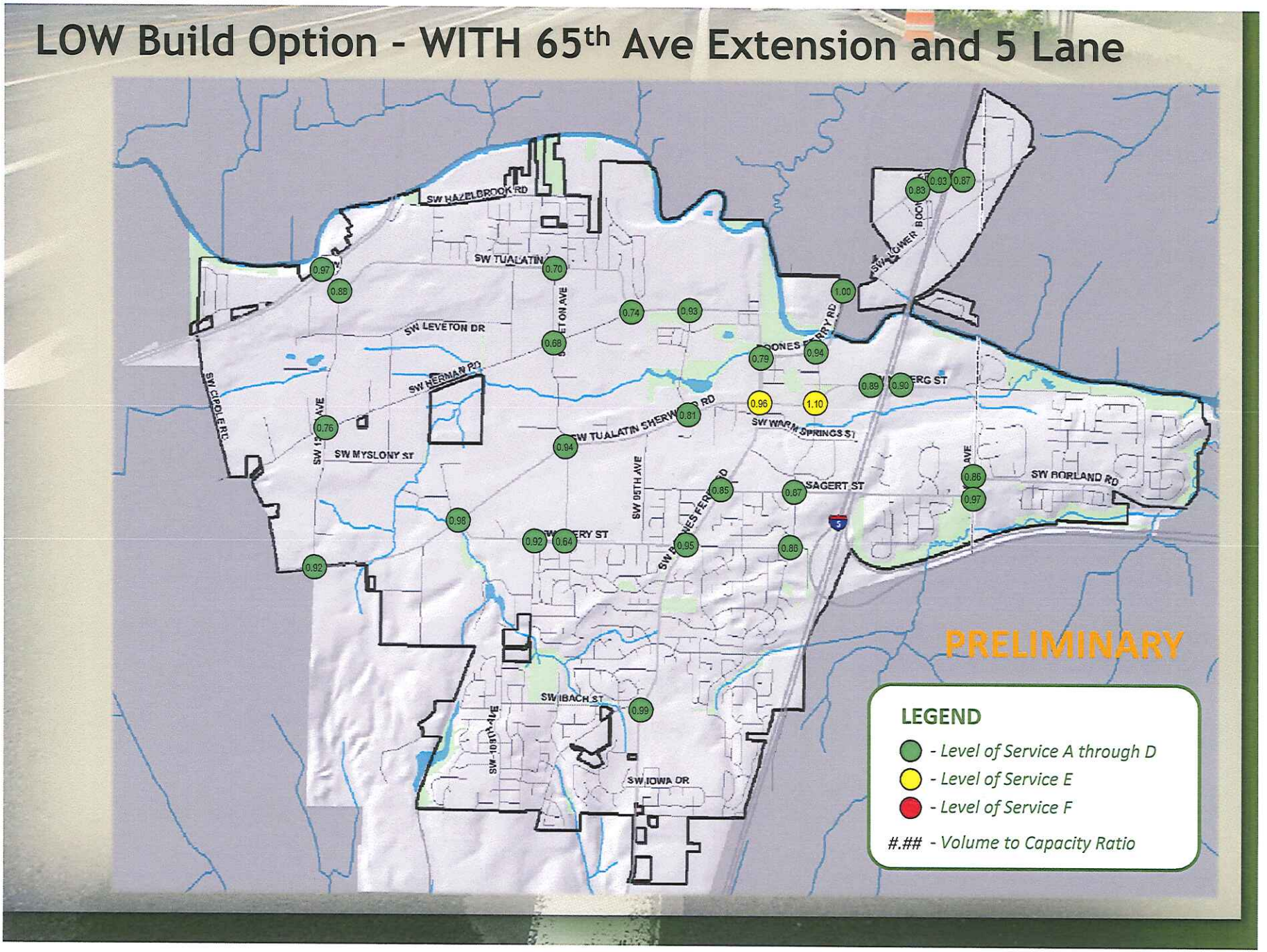
LOW Build Option - WITH 65th Ave Extension



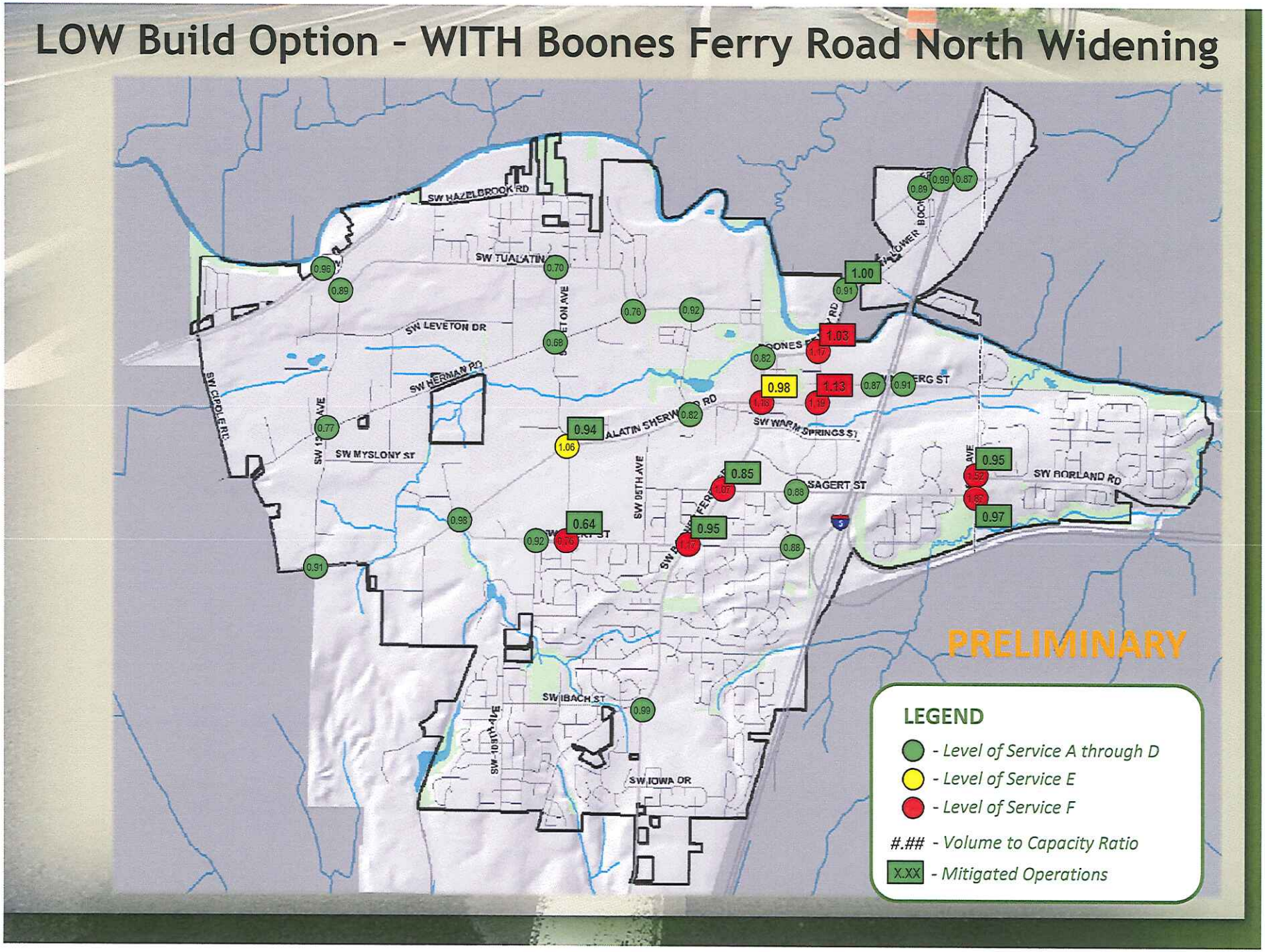
LOW Build Option - WITH 65th Ave Extension and 5 Lane



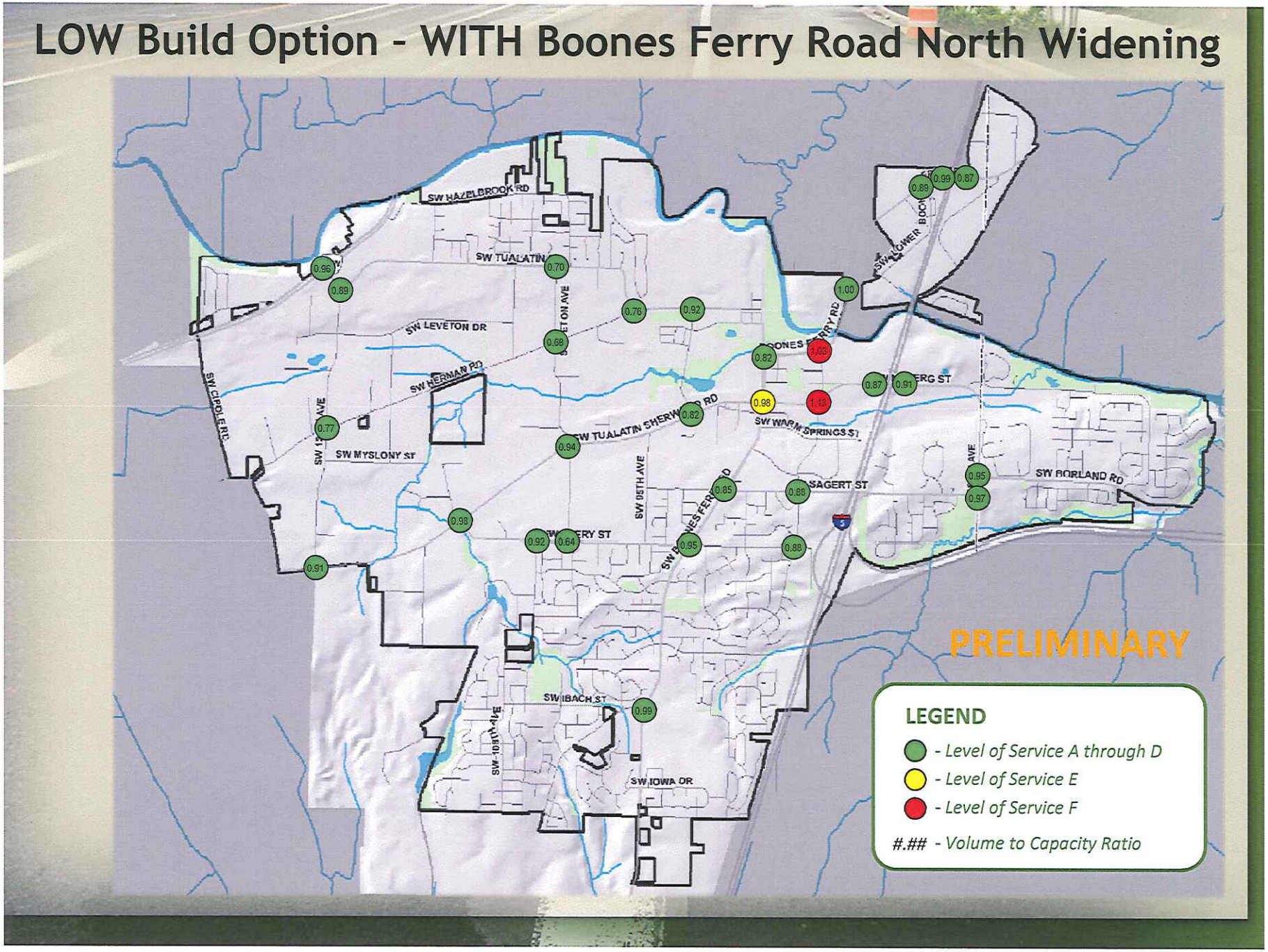
LOW Build Option - WITH 65th Ave Extension and 5 Lane



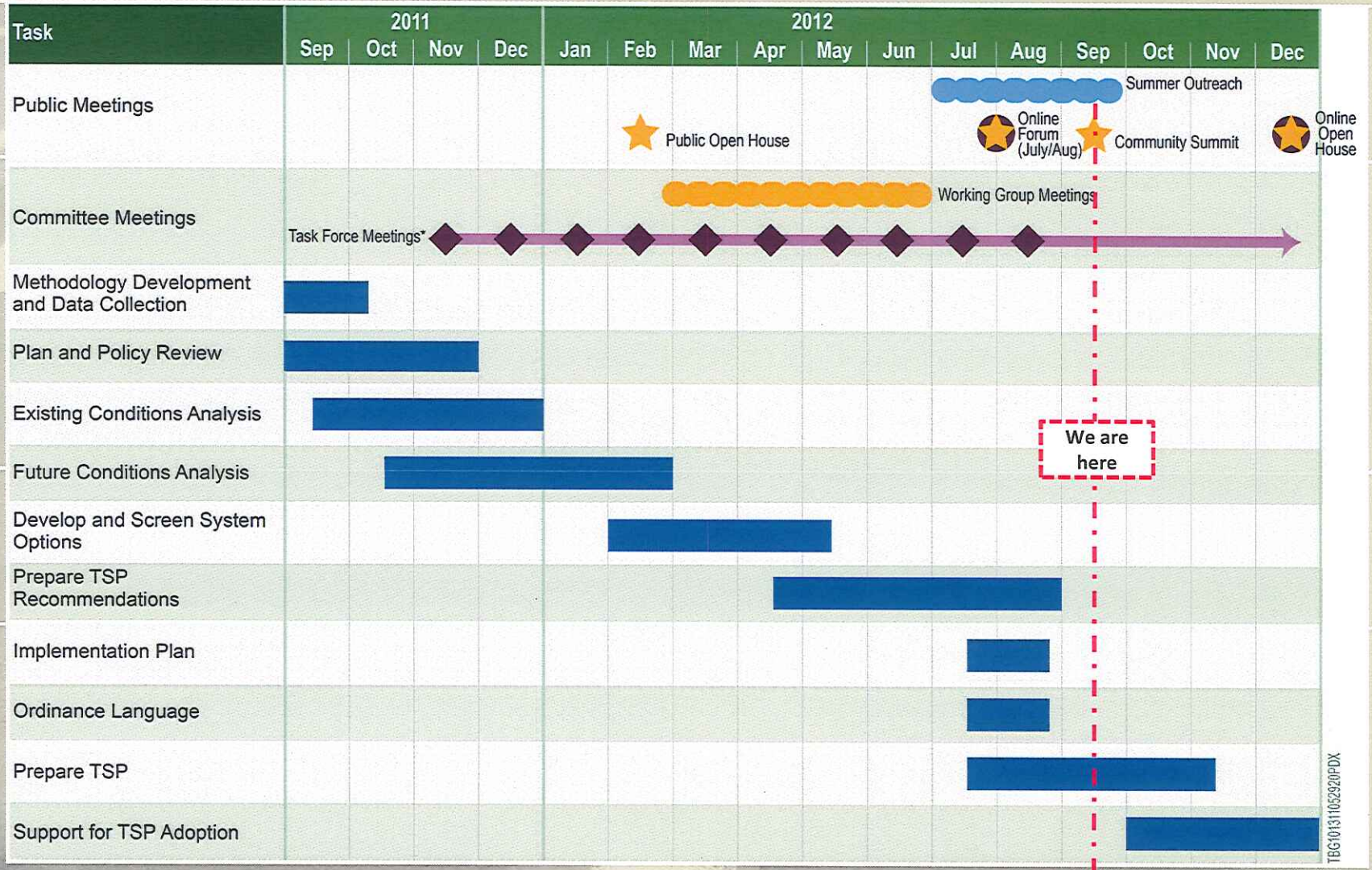
LOW Build Option - WITH Boones Ferry Road North Widening



LOW Build Option - WITH Boones Ferry Road North Widening



Transportation System Plan Timeline



What Happens Next?

- Discuss and finalize TSP recommendations
- Refine the implementation
  - Code language
  - Prioritization
  - Costs and funding
- Develop the draft TSP
- Begin discussing TSP document with Planning Commission, TPARK, and City Council

Thank you!

TualatinTSP_TBG061511t054135PDX 422992.PS.C1.HWn6/15/2011 kk

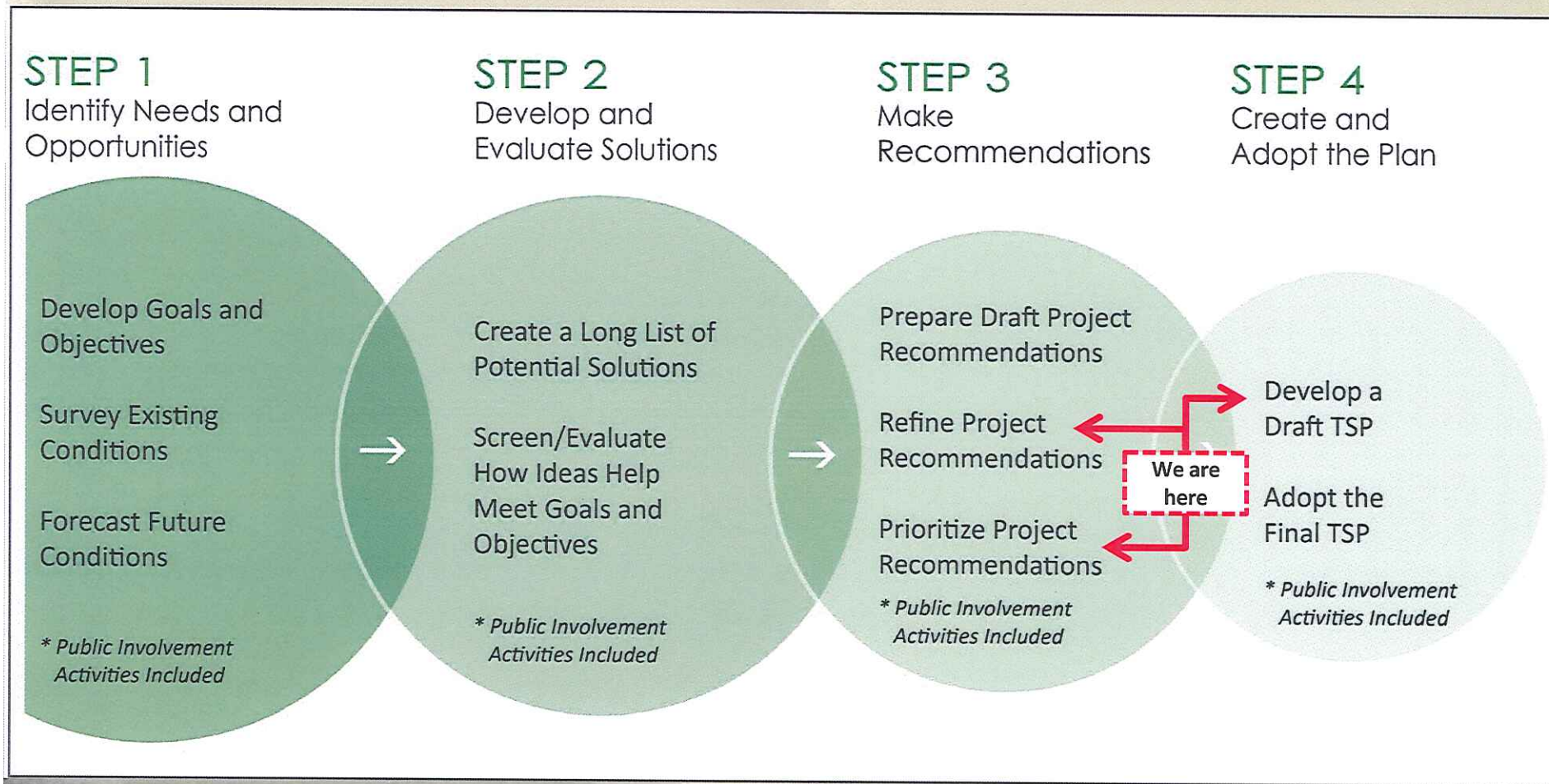
City of Tualatin

Overview of Traffic Analysis

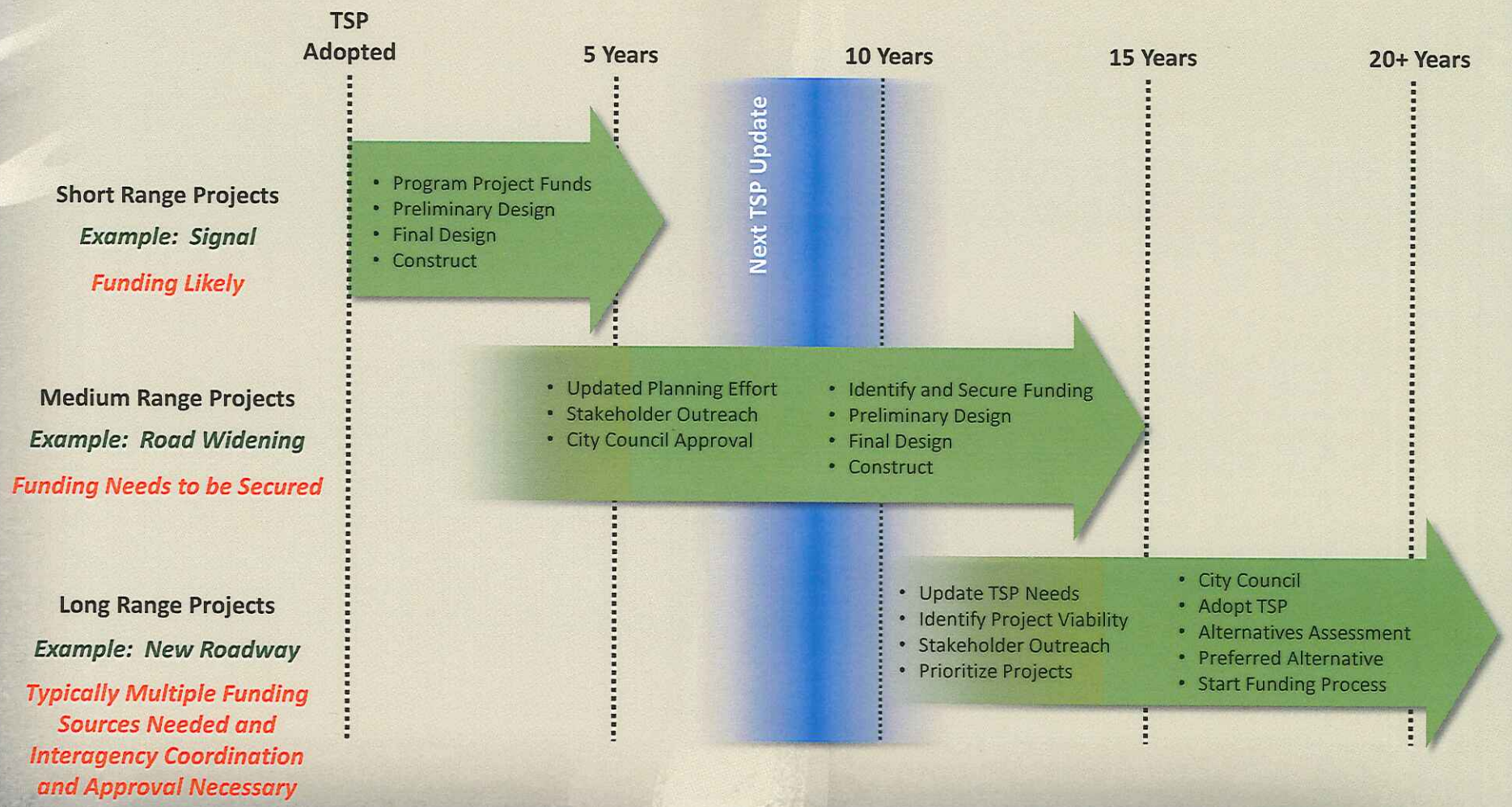
Tualatin TSP

Presentation to
Tualatin Task Force
November 1, 2012

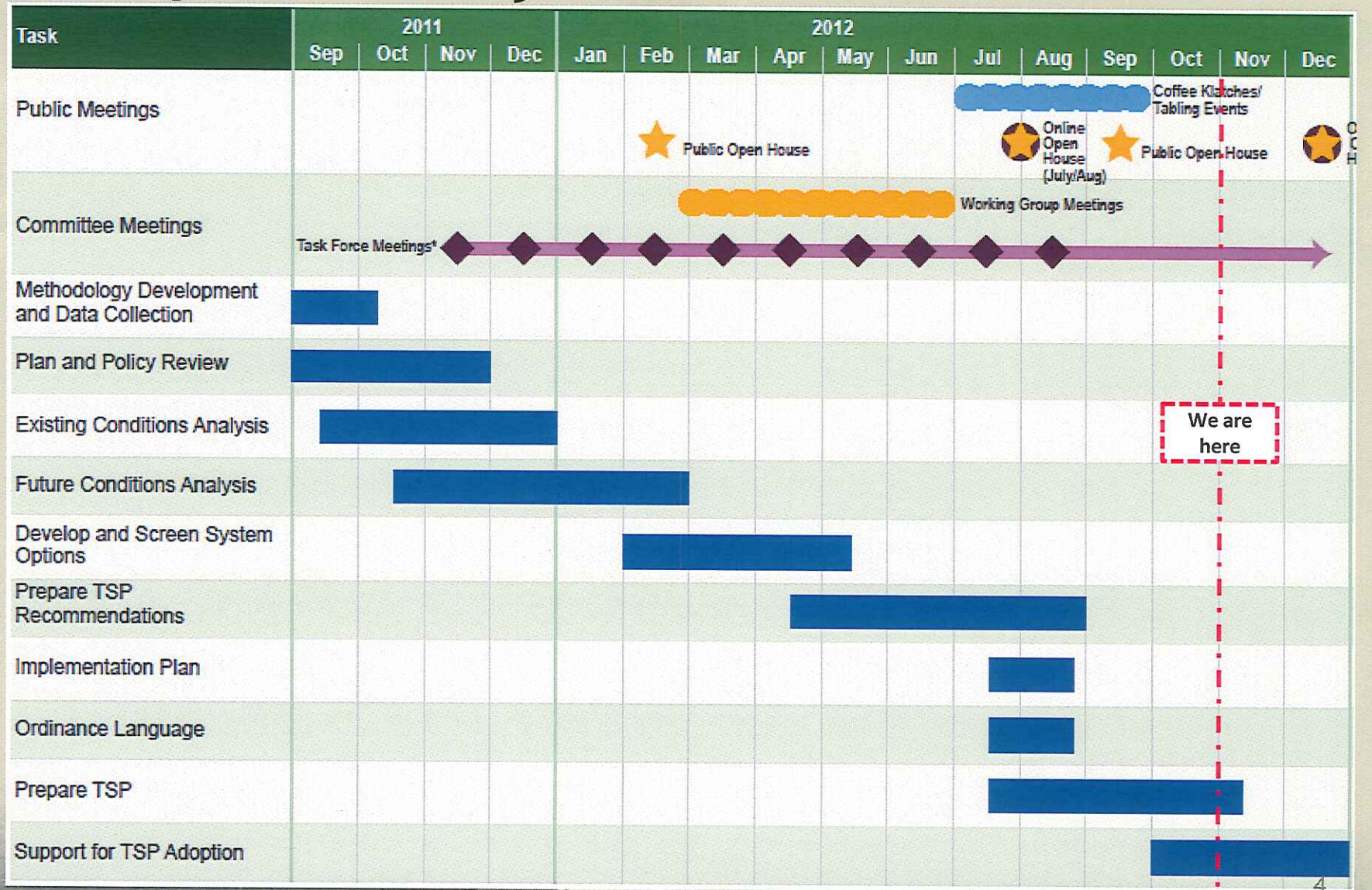
Where We Are In the TSP Process



What happens to projects after adoption?



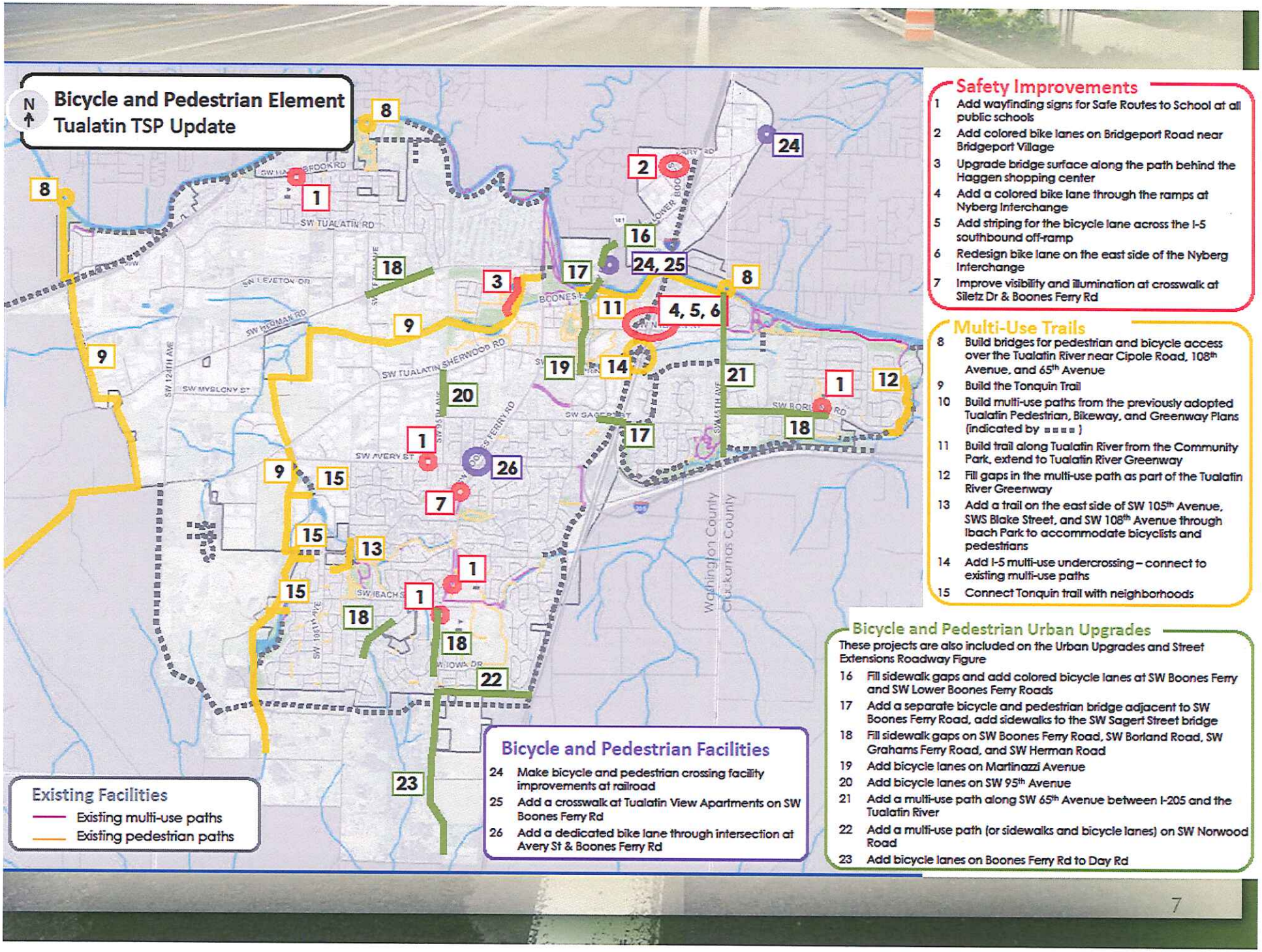
Transportation System Plan Timeline



Progress Since our September 20th Meeting…

1. Decided on "Low Build" Scenario
2. Additional travel time results requested for scenarios:
   - No-build
   - Low build
   - Low build + 65th Ave (2 lane)
   - Low build + Boones Ferry Road widening
   - Low build + 65th Ave (2 lane) + BFR widening
3. Tabled decisions on:
   - 65th Avenue extension
   - Boones Ferry Road widening

Bicycle/Pedestrian Element



Safety Improvements

1. Add wayfinding signs for Safe Routes to School at all public schools
2. Add colored bike lanes on Bridgeport Road near Bridgeport Village
3. Upgrade bridge surface along the path behind the Haggen shopping center
4. Add a colored bike lane through the ramps at Nyberg Interchange
5. Add striping for the bicycle lane across the I-5 southbound off-ramp
6. Redesign bike lane on the east side of the Nyberg Interchange
7. Improve visibility and illumination at crosswalk at Siletz Dr & Boones Ferry Rd

Multi-Use Trails

8. Build bridges for pedestrian and bicycle access over the Tualatin River near Cipole Road, 108th Avenue, and 65th Avenue
9. Build the Tonquin Trail
10. Build multi-use paths from the previously adopted Tualatin Pedestrian, Bikeway, and Greenway Plans (indicated by ▪▪▪▪)
11. Build trail along Tualatin River from the Community Park, extend to Tualatin River Greenway
12. Fill gaps in the multi-use path as part of the Tualatin River Greenway
13. Add a trail on the east side of SW 105th Avenue, SWS Blake Street, and SW 108th Avenue through Ibach Park to accommodate bicyclists and pedestrians
14. Add I-5 multi-use undercrossing – connect to existing multi-use paths
15. Connect Tonquin trail with neighborhoods

Bicycle and Pedestrian Urban Upgrades

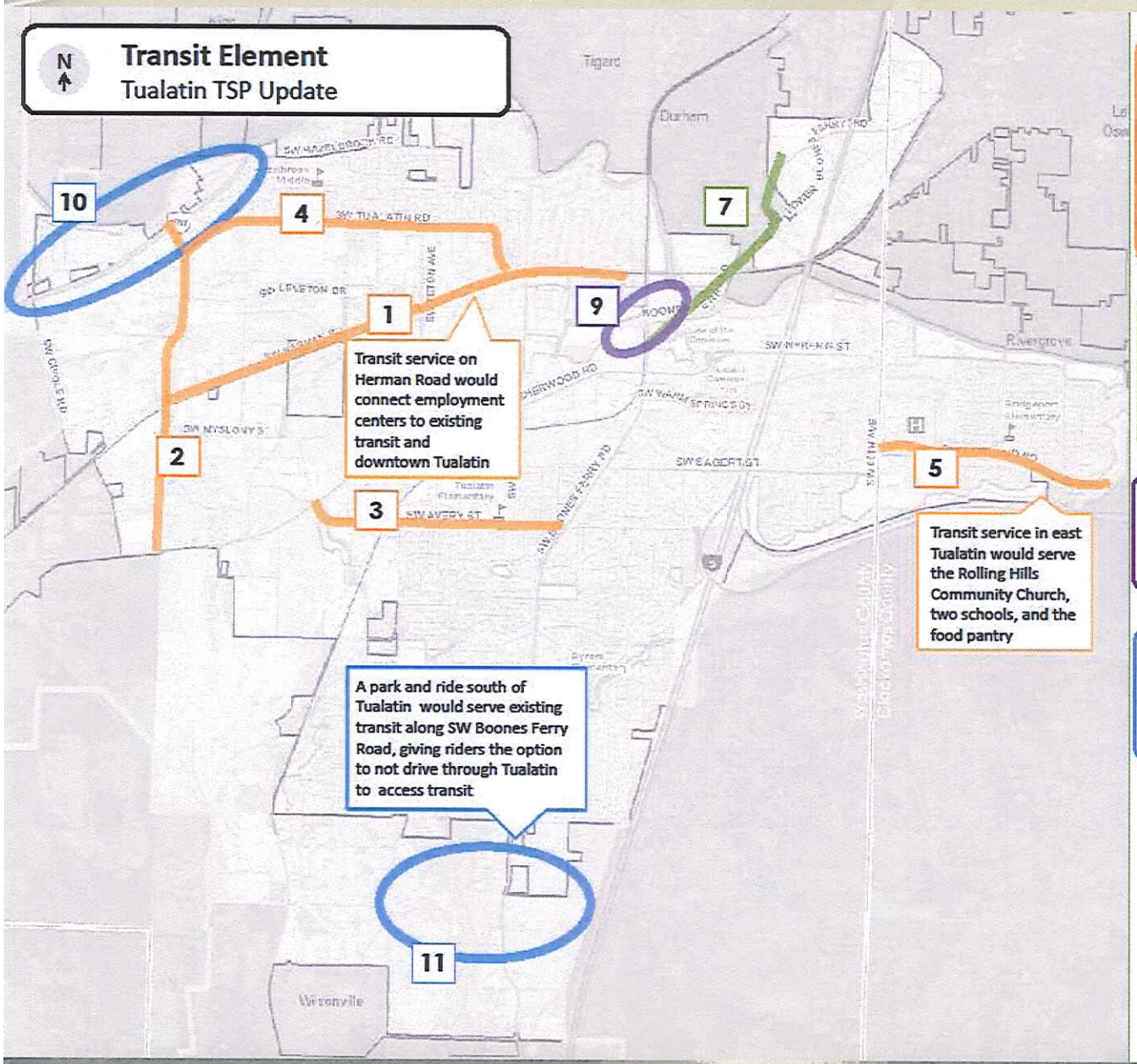
These projects are also included on the Urban Upgrades and Street Extensions Roadway Figure

16. Fill sidewalk gaps and add colored bicycle lanes at SW Boones Ferry and SW Lower Boones Ferry Roads
17. Add a separate bicycle and pedestrian bridge adjacent to SW Boones Ferry Road, add sidewalks to the SW Sagert Street bridge
18. Fill sidewalk gaps on SW Boones Ferry Road, SW Borland Road, SW Grahams Ferry Road, and SW Herman Road
19. Add bicycle lanes on Martinazzi Avenue
20. Add bicycle lanes on SW 95th Avenue
21. Add a multi-use path along SW 65th Avenue between I-205 and the Tualatin River
22. Add a multi-use path (or sidewalks and bicycle lanes) on SW Norwood Road
23. Add bicycle lanes on Boones Ferry Rd to Day Rd

Bicycle and Pedestrian Facilities

24. Make bicycle and pedestrian crossing facility improvements at railroad
25. Add a crosswalk at Tualatin View Apartments on SW Boones Ferry Rd
26. Add a dedicated bike lane through intersection at Avery St & Boones Ferry Rd

Transit Element



Expansions of Fixed-Route Bus Transit Service

1. Provide bus transit service on Herman Rd
2. Provide bus transit service on 124th St
3. Provide bus transit service on Avery St
4. Provide bus transit service on Tualatin Rd between downtown Tualatin and 99W
5. Extend bus service further east in Tualatin
6. General – need extended service for all transit (not shown on map)

Expansions of the Shuttle Service

7. Provide a shuttle or trolley service between Bridgeport Village and Commons area, especially for weekend service
8. General - Create an on-call shuttle for industrial & manufacturing workers during the day – consider charging fares (not shown on map)

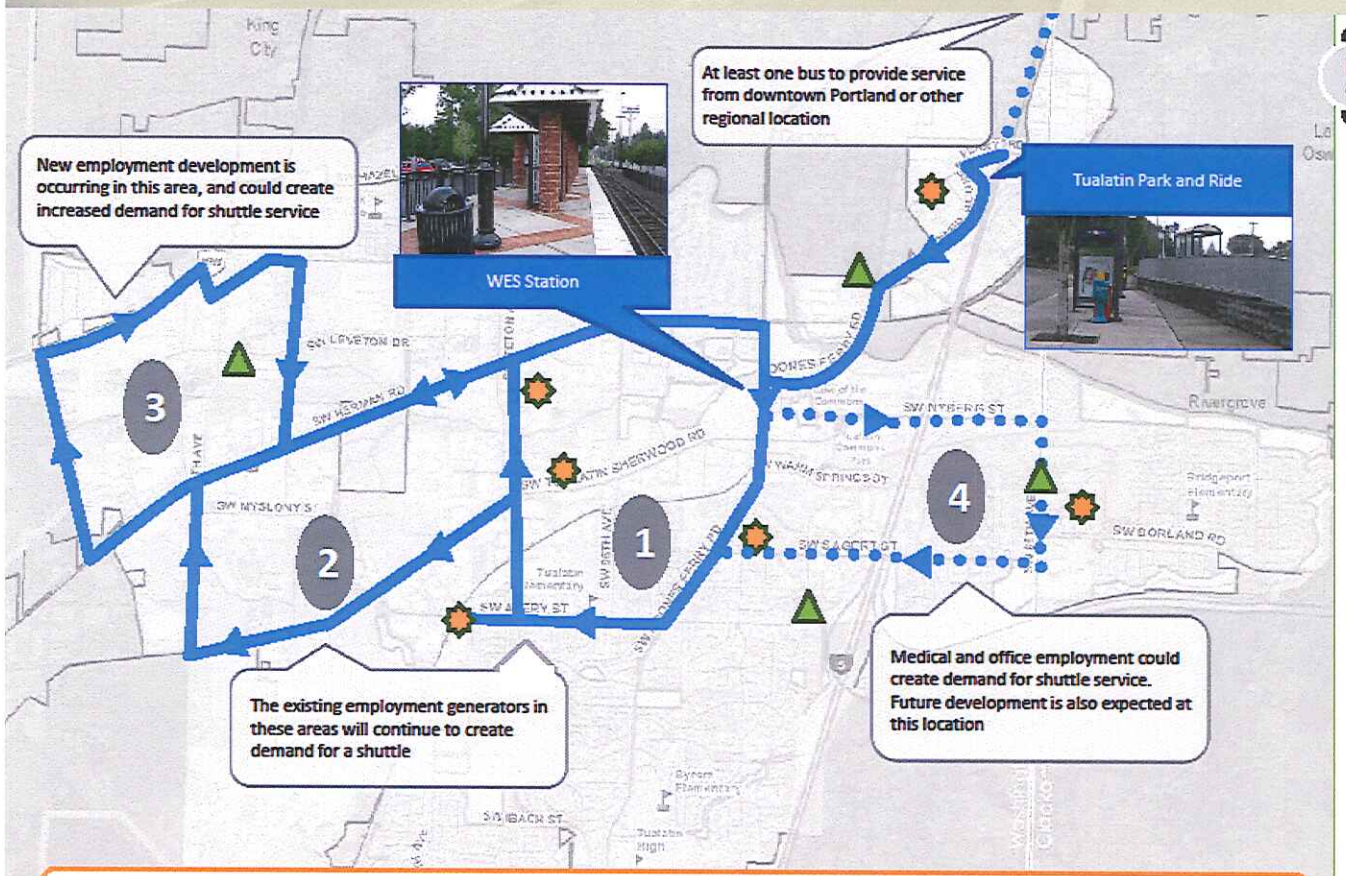
WES

9. Make the WES station a central focus of downtown and the main transit center. Improve pedestrian connectivity, transit-oriented development opportunities, and local transit connections

Expansions of the Park-and-ride System

10. Look for potential park-and-ride locations in west Tualatin
11. Look for potential park-and-ride locations south of Bridgeport Village (Wilsonville area)

Tualatin Shuttle



Note: Van 2 would retain a flexible, on-call route connecting residential areas with employment

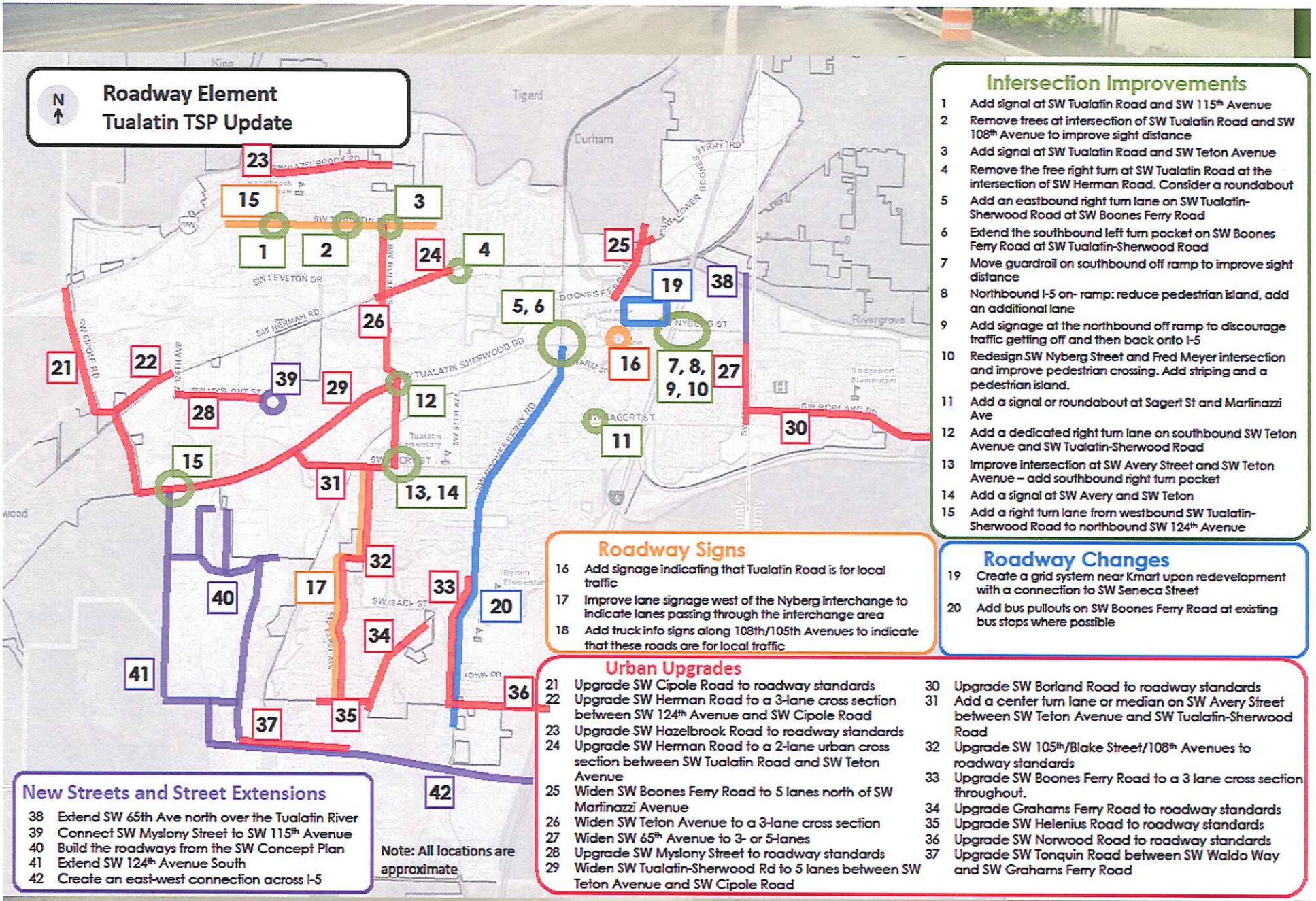
DRAFT

The Tualatin shuttle runs weekdays in the morning and afternoon rush hours, connecting people coming from regional transit and residential areas to jobs in Tualatin's employment centers. Its operations are managed by the Tualatin Chamber of Commerce. At least one shuttle bus provides service from downtown Portland.

Proposed improvements to the shuttle service include:

- ✓ Apply for funding to support a second shuttle in the afternoon, and to expand service hours
- ✓ Implement a partially fixed route for Van 1 that works in a counter-clockwise loop and serves the Tualatin Park and Ride and the downtown WES station every 30 minutes
- ✓ Print a route map and schedule, and display on board and at employment areas, station locations, and Chamber of Commerce
- ✓ Advertise service, on WES trains and bus routes serving Tualatin

Major Corridors and Intersections



Intersection Improvements

1. Add signal at SW Tualatin Road and SW 115th Avenue
2. Remove trees at intersection of SW Tualatin Road and SW 108th Avenue to improve sight distance
3. Add signal at SW Tualatin Road and SW Teton Avenue
4. Remove the free right turn at SW Tualatin Road at the intersection of SW Herman Road. Consider a roundabout
5. Add an eastbound right turn lane on SW Tualatin-Sherwood Road at SW Boones Ferry Road
6. Extend the southbound left turn pocket on SW Boones Ferry Road at SW Tualatin-Sherwood Road
7. Move guardrail on southbound off ramp to improve sight distance
8. Northbound I-5 on- ramp: reduce pedestrian island, add an additional lane
9. Add signage at the northbound off ramp to discourage traffic getting off and then back onto I-5
10. Redesign SW Nyberg Street and Fred Meyer intersection and improve pedestrian crossing. Add striping and a pedestrian island.
11. Add a signal or roundabout at Sagert St and Martinazzi Ave
12. Add a dedicated right turn lane on southbound SW Teton Avenue and SW Tualatin-Sherwood Road
13. Improve intersection at SW Avery Street and SW Teton Avenue – add southbound right turn pocket
14. Add a signal at SW Avery and SW Teton
15. Add a right turn lane from westbound SW Tualatin-Sherwood Road to northbound SW 124th Avenue

Roadway Signs

16. Add signage indicating that Tualatin Road is for local traffic
17. Improve lane signage west of the Nyberg interchange to indicate lanes passing through the interchange area
18. Add truck info signs along 108th/105th Avenues to indicate that these roads are for local traffic

Roadway Changes

19. Create a grid system near Kmart upon redevelopment with a connection to SW Seneca Street
20. Add bus pullouts on SW Boones Ferry Road at existing bus stops where possible

Urban Upgrades

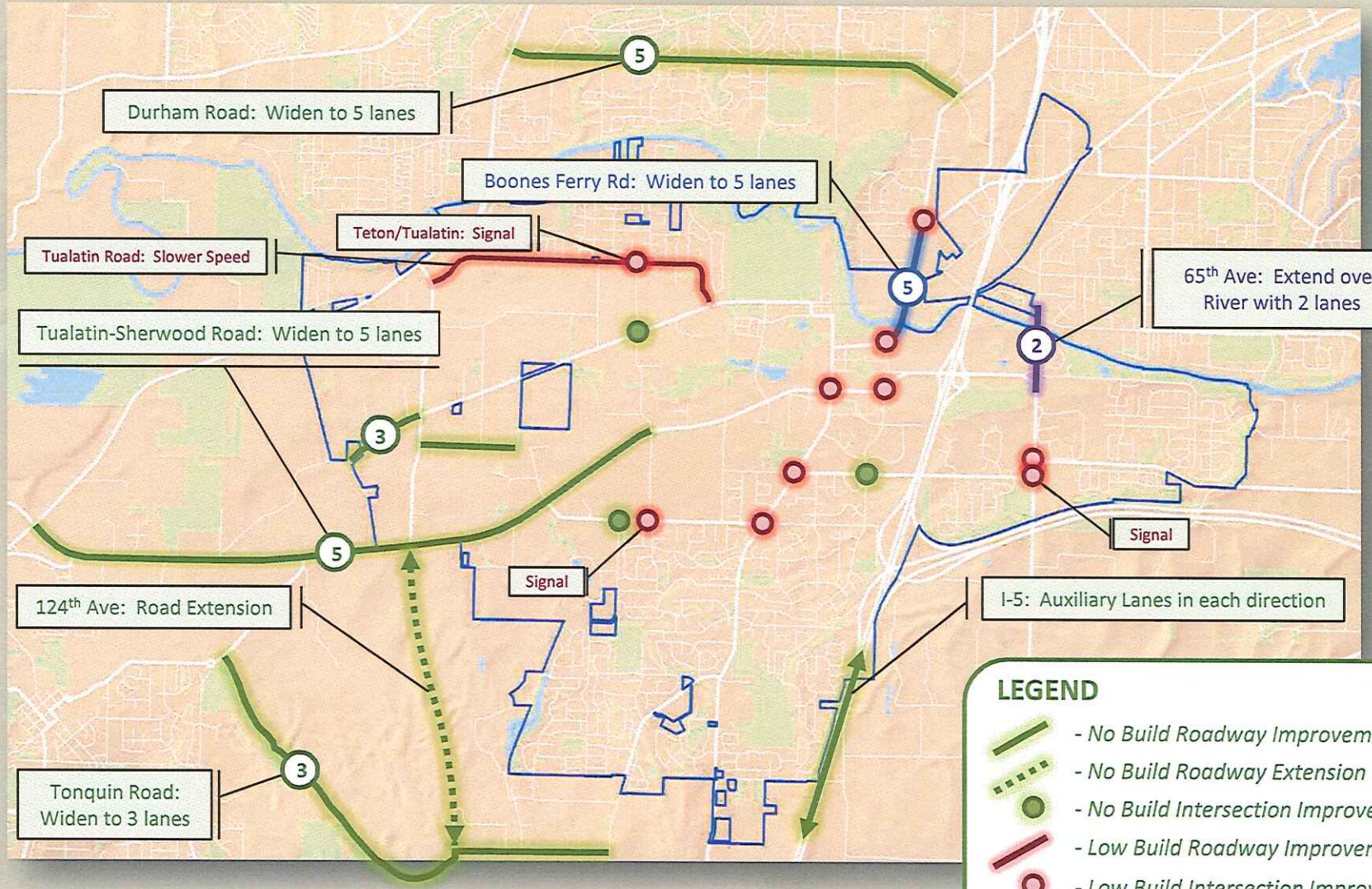
21. Upgrade SW Cipole Road to roadway standards
22. Upgrade SW Herman Road to a 3-lane cross section between SW 124th Avenue and SW Cipole Road
23. Upgrade SW Hazelbrook Road to roadway standards
24. Upgrade SW Herman Road to a 2-lane urban cross section between SW Tualatin Road and SW Teton Avenue
25. Widen SW Boones Ferry Road to 5 lanes north of SW Martinazzi Avenue
26. Widen SW Teton Avenue to a 3-lane cross section
27. Widen SW 65th Avenue to 3- or 5-lanes
28. Upgrade SW Mysloney Street to roadway standards
29. Widen SW Tualatin-Sherwood Rd to 5 lanes between SW Teton Avenue and SW Cipole Road
30. Upgrade SW Borland Road to roadway standards
31. Add a center turn lane or median on SW Avery Street between SW Teton Avenue and SW Tualatin-Sherwood Road
32. Upgrade SW 105th/Blake Street/108th Avenues to roadway standards
33. Upgrade SW Boones Ferry Road to a 3 lane cross section throughout.
34. Upgrade Grahams Ferry Road to roadway standards
35. Upgrade SW Helenius Road to roadway standards
36. Upgrade SW Norwood Road to roadway standards
37. Upgrade SW Tonquin Road between SW Waldo Way and SW Grahams Ferry Road

New Streets and Street Extensions

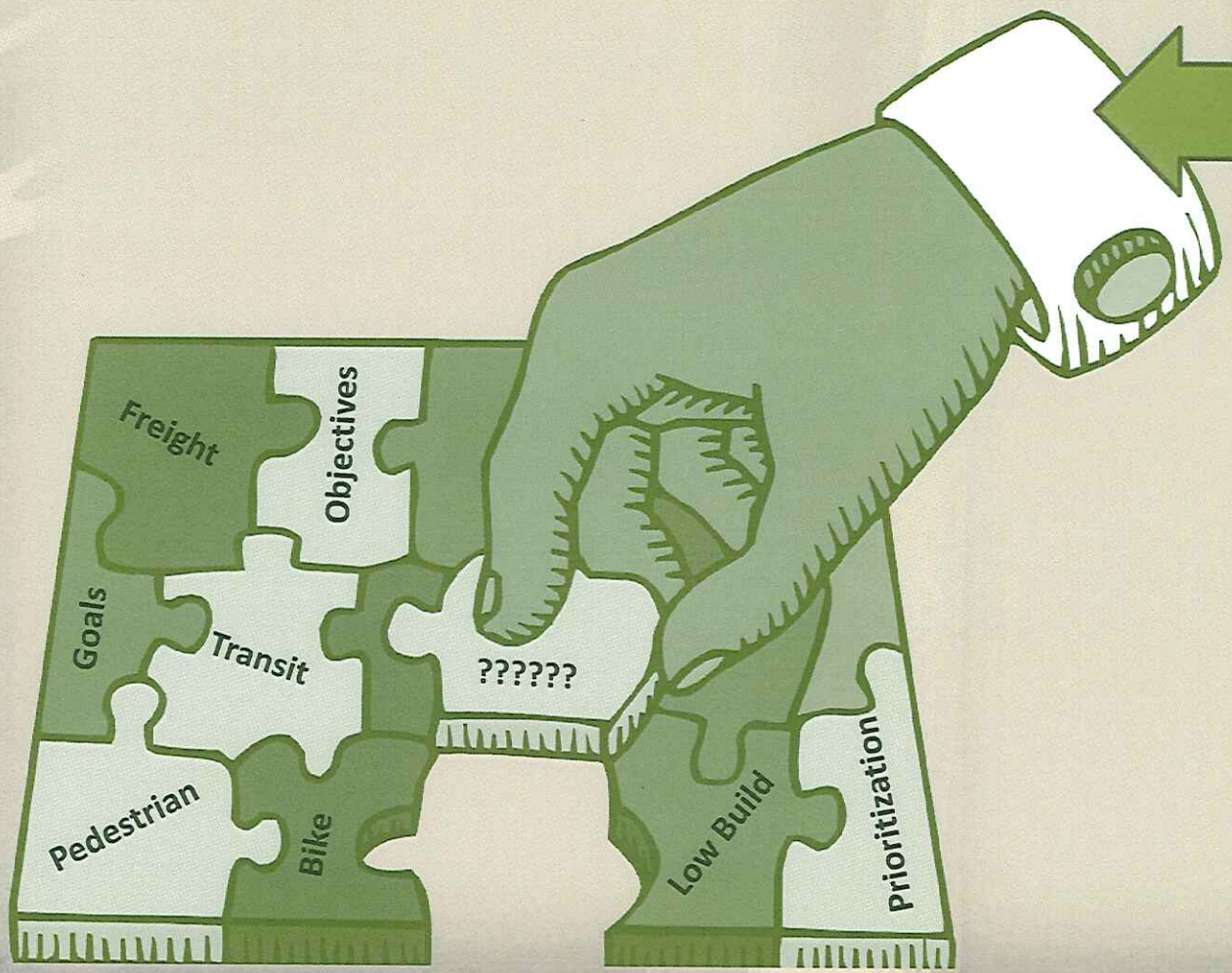
38. Extend SW 65th Ave north over the Tualatin River
39. Connect SW Mysloney Street to SW 115th Avenue
40. Build the roadways from the SW Concept Plan
41. Extend SW 124th Avenue South
42. Create an east-west connection across I-5

Note: All locations are approximate

Future Potential Improvements

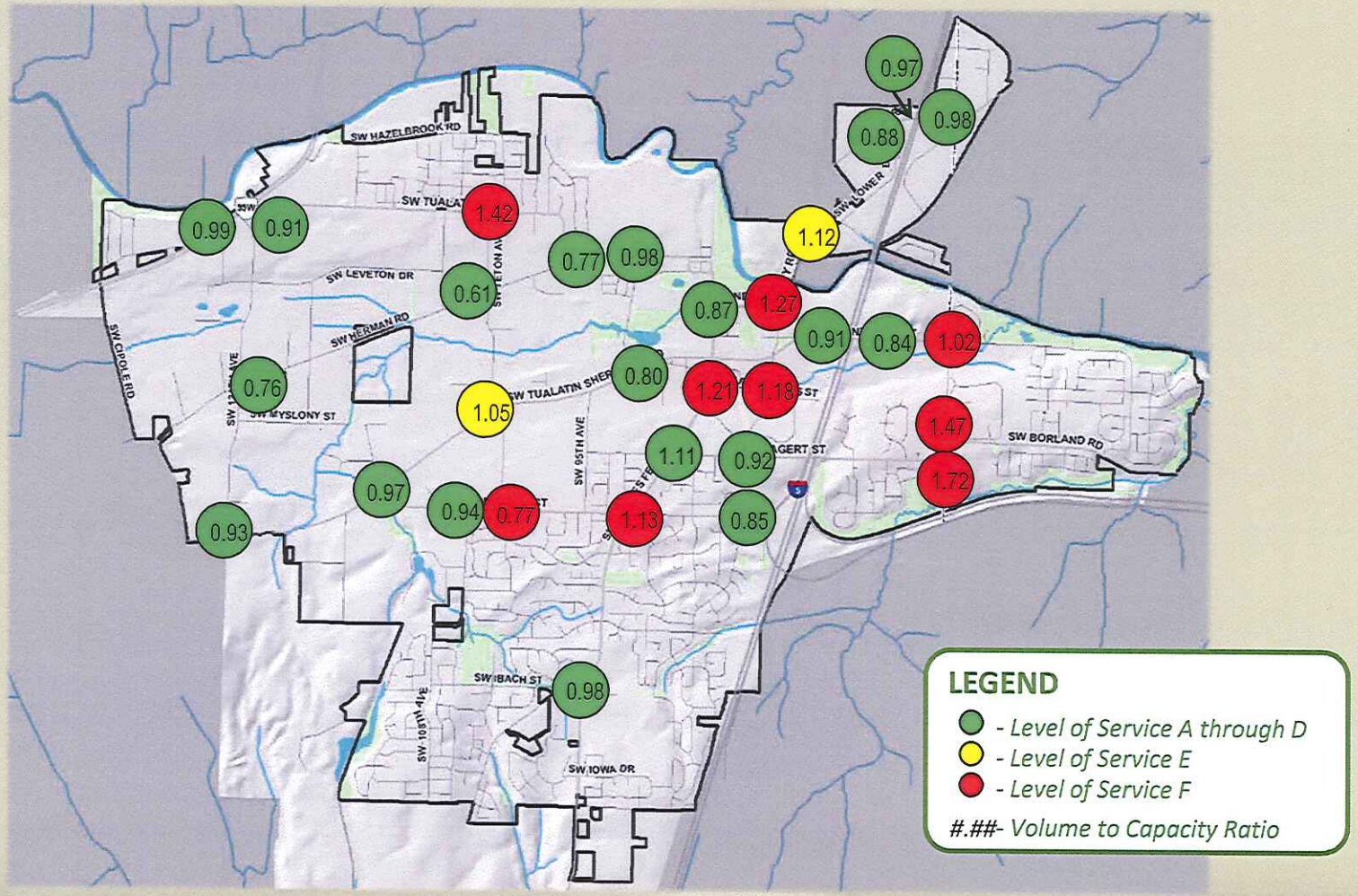


What we are looking for tonight

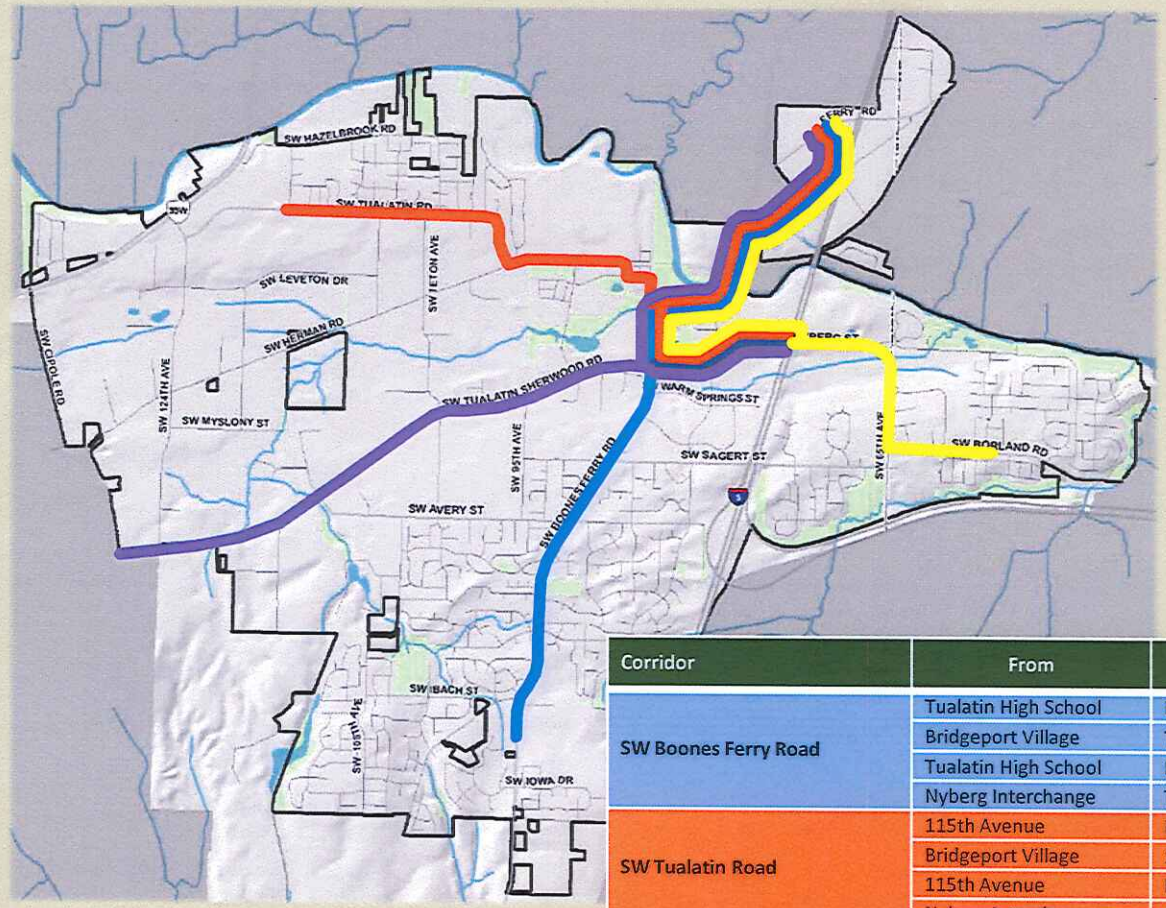


- Just Low Build
- 65th Avenue Extension
- Boones Ferry Road Widening
- 65th Avenue AND Boones Ferry Road Widening

No-build Operations

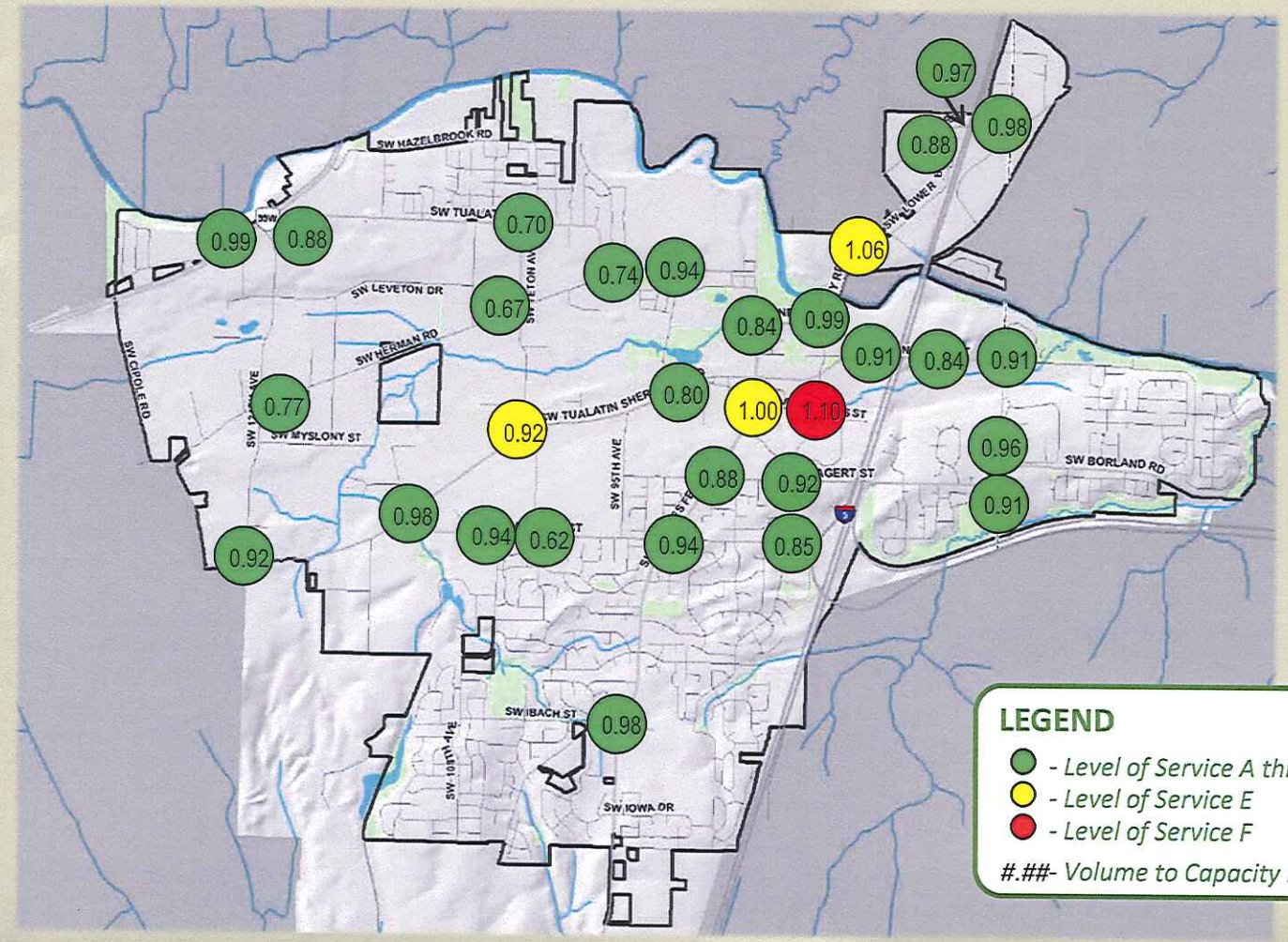


No-build Travel Times

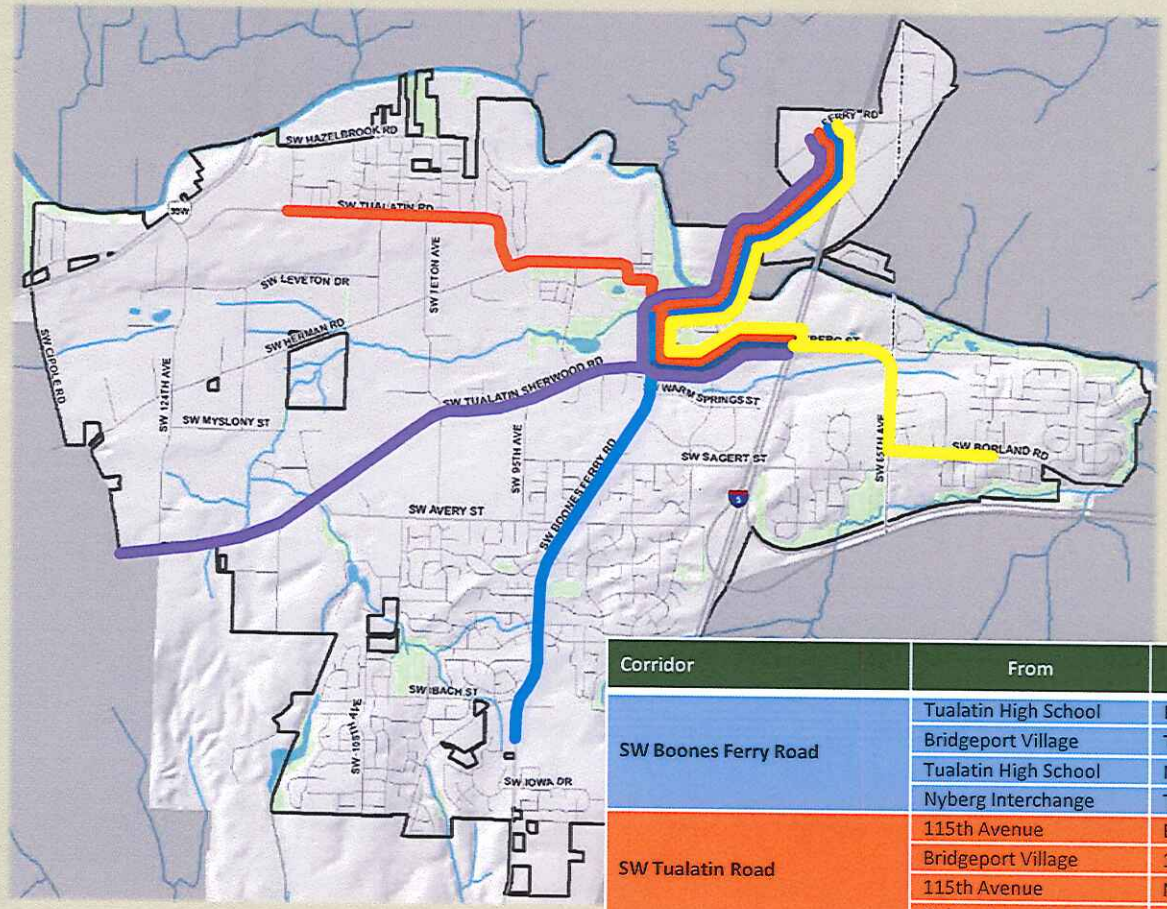


Corridor	From	To	Average Travel Time	Difference from Existing Conditions
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	+4 min, 45 sec
	Bridgeport Village	Tualatin High School	12 min, 10 sec	+3 min
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	+2 min, 15 sec
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	+1 min, 5 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	13 minutes	+4 min, 25 sec
	Bridgeport Village	115th Avenue	11 min, 40 sec	+3 min, 10 sec
	115th Avenue	Nyberg Interchange	10 min, 35 sec	+2 min, 35 sec
	Nyberg Interchange	115th Avenue	10 min, 25 sec	+1 min, 45 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	+5 min, 20 sec
	Bridgeport Village	Cipole Road	17 min, 20 sec	+ 4min, 20 sec
	Cipole Road	Nyberg Interchange	11 minutes 35 sec	+2min, 55 sec
	Nyberg Interchange	Cipole Road	11 min, 50 sec	+1 min, 45 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	+15 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	+1 min, 10 sec
	Bridgeport Elementary	Bridgeport Village	12 min, 55 sec	+3 min, 45 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	+6 min

Low Build Operations

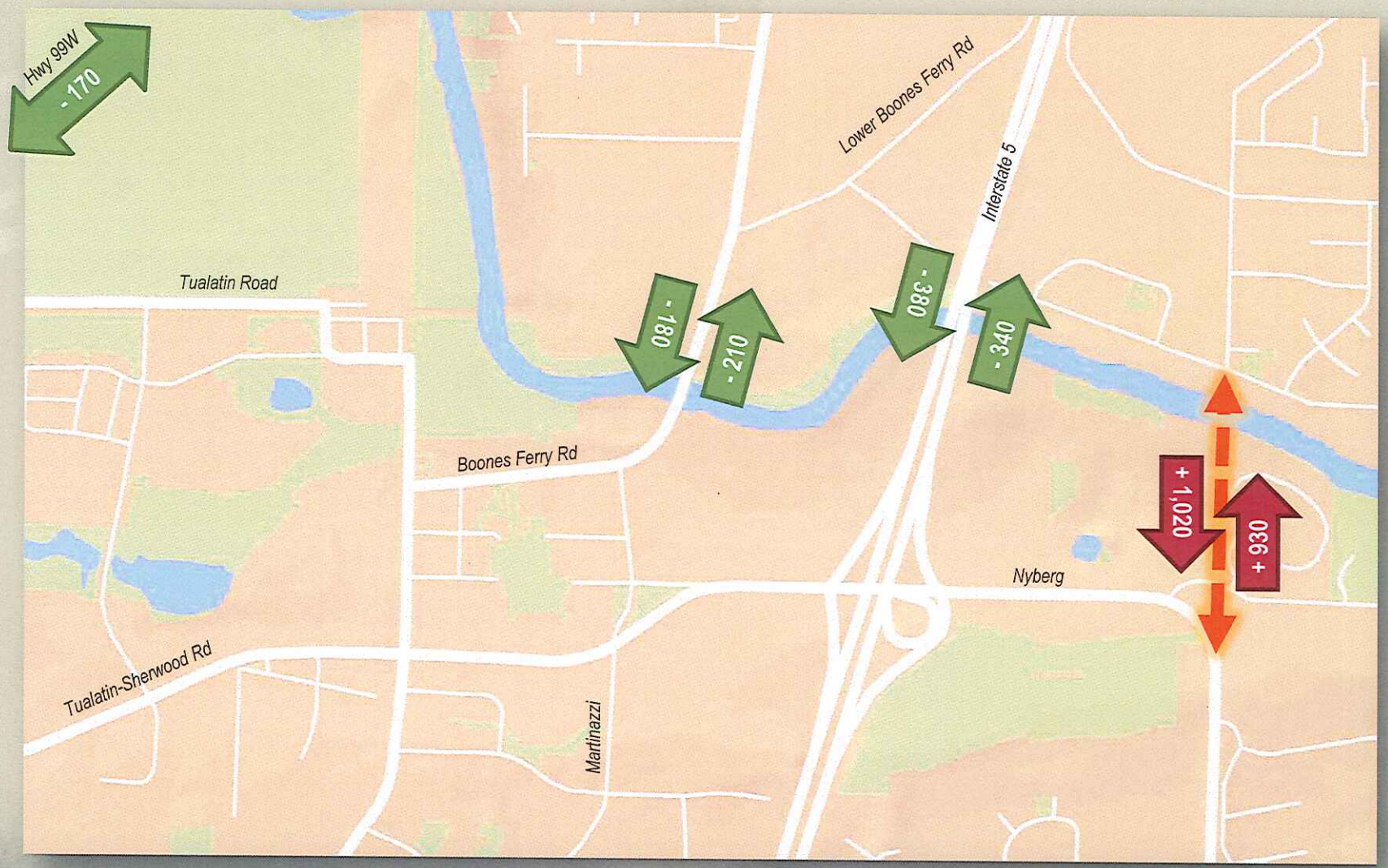


Low Build Travel Times

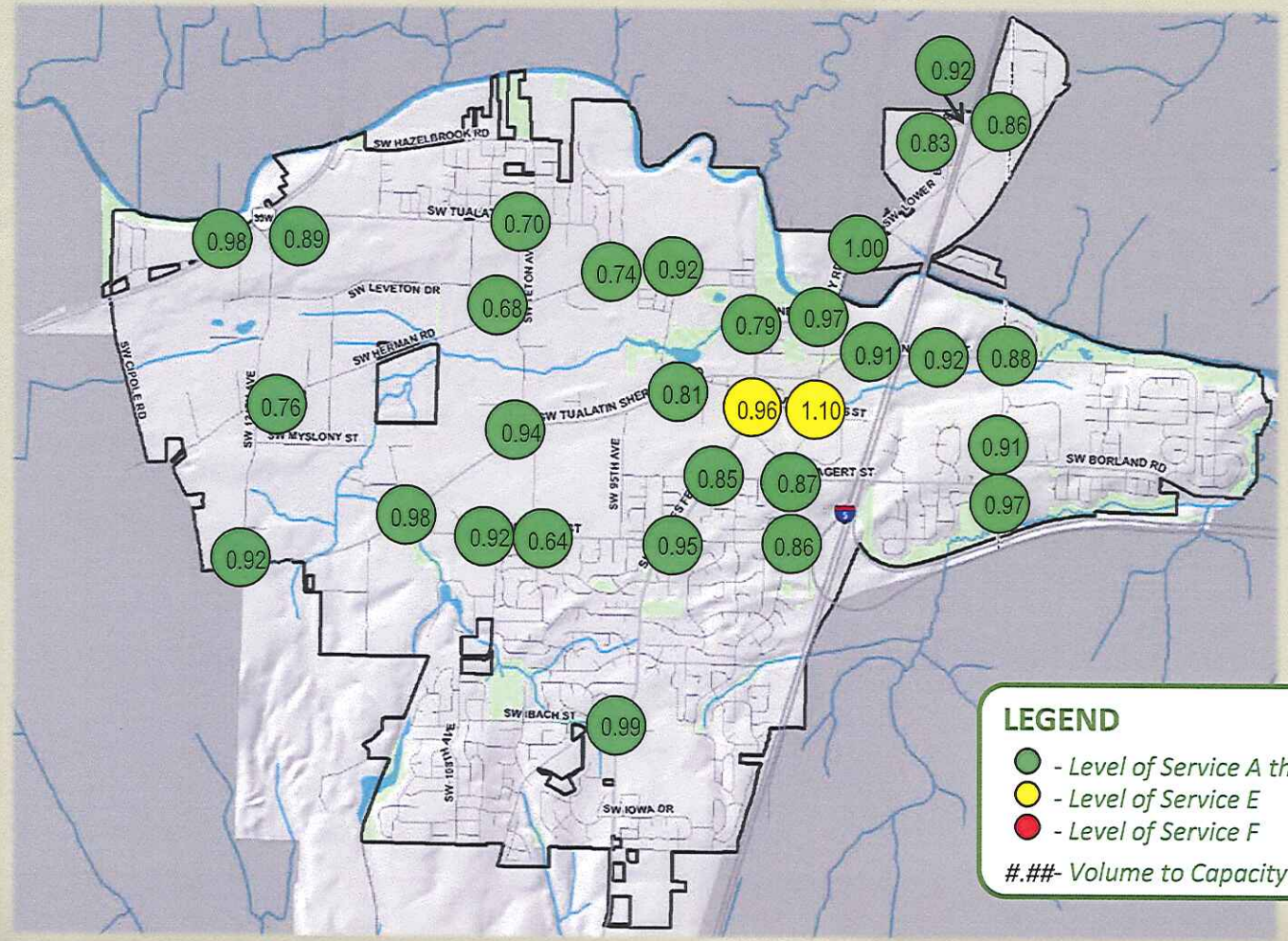


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	15 min, 5 sec	No difference
	Bridgeport Village	Tualatin High School	12 min, 10 sec	No difference
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	13 min, 30 sec	+30 sec
	Bridgeport Village	115th Avenue	12 minutes	+20 sec
	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 50 sec	+25 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	17 minutes	No difference
	Bridgeport Village	Cipole Road	17 min, 25 sec	+5 sec
	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	12 min, 50 sec	-5 sec
	Bridgeport Village	Bridgeport Elementary	14 min, 25 sec	No difference

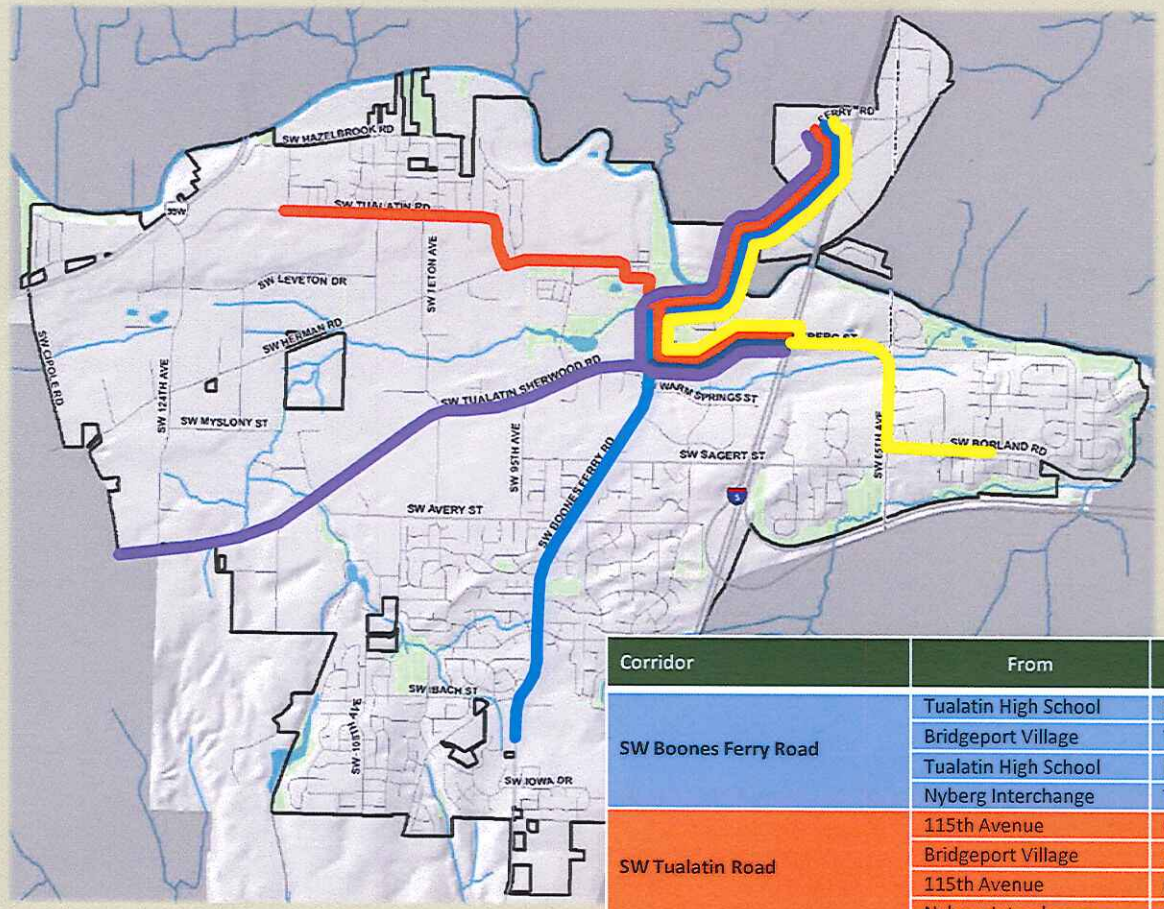
Low Build + 65th Ave Extension Volume Shifts



Low Build + 65th Ave Extension Operations

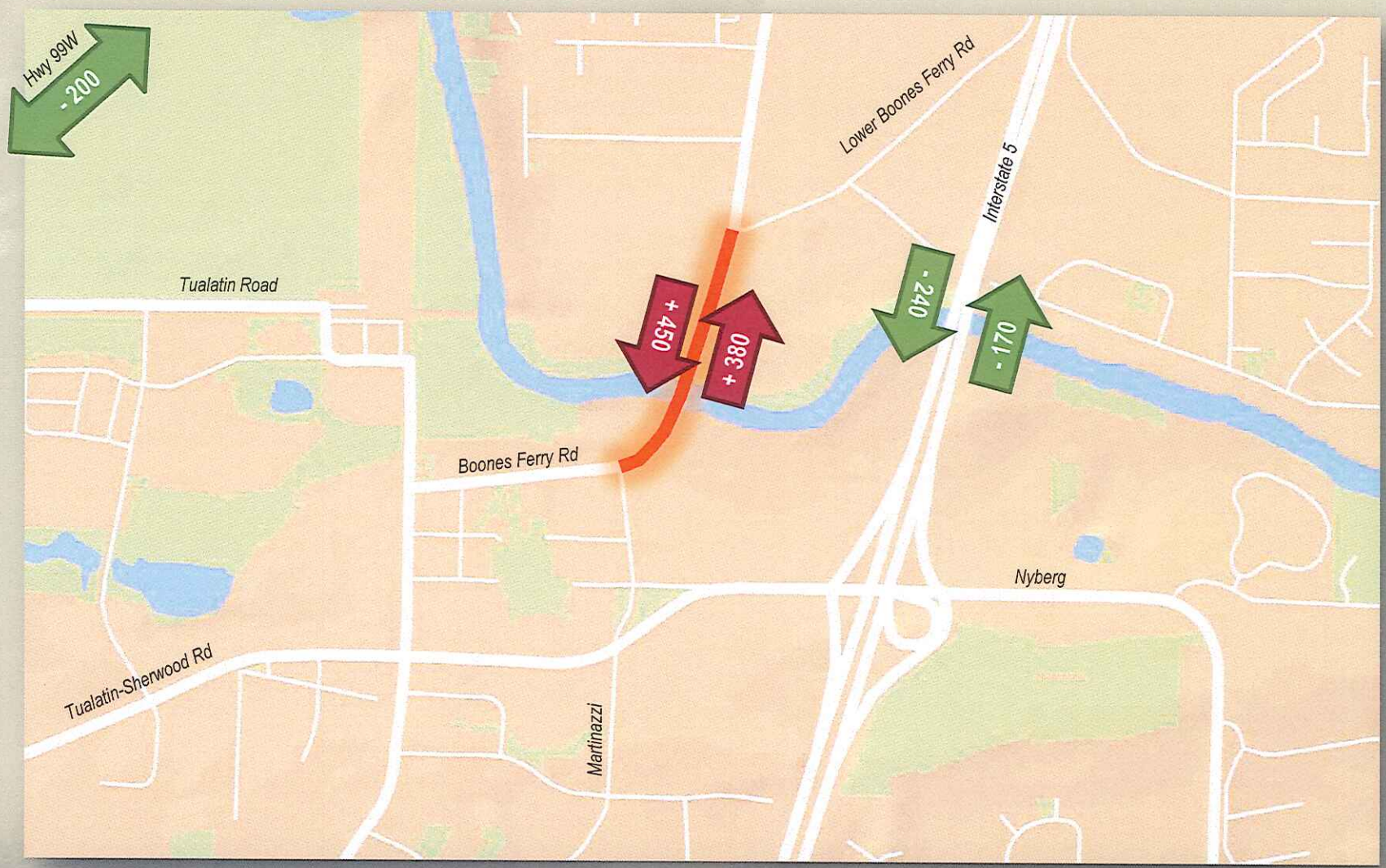


Low Build + 65th Ave Extension Travel Times

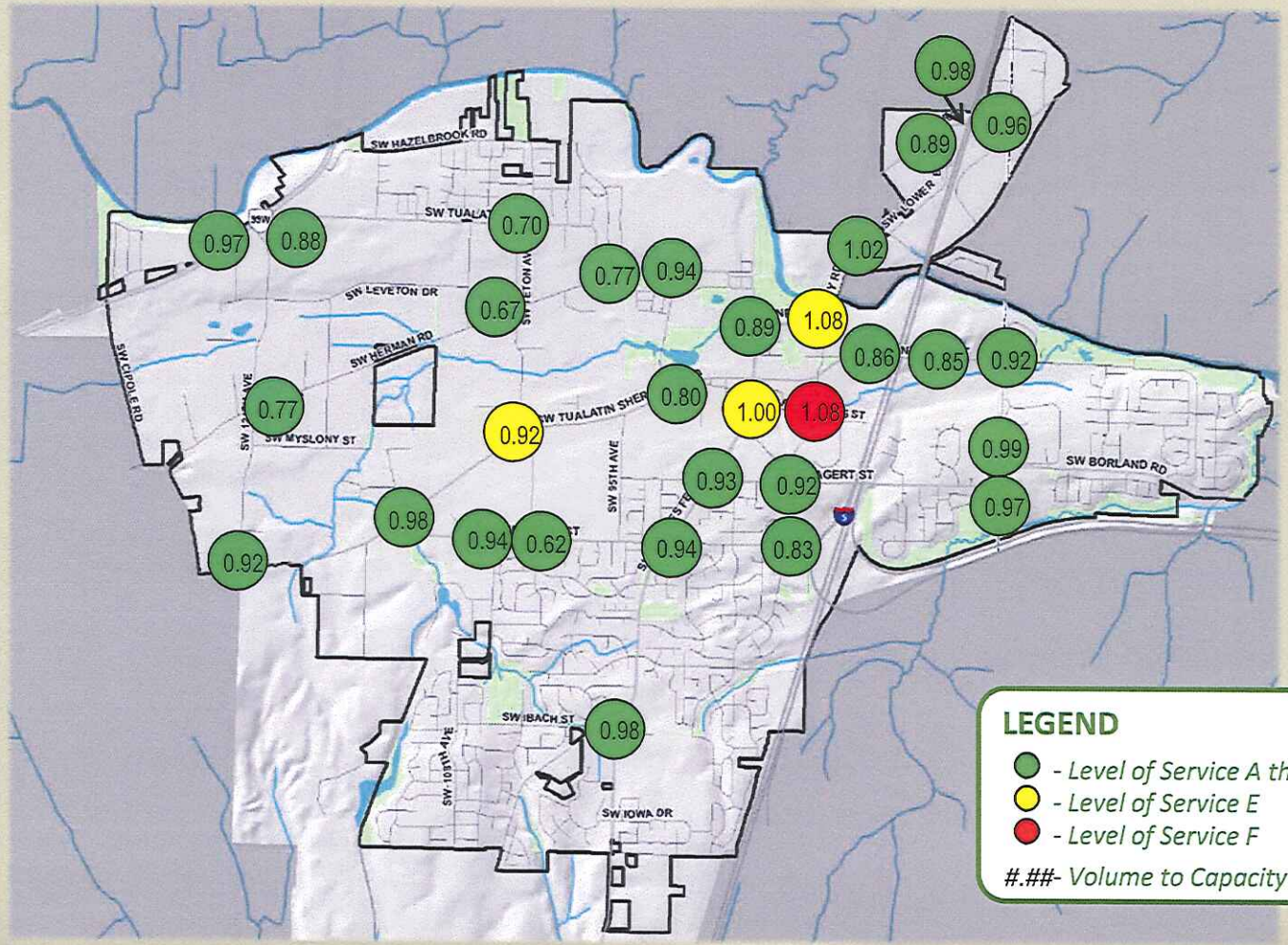


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin High School	11 min, 20 sec	-50 sec
	Tualatin High School	Nyberg Interchange	10 min	+20sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 20 sec	-40 sec
	Bridgeport Village	115th Avenue	11 min, 25 sec	-15 sec
	115th Avenue	Nyberg Interchange	11 min, 10 sec	+35 sec
	Nyberg Interchange	115th Avenue	11 min	+35 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	16 min	-1 min
	Bridgeport Village	Cipole Road	16 min 25 sec	-55 sec
	Cipole Road	Nyberg Interchange	12 min	+25 sec
	Nyberg Interchange	Cipole Road	12 min, 25 sec	+40 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 20 sec	No difference
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	10 min, 40 sec	-2 min, 15 sec
	Bridgeport Village	Bridgeport Elementary	12 min, 10 sec	-2 min, 15 sec

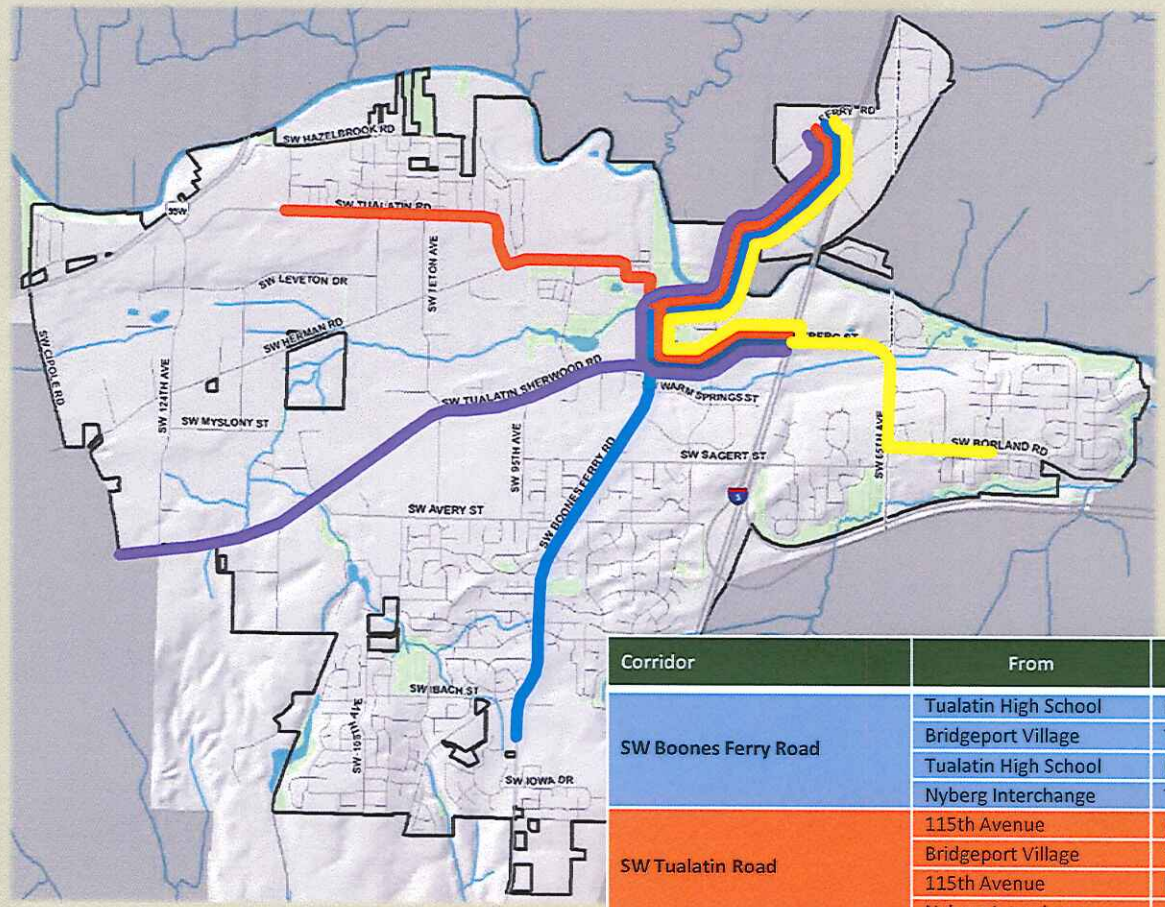
Low Build + Boones Ferry Road Widening Volume Shifts



Low Build + Boones Ferry Road Widening Operations

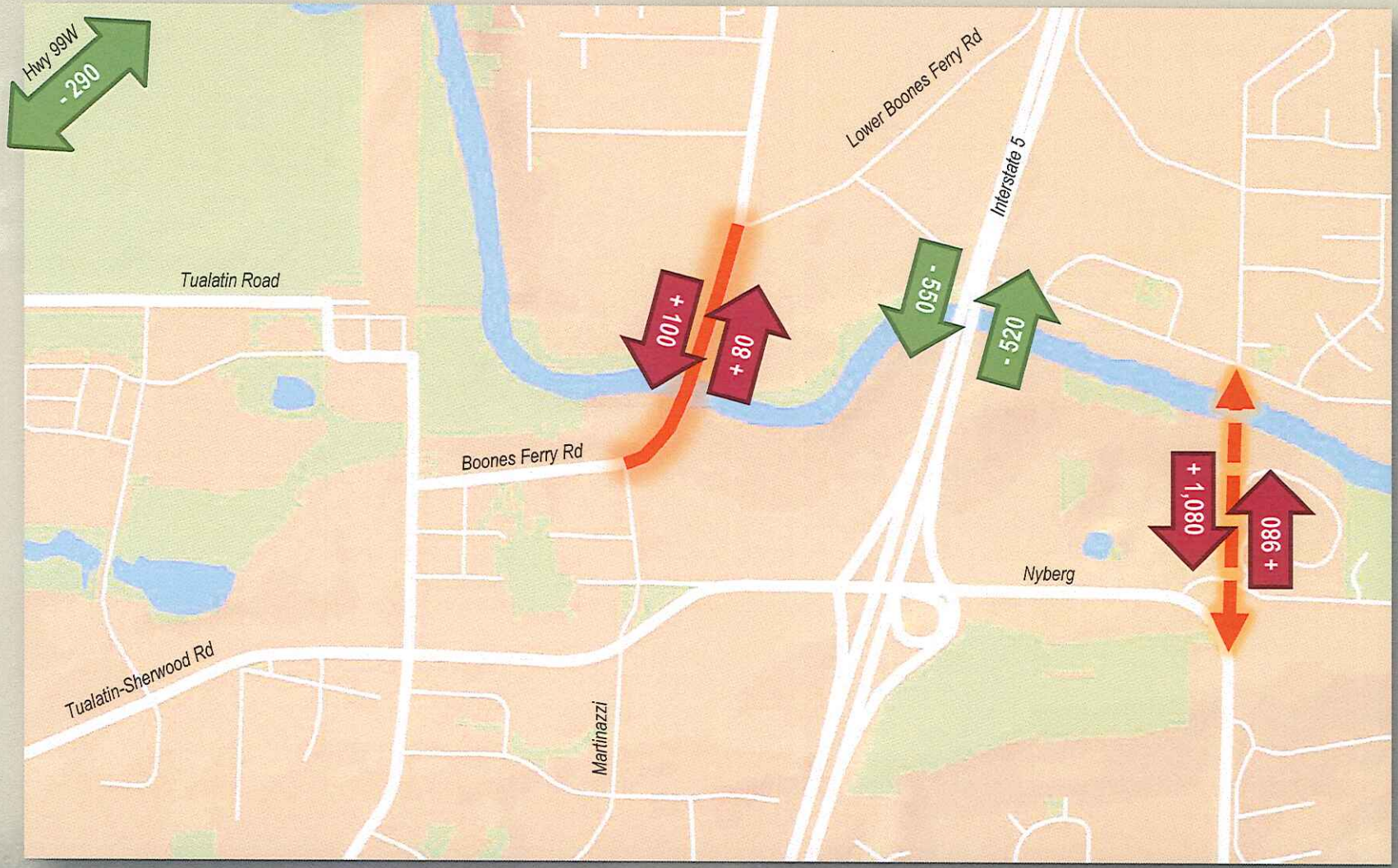


Low Build + Boones Ferry Road Widening Travel Times

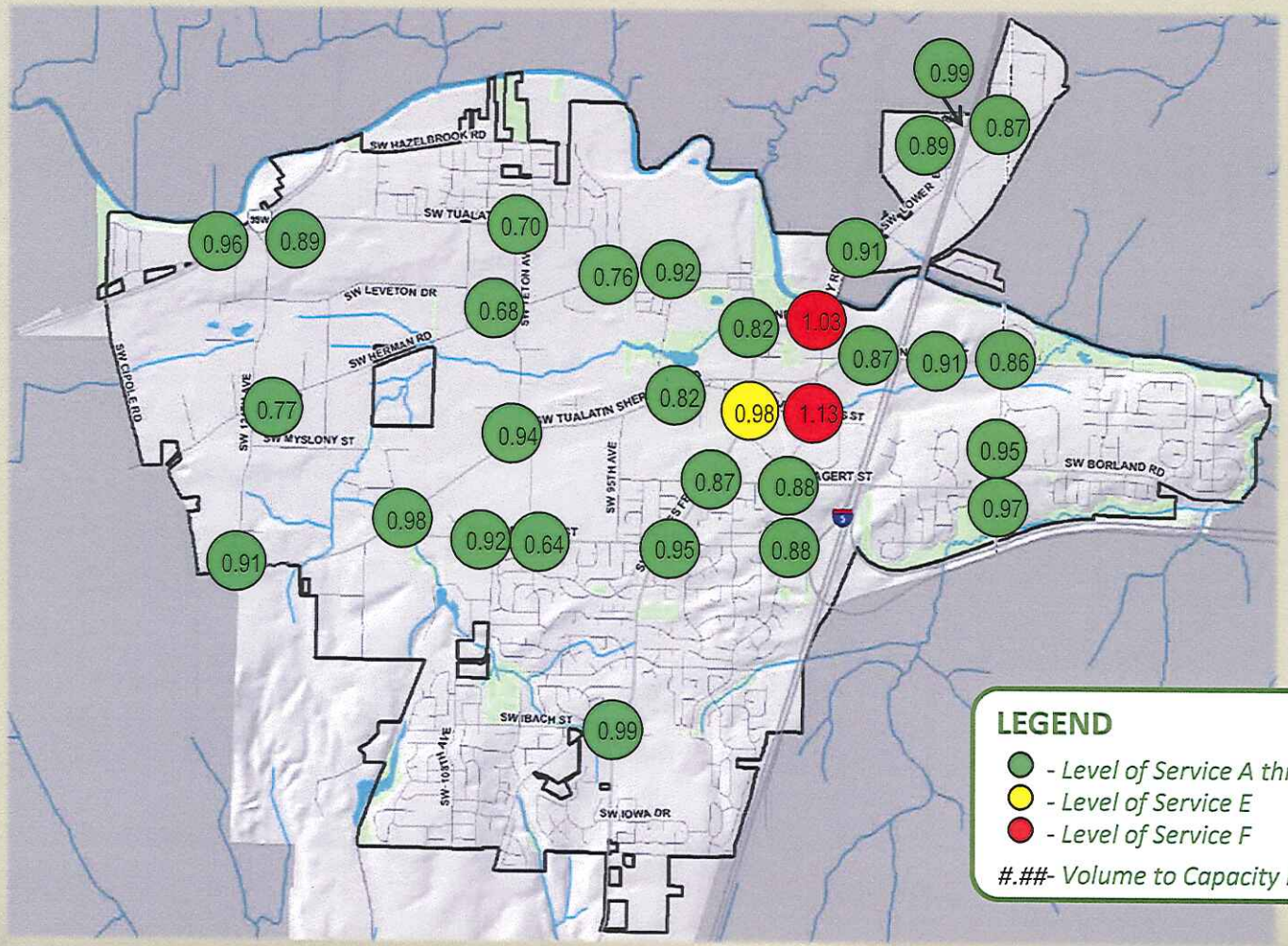


Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	13 min, 40 sec	-1 min, 25 sec
	Bridgeport Village	Tualatin High School	11 min, 30 sec	-40 sec
	Tualatin High School	Nyberg Interchange	9 min, 40 sec	No difference
	Nyberg Interchange	Tualatin High School	8 min, 10 sec	No difference
SW Tualatin Road	115th Avenue	Bridgeport Village	12 min, 30 sec	-30 sec
	Bridgeport Village	115th Avenue	11 min, 20 sec	-20 sec
	115th Avenue	Nyberg Interchange	10 min, 55 sec	+20 sec
	Nyberg Interchange	115th Avenue	10 min, 40 sec	+15 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	15 min, 50 sec	-1 min, 10 sec
	Bridgeport Village	Cipole Road	16 min, 40 sec	-40 sec
	Cipole Road	Nyberg Interchange	11 min, 35 sec	No difference
	Nyberg Interchange	Cipole Road	12 minutes	+10 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 25 sec	+5 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	12 min, 10 sec	-45 sec
	Bridgeport Village	Bridgeport Elementary	13 min, 40 sec	-45 sec

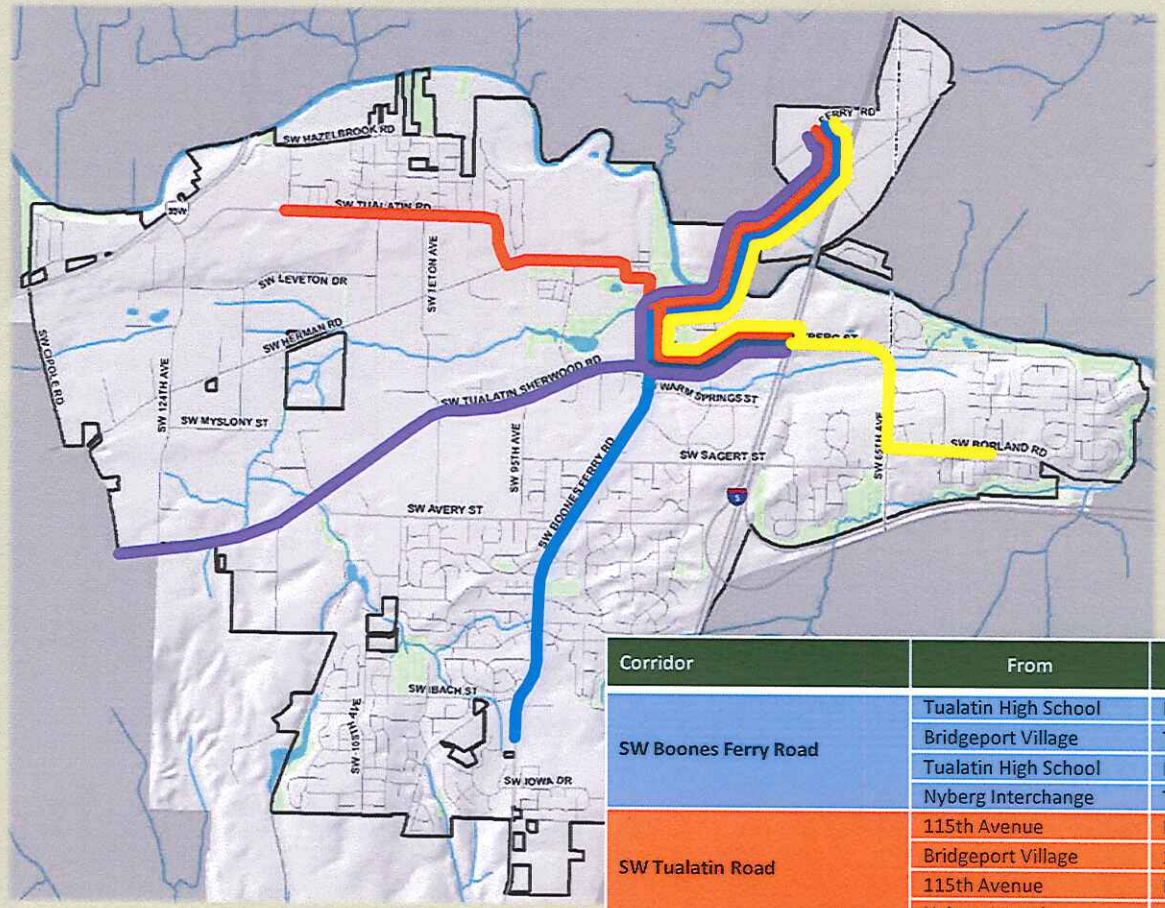
Low Build + 65th Ave + BFR Widening Volume Shifts



Low Build + 65th Ave + BFR Widening Operations



Low Build + 65th Ave + BFR Widening Travel Times



Corridor	From	To	Average Travel Time	Difference from Future No-build
SW Boones Ferry Road	Tualatin High School	Bridgeport Village	12 min, 35 sec	-2 min, 30 sec
	Bridgeport Village	Tualatin High School	10 min, 35 sec	-1 min, 35 sec
	Tualatin High School	Nyberg Interchange	9 min, 50 sec	+10 sec
	Nyberg Interchange	Tualatin High School	8 min, 25 sec	+15 sec
SW Tualatin Road	115th Avenue	Bridgeport Village	11 min, 30 sec	-1 min, 30 sec
	Bridgeport Village	115th Avenue	10 min, 55 sec	-45 sec
	115th Avenue	Nyberg Interchange	11 minutes	+25 sec
	Nyberg Interchange	115th Avenue	10 min, 55 sec	+30 sec
SW Tualatin-Sherwood Road	Cipole Road	Bridgeport Village	14 min, 55 sec	-2 min, 5 sec
	Bridgeport Village	Cipole Road	15 min, 40 sec	-1 min, 40 sec
	Cipole Road	Nyberg Interchange	11 min, 50 sec	+15 sec
	Nyberg Interchange	Cipole Road	12 min, 20 sec	+30 sec
SW Borland Road / 65th Ave	Bridgeport Elementary	Nyberg Interchange	3 min, 30 sec	+10 sec
	Nyberg Interchange	Bridgeport Elementary	3 min, 30 sec	No difference
	Bridgeport Elementary	Bridgeport Village	10 min, 25 sec	-2 min, 30 sec
	Bridgeport Village	Bridgeport Elementary	11 min, 50 sec	-2 min, 35 sec

How do these projects pencil out?

Cost vs. Benefit Perspective

65th Avenue Extension

AM/PM Peak VHT Saved
- ✓ 548 hours

Project cost
- ✓ $22M

Potential 20 year benefit
- ✓ $50.9M

Boones Ferry Rd Widening

AM/PM Peak VHT Saved
- ✓ 244 hours

Project cost
- ✓ $17.8M

Potential 20 year benefit
- ✓ $22.7M

65th Ave + BFR Widening

AM/PM Peak VHT Saved
- ✓ 752 hours

Project cost
- ✓ $39.8M

Potential 20 year benefit
- ✓ $69.9M

Summary of Operations and Travel Time Findings

- Tualatin becomes very congested in the future
- Low Build does a fair job of mitigating intersection operations, but minor travel time changes
- 65th Avenue extension pulls traffic from Boones Ferry Road and enhances that travel time
- Boones Ferry Road widening helps enhance travel times, but creates some intersection issues in downtown
- Combination of 65th Avenue and Boones Ferry Road widening enhances travel times in North Tualatin, but has similar downtown intersection issues

Technical Team Recommendation

- In addition to the Low Build projects, include:
  1. Include Boones Ferry Road widening project from Martinazzi to Lower Boones Ferry Road
  2. Include 65th Avenue extension as a **refinement plan** project
     - Establishes and acknowledges the need for improvements and connectivity in the area
     - Acknowledges the need to work collaboratively with surrounding jurisdictions
     - Identifies a project area that goes into deeper planning analysis to determine details

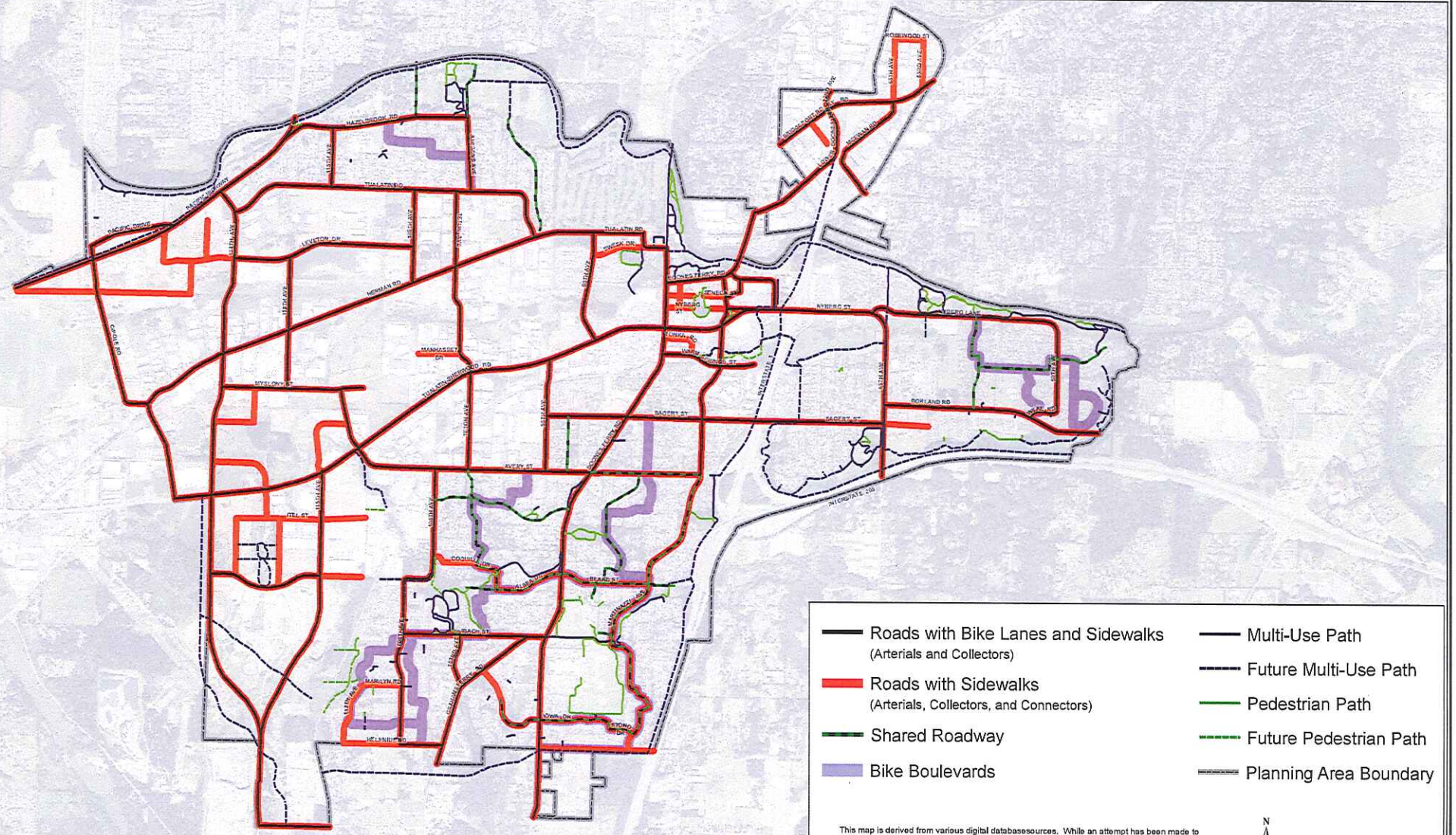
What happens if I hold up my "STOP" sign?

- Project is recommended to not be included in the TSP
- Does not preclude project from being considered in future TSP updates
- Does not preserve the potential right-of-way

What happens if I hold up my "GO" sign?

- Project recommended to be included in the TSP
- Preserves potential right-of-way when new development comes to the table
- Additional study/coordination is necessary
- It will take a while for these projects to be built

Appendix H
Bicycle and Pedestrian Plan

Figure 11-4: Bicycle and Pedestrian Plan

TUALGIS