



# City of Tualatin

www.tualatinoregon.gov

**"NECESSARY PARTIES"  
MARKED BELOW**

## NOTICE OF APPLICATION SUBMITTAL

- ANNEXATION                       CONDITIONAL USE PERMIT                       PLAN TEXT AMENDMENT  
 ARCHITECTURAL REVIEW                       PLAN MAP AMENDMENT                       OTHER: VARIANCE

**CASE/FILE: VAR17-0001** (Community Development Dept.: Planning Division)

<b>PROPOSAL</b>	To request a variance from the 1,500-foot separation requirement between wireless communication facilities (WCFs) pursuant to Tualatin Development Code (TDC) 73.490(9).
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<b>PROPERTY</b>	<b>Name of Application</b>	POR DURHAM				
	<input type="checkbox"/> n/a	<b>Street Address</b>	10290 SW Tualatin Rd			
		<b>Tax Map and Lot No(s).</b>	2S1 23B 000800			
		<b>Planning District</b>	Light Manufacturing (ML)	<b>Overlays</b> <input type="checkbox"/>	<b>NRPO</b> <input type="checkbox"/>	<b>Flood Plain</b> <input type="checkbox"/>
		<b>Previous Applications</b>	AR86-21	<b>Additional Applications:</b>	CIO INDUSTRIAL	

<b>DATES</b>	<b>Receipt of application</b>	05/19/2017	<b>Deemed Complete</b>	10/02/2017	<b>CONTACT</b>	<b>Name:</b> Charles H. Benson III
	<b>Notice of application submittal</b>			10/02/2017		<b>Title:</b> ASSOCIATE PLANNER
	<b>Project Status / Development Review meeting</b>			03/23/2017		<b>E-mail:</b> CBENSON@tualatin.gov
	<b>Comments due for staff report</b>			10/23/2017		<b>Phone:</b> 503-691-3029
	<b>Public meeting:</b> <input type="checkbox"/> ARB <input checked="" type="checkbox"/> TPC <input type="checkbox"/> n/a			11/16/2017		
	<b>City Council (CC)</b>			<input checked="" type="checkbox"/> n/a		

### City Staff

- City Manager
- Building Official
- Chief of Police
- City Attorney
- City Engineer
- Community Development Director
- Community Services Director
- Economic Development liaison
- Engineering Associate\*
- Finance Director
- GIS technician(s)
- IS Manager
- Operations Director\*
- Parks and Recreation Coordinator
- Planning Manager
- Street/Sewer Supervisor
- Water Supervisor

### Neighboring Cities

- Durham
- King City Planning Commission
- Lake Oswego
- Rivergrove PC
- Sherwood Planning Dept.
- Tigard Community Development Dept.
- Wilsonville Planning Division

### Counties

- Clackamas County Dept. of Transportation and Development
- Washington County Dept. of Land Use and Transportation (ARs)
- Washington County Long Range Planning (LRP) (Annexations)

### Regional Government

- Metro

### School Districts

- Lake Oswego School Dist. 7J
- Sherwood SD 88J
- Tigard-Tualatin SD 23J (TTSD)
- West Linn-Wilsonville SD 3J

### State Agencies

- Oregon Dept. of Aviation
- Oregon Dept. of Environmental Quality (DEQ)
- Oregon Dept. of Land Conservation and Development (DLCD) (via proprietary notice)
- Oregon Dept. of State Lands: Wetlands Program
- Oregon Dept. of Transportation (ODOT) Region 1
- ODOT Maintenance Dist. 2A
- ODOT Rail Division
- OR Dept. of Revenue

### Utilities

- Republic Services
- Clean Water Services (CWS)
- Comcast [cable]\*
- Frontier Communications [phone]
- Northwest Natural [gas]
- Portland General Electric (PGE)
- TriMet
- Tualatin Valley Fire & Rescue (TVF&R)
- United States Postal Service (USPS) (Washington; 18850 SW Teton Ave.)
- USPS (Clackamas)
- Washington County Consolidated Communications Agency (WCCCA)

### Additional Parties

- Tualatin Citizen Involvement Organization (CIO)

\*Paper Copies

- 1.032: Burden of Proof
- 31.071 Architectural Review Procedure
- 31.074 Architectural Review Application Review Process
- 31.077 Quasi-Judicial Evidentiary Hearing Procedures
- Metro Code 3.09.045 Annexation Review Criteria
- 32.030 Criteria for Review of Conditional Uses
- 33.020 Conditions for Granting a Variance that is not a Sign or a Wireless Communication Facility
- 33.022 Criteria for Granting a Sign Variance
- 33.024 Criteria for Granting a Minor Variance
- 33.025 Criteria for Granting a Variance
- 34.200 Tree Cutting on Private Property without Architectural Review, Subdivision or Partition Approval, or Tree Removal Permit Prohibited
- 34.210 Application for Architectural Review, Subdivision or Partition Review, or Permit
- 34.230 Criteria (tree removal)
- 35.060 Conditions for Granting Reinstatement of Nonconforming Use
- 36.160 Subdivision Plan Approval
- 36.230 Review Process (partitioning)
- 36.330 Review Process (property line adjustment)
- 37.030 Criteria for Review (IMP)
- 40.030 Conditional Uses Permitted (RL)
- 40.060 Lot Size for Conditional Uses (RL)
- 40.080 Setback Requirements for Conditional Uses (RL)
- 41.030 Conditional Uses Permitted (RML)
- 41.050 Lot Size for Conditional Uses (RML)
- 41.070 Setback Requirements for Conditional Uses (RML)
- 42.030 Conditional Uses Permitted (RMH)
- 42.050 Lot Size for Conditional Uses (RMH)
- 42.070 Setback Requirements for Conditional Uses (RMH)
- 43.030 Conditional Uses Permitted (RH)
- 43.060 Lot Size for Conditional Uses (RH)
- 43.090 Setback Requirements for Conditional Uses (RH)
- 44.030 Conditional Uses Permitted (RH-HR)
- 44.050 Lot Size for Conditional Uses (RH-HR)
- 44.070 Setback Requirements for Conditional Uses (RH-HR)
- 49.030 Conditional Uses (IN)
- 49.040 Lot Size for Permitted and Conditional Uses (IN)
- 49.060 Setback Requirements for Conditional Uses (IN)
- 50.020 Permitted Uses (CO)
- 50.030 Central Urban Renewal Plan – Additional Permitted Uses and Conditional Uses (CO)
- 50.040 Conditional Uses (CO)
- 52.030 Conditional Uses (CR)
- 53.050 Conditional Uses (CC)
- 53.055 Central Urban Renewal Area – Conditional Uses (CC)
- 54.030 Conditional Uses (CG)
- 56.030 Conditional Uses (MC)
- 56.045 Lot Size for Conditional Uses (MC)
- 57.030 Conditional Uses (MUCOD)
- 60.040 Conditional Uses (ML)
- 60.041 Restrictions on Conditional Uses (ML)
- 61.030 Conditional Uses (MG)
- 61.031 Restrictions on Conditional Uses (MG)
- 62.030 Conditional Uses (MP)
- 62.031 Restrictions on Conditional Uses (MP)
- 64.030 Conditional Uses (MBP)
- 64.050 Lot Size for Permitted and Conditional Uses (MBP)
- 64.065 Setback Requirements for Conditional Uses (MBP)
- 68.030 Criteria for Designation of a Landmark
- 68.060 Demolition Criteria
- 68.070 Relocation Criteria
- 68.100 Alteration and New Construction Criteria
- 68.110 Alteration and New Construction Approval Process
- 73.130 Standards
- 73.160 Standards
- 73.190 Standards – Single-Family and Multi-Family Uses
- 73.220 Standards
- 73.227 Standards
- 73.230 Landscaping Standards
- 73.300 Landscape Standards – Multi-Family Uses
- 73.310 Landscape Standards – Commercial, Industrial, Public and Semi-Public Uses
- 73.320 Off-Street Parking Lot Landscaping Standards
- 73.470 Standards
- 73.500 Standards



# City of Tualatin

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## APPLICATION FOR VARIANCE

Information			
Name: Reid Stewart		Title: Consultant/Agent	
Company Name: Acom Consulting, Inc.			
Current address: 4015 SW Battaglia Avenue			
City: Gresham		State: OR	ZIP Code: 97080
Phone: 503.720.6526	Fax: N/A	Email: reid.stewart@acomconsultinginc.com	
Applicant			
Name: Brandon Olsen		Company Name: Lendlease (US) Telecom Holdings LLC	
Address: 909 Lake Carolyn Parkway c/o PI Tower Development LLC			
City: Irving		State: TX	ZIP Code: 75039
Phone: 503.951.7515	Fax: N/A	Email: brandon.olsen@pitowers.com	
Applicant's Signature: See attached LOA			Date:
Property Owner			
Name: TOTE-N-STOW INC. - Joana Freedman			
Address: 10290 SW Tualatin Road			
City: Tualatin		State: OR	ZIP Code: 97062
Phone: 503.692.3930	Fax: N/A	Email:	
Property Owner's Signature: See attached LOA			Date
<b>(Note: Letter of authorization is required if not signed by owner)</b>			
Architect			
Name: Rick Matteson			
Address: 5200 SW Meadows Road, Suite 150			
City: Lake Oswego		State: OR	ZIP Code: 97035
Phone: 425.209.6723	Fax: N/A	Email: rick.matteson@acomconsultinginc.com	
Landscape Architect			
Name: N/A			
Address:			
City:		State:	ZIP Code:
Phone:	Fax: N/A	Email:	
Engineer			
Name: TBD			
Address:			
City:		State:	ZIP Code:
Phone:	Fax: N/A	Email:	
Project			
Project Title: POR Durham			
Address: 10290 SW Tualatin Road			
City: Tualatin		State: OR	ZIP Code: 97062
Brief Project Description: New 100' monopole associated with new wireless communications facility			
Proposed Use: Wireless communications facility			

Value of Improvements:

**\$130,000**

**AS THE PERSON RESPONSIBLE FOR THIS APPLICATION, I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION ABOVE, ON THE FACT SHEET, AND THE SURROUNDING PARTY OWNER MAILING LIST IS CORRECT. I AGREE TO COMPLY WITH ALL APPLICABLE CITY AND COUNTY ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND LAND USE.**

Applicant's Signature:

Date:

### Office Use

Case No:	Date Received:	Received by:
Fee: Complete Review:	Receipt No:	
Application Complete as of:	ARB hearing date (if applicable):	
Posting Verification:	6 copies of drawings (folded)	
1 reproducible 8 ½" X 11" vicinity map	1 reproducible 8 ½" X 11" site, grading, LS, Public Facilities plan	
Neighborhood/Developer meeting materials		



APPLICATION FOR  
VARIANCE

**UNMANNED WIRELESS  
TELECOMMUNICATIONS  
FACILITY AT:**

10290 SW Tualatin Road  
Tualatin, OR 97062

**Prepared By**



**Date**  
October 03, 2017

**Project Name**  
POR Durham



Applicant: Lendlease (US) Telecom Holdings LLC  
c/o PI Tower Development LLC  
909 Lake Carolyn Parkway  
Irving, TX 75039

Co-Applicant: Verizon Wireless (VAW), LLC dba, Verizon Wireless  
5430 NE 122<sup>nd</sup> Avenue  
Portland, OR 97230

Representative: Acom Consulting, Inc.  
Reid Stewart  
5200 SW Meadows Road, Suite 150  
Lake Oswego, OR 97035

Property Owner: Tote 'N Stow, Inc.  
10290 SW Tualatin Road  
Tualatin, OR 97062

Project Information:  
Site Address: 10290 SW Tualatin Road, Tualatin, OR 97062  
Parcel: 2S123B000800  
Parcel Area: 3.63 acres  
Zone Designation: ML (Light Manufacturing Planning District)  
Existing Use: Storage Facility  
Project Area: 1,200 square foot lease area (25' x 48' fenced equipment area)

**Chapter 33: Variances**

**Section 33.025 – Criteria for Granting a Variance for a Wireless Communication Facility.**

*No variance to the separation or height requirements for wireless communication facilities shall be granted by the Planning Commission unless it can be shown that the following criteria are met. The criteria for granting a variance to the separation or height requirements for wireless communication facilities shall be limited to this section, and shall not include the standard variance criteria of Section 33.020, Conditions for Granting a Variance that is not for a Sign or a Wireless Communication Facility.*

- (1) *The City may grant a variance from the provisions of TDC 73.470(9), which requires a 1500-foot separation between WCFs, providing the applicant demonstrates compliance with (a) or (b) below.*
  - (a) *coverage and capacity.*
    - (i) *It is technically not practicable to provide the needed capacity or coverage the tower is intended to provide and locate the proposed tower on available sites more than 1,500 feet from an existing wireless communication facility or from the proposed location of a wireless communication facility for which an application has been filed and not*

*denied. The needed capacity or coverage shall be documented with a Radio Frequency report;*

**Response:** Verizon Wireless, the co-applicant, has done extensive research looking at opportunities in the area to collocate on existing towers or buildings, as that is always a preferred option when available. If an existing tower or structure is not available at the specified height or not attainable because of space constraints or unreliable structural design, then Verizon Wireless will propose a new tower. In this instance, there is one existing tower, the ATC tower, which is located outside of the search area designated as usable by Verizon Wireless' RF department, but within the 1,500-foot radius of the proposed facility. This tower is not viable as a solution to meet their coverage and capacity objectives due to the existing trees that would cause interference. There are no other existing towers available to collocate on within the area of interest thus a new tower is being proposed, which will in turn be available for other providers to collocate on in the future.

In order to meet the Verizon's coverage and capacity objectives, it is necessary to site a tower within the search ring provided by Verizon's RF department as shown below. Moving outside this search ring is technically not practicable and has adverse effects on providing the needed coverage and capacity objectives the tower is intended to provide, which include nearby high-traffic residential areas to the North. Siting outside the search ring can also create interference with other nearby network sites where coverage may overlap.

The Applicant is requesting a variance to the 1,500-foot tower separation requirement. There is an existing 146-foot ATC monopole support structure outside of the search ring, approximately 750 feet to the SW of the proposed support tower, located at 10699 SW Herman Road. Per the tower owner, there is currently available space on the tower at the 100-foot level, however this is not high enough to avoid interference from multiple trees surrounding the tower and still meet coverage and capacity objectives to the North, as detailed in the attached RF Usage and Facility Justification Report and RF Engineer Interference Letter.

Locating the tower within the search ring and outside the 1,500-foot radius of the nearby existing ATC tower is also not a desirable alternative as it would mean locating in another part of the ML zone without existing screening or in the RML or RMH zone, where a conditional use permit would be required and where it would be very visible to nearby residential areas.

In addition, T-Mobile has also indicated that they intend on co-locating on the proposed WCF, if approved, as the existing ATC tower to the SW will not meet their coverage and capacity requirements either as noted in the attached Letter from T-Mobile RF.

- (ii) The collocation report, required as part of the Architectural Review submittal, shall document that the existing WCFs within 1500 feet of the proposed WCF, or a WCF within 1500 feet of the proposed WCF for which application has been filed and not denied, cannot be modified to accommodate another provider; and,*

**Response:** The only existing monopole tower located within 1,500 feet of the proposed location cannot be modified as it is not designed to be extended to the necessary height required to avoid interference from the tall trees currently surrounding the tower. The existing tower would need to be removed and replaced with a new tower at least 20-30 feet taller to avoid interference unless the trees were to be removed or reduced in height to approximately the 100-foot level or lower.

**Topping the trees would create undesirable visual impacts to nearby residential areas, whereas the proposed location is well screened to nearby residential areas to the North and does not require the removal or trimming of any existing trees. The topped trees would also create a negative visual impact on their own, as over a third of the height would need to be removed to avoid interference.**

*(iii) There are no available buildings, light or utility poles, or water towers on which antennas may be located and still provide the approximate coverage the tower is intended to provide.*

**Response: No available buildings, light or utility poles, or water towers with adequate height to meet coverage objectives are located in the geographical search ring necessary to provide coverage. See Search Ring and ½ mile radius maps below.**

*(b) site characteristics. The proposed monopole location includes tall, dense evergreen trees that will screen at least 50% of the proposed monopole from the RL District or from a small lot subdivision in the RML District.*

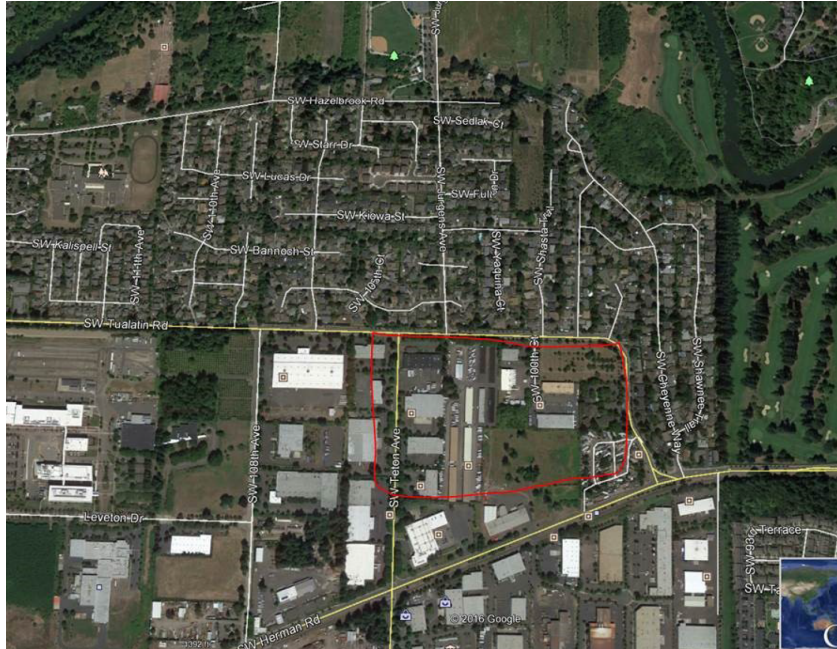
**Response: Application has demonstrated compliance with Section 33.025(1)(a) above, however proposed location also meets this requirement and includes tall, dense evergreens trees that will screen at least 50% of the proposed monopole from adjacent residential areas. The proposed support tower is sited in the least intrusive location possible to cover the gap in coverage and capacity.**

*(2) The City may grant a variance to the maximum allowable height for a WCF if the applicant demonstrates:*

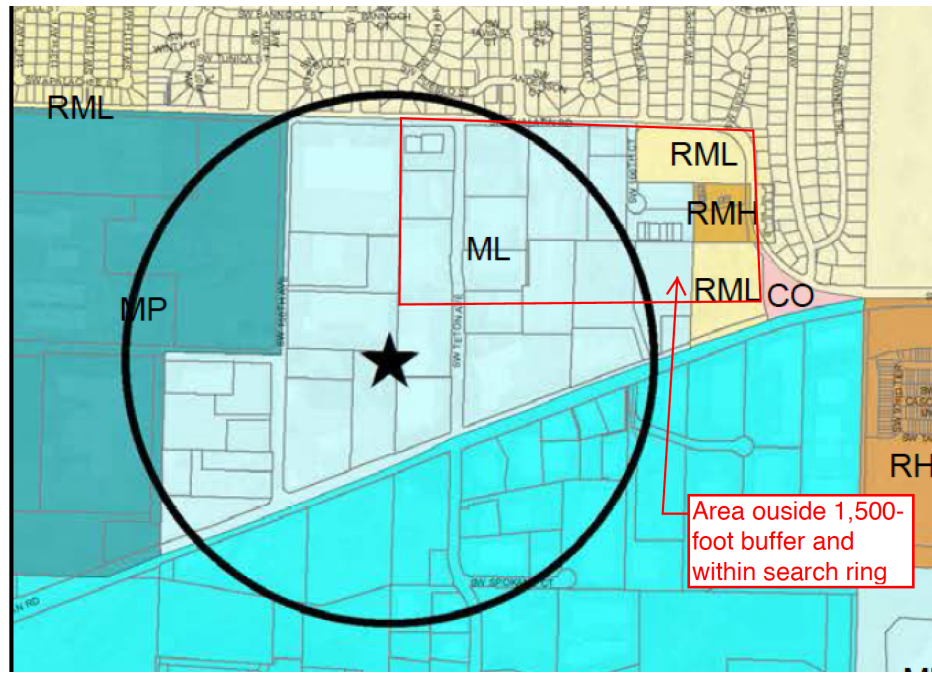
- (a) It is technically not practicable to provide the needed capacity or coverage the tower is intended to provide at a height that meets the TDC requirements. The needed capacity or coverage shall be documented with a Radio Frequency report; and,*
- (b) The collocation report, required as part of the Architectural Review submittal, shall document that existing WCFs, or a WCF for which an application has been filed and not denied, cannot be modified to provide the capacity or coverage the tower is intended to provide.*

**Response: Not applicable – Applicant is not requesting a variance to the maximum allowable height for the proposed WCF.**

**VERIZON SEARCH RING**



**EXISTING TOWER 1,500' RADIUS WITH VERIZON SEARCH RING OVERLAP**





**½ MILE RADIUS OF PROPOSED TOWER**



# **RF Usage and Facility Justification**

## **Durham**

**Prepared by Verizon Wireless Walid Nasr**

**Jun 14, 2017**

**verizon<sup>v</sup>**

## Introduction:

There are two main drivers that prompt the need for a new cell site. One is coverage and the other is capacity.

**Coverage** is the need to expand wireless service into an area that either has no service or bad service. The request for service often comes from customers or emergency personnel. Expansion of service could mean improving the signal levels in a large apartment complex or new residential community. It could also mean providing new service along a newly built highway.

**Capacity** is the need for more wireless resources. Cell sites have a limited amount of resources to handle voice calls, data connections, and data volume. When these limits are reached, user experience quickly degrades. This could mean customers may no longer be able to make/receive calls nor be able to browse the internet. It could also mean that webpages will be very slow to download.

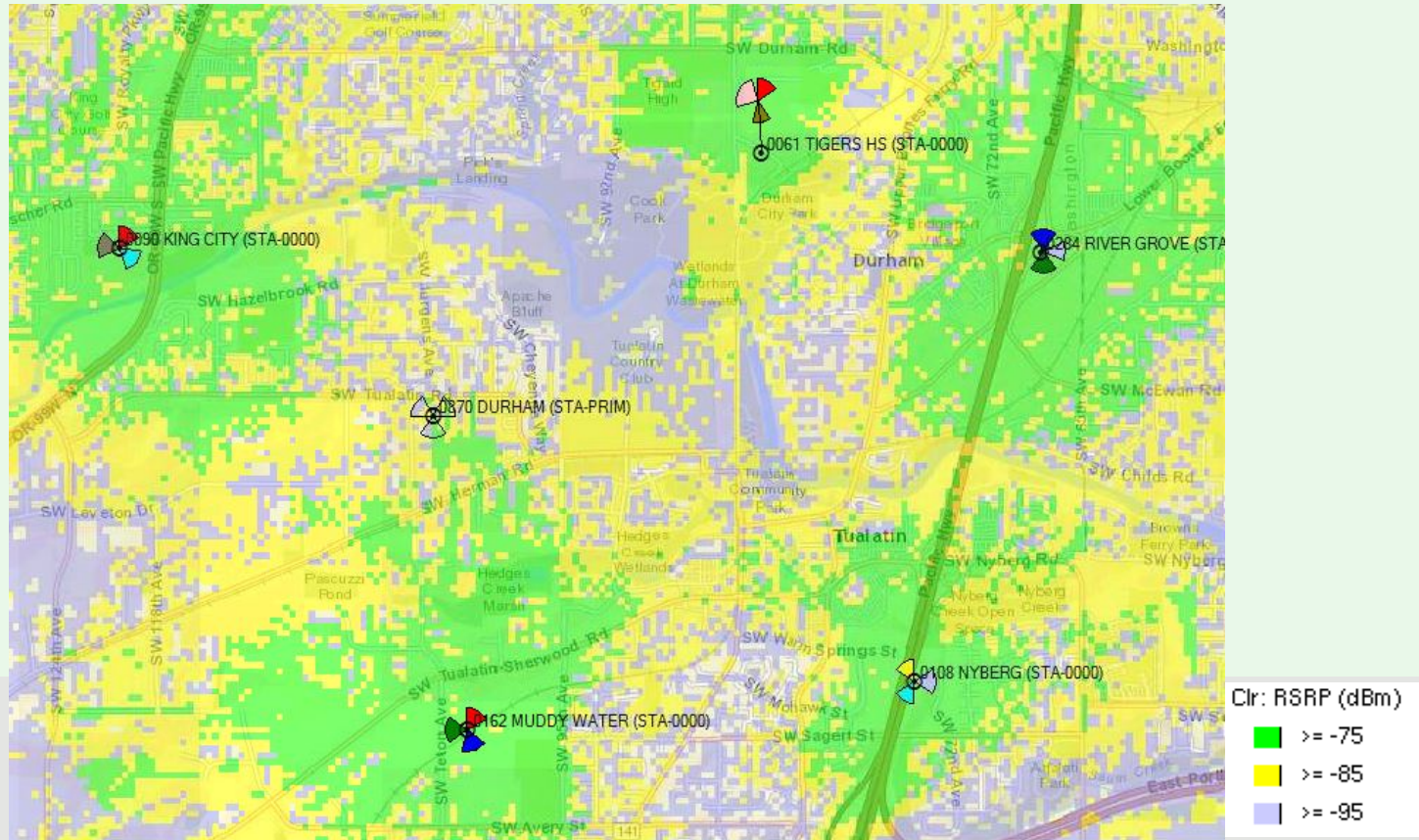


**Capacity** is the amount of resources a cell site has to handle customer demand. We utilize sophisticated programs that use current usage trends to forecast future capacity needs. Since it takes an average of (1-3) years to complete a cell site project, we have to start the acquisition process several years in advance to ensure the new cell site is in place before the existing cell site hits capacity limits.

**Location, Location, Location.** A good capacity cell site needs to be in the center of the user population which ensures even traffic distribution around the cell. A typical cell site is configured in a pie shape, with each slice (aka. sector) holding 33% of the resources. Optimal performance is achieved when traffic is evenly distributed across the 3 sectors.

# Coverage Area of Existing Site

The proposed Durham site is a capacity site. This site will offload the existing sites King City, Muddy Water, TigerHS.

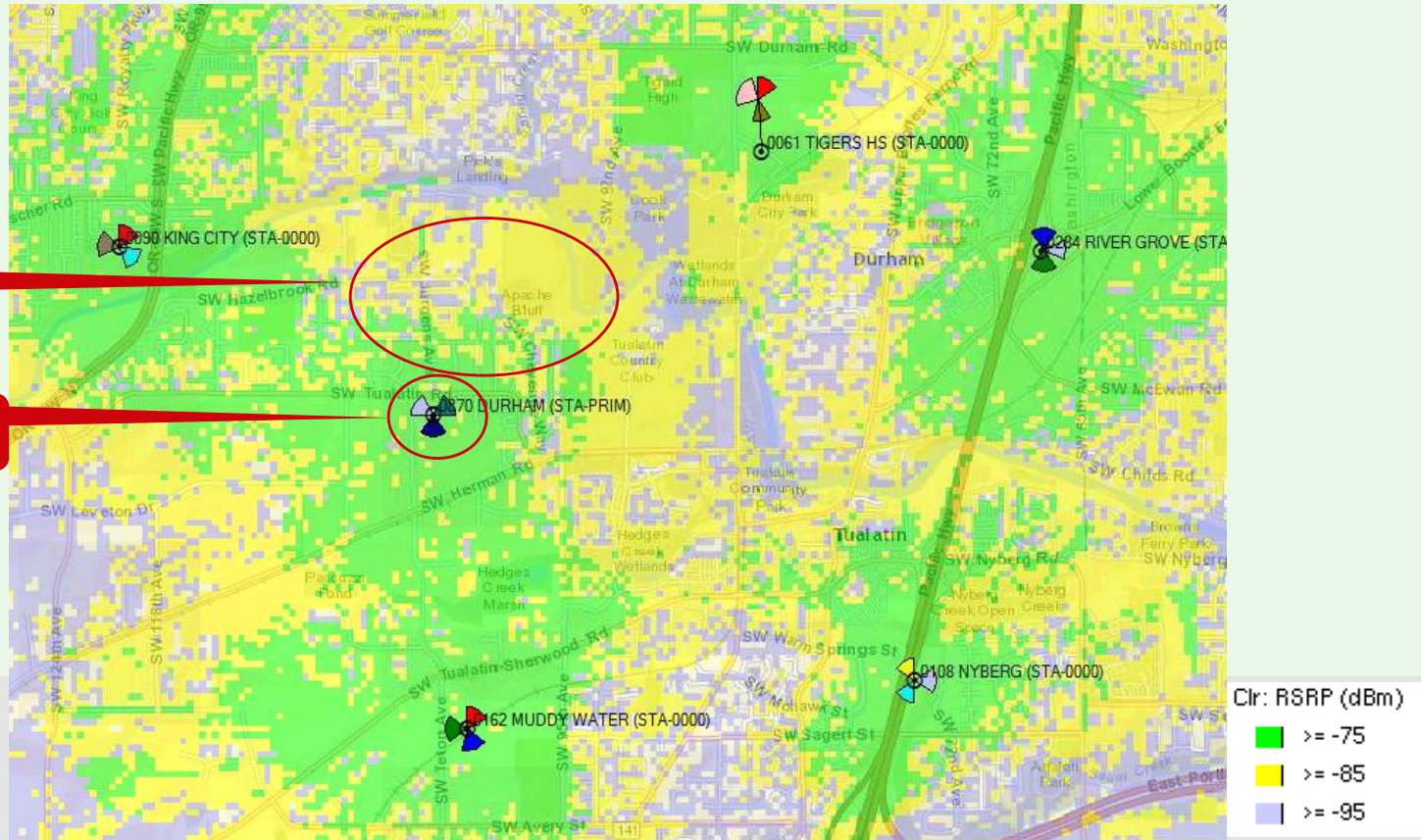


# Coverage Area Offloaded by New Site

The proposed Durham site is a capacity site. This site will offload the existing sites King City, Muddy Water, TigerHS.

Residential area

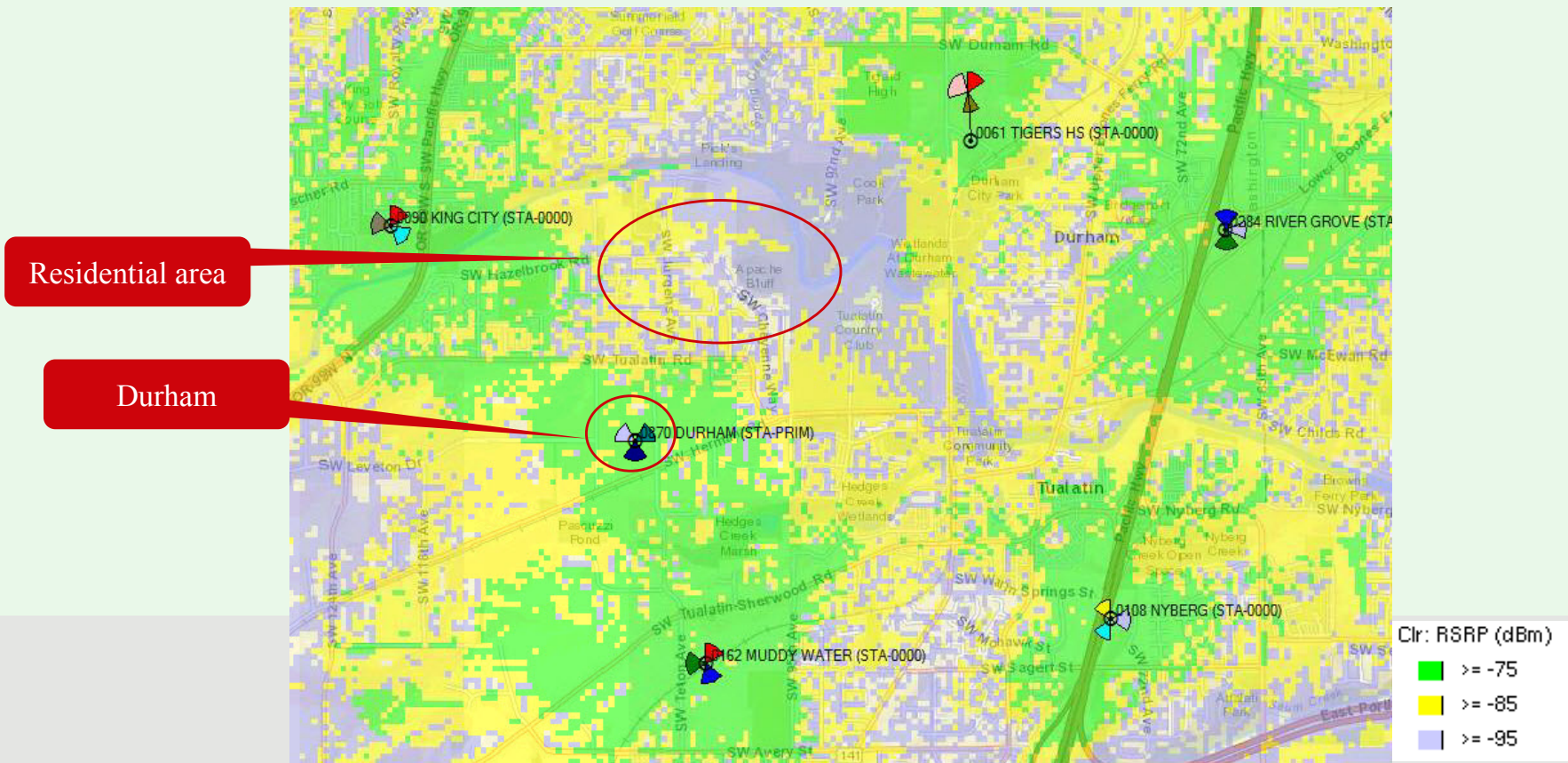
Durham





## Coverage Area Offloaded by New Site at New Proposed Location

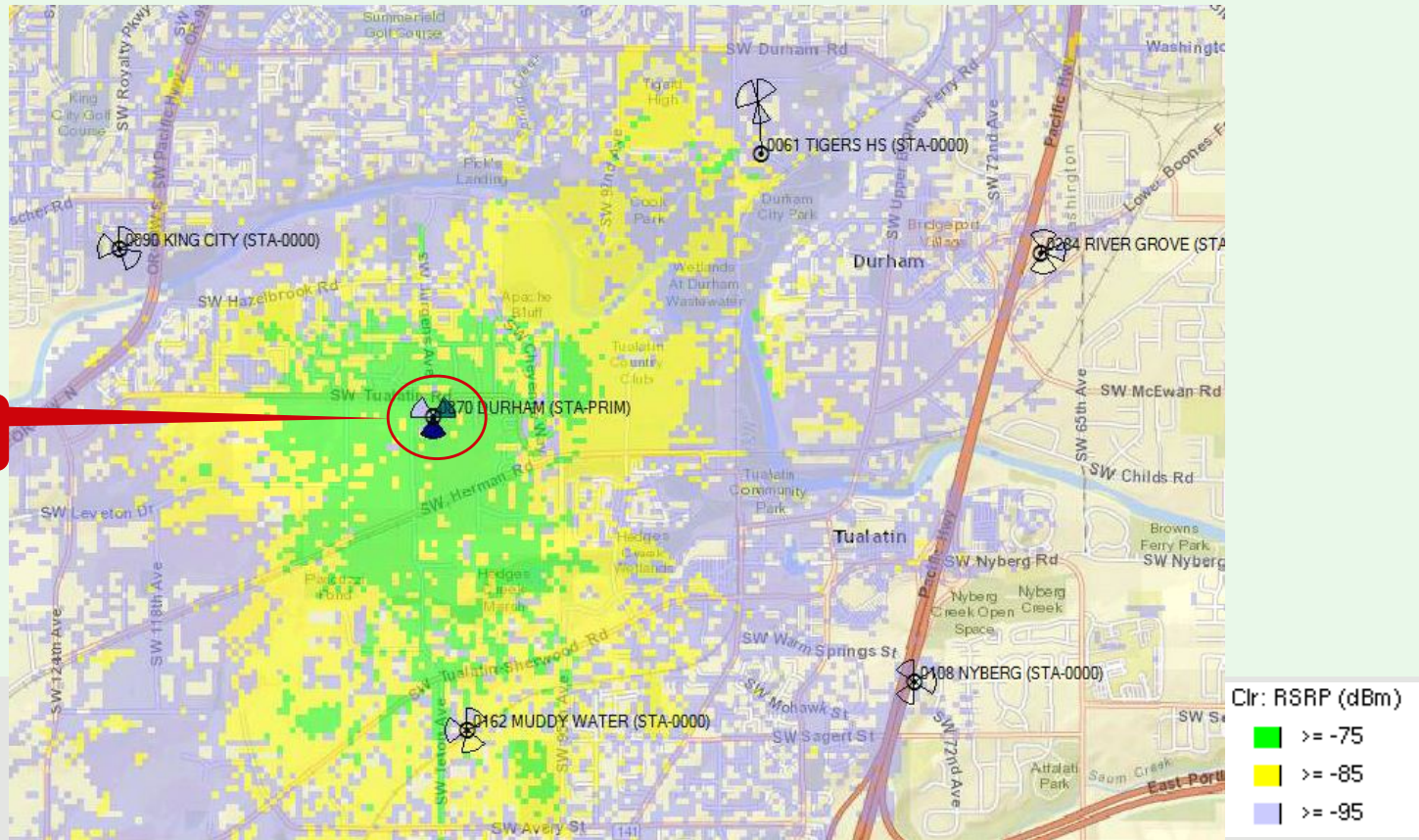
The proposed Durham site is a capacity site. This site will offload the existing sites King City, Muddy Water, TigerHS.



Marginal coverage in residential area due to surrounding trees at existing ATC tower

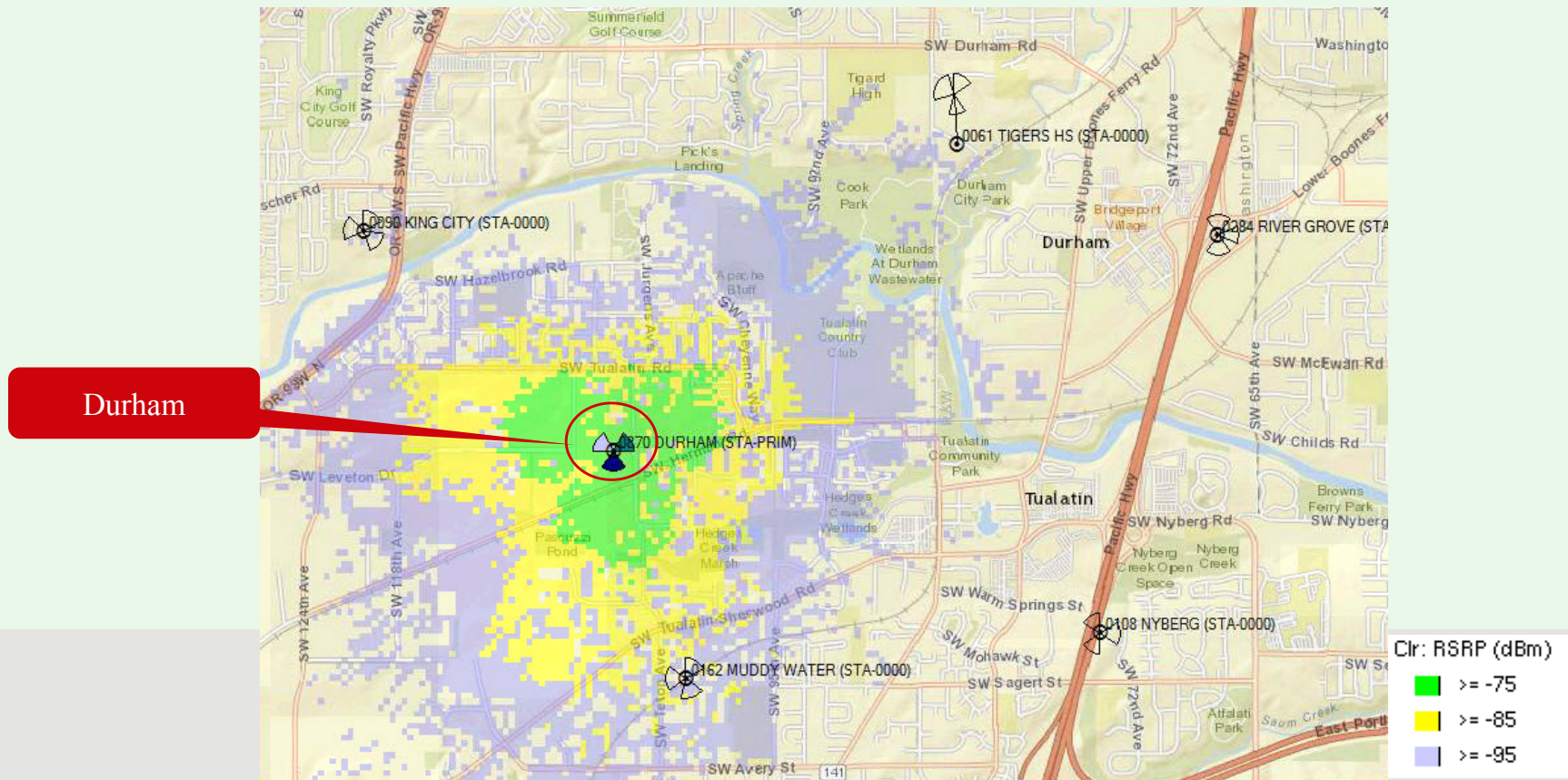
# Coverage with Durham Site

Durham





# Coverage with Durham Site at New Proposed Location



## Need Case for: Durham

**Summary:** The existing sites King City, Muddy Water, TigerHS cannot carry the data traffic that exists in the area it serves.

**Detail below:**

- Exact data about sites is proprietary and cannot be disclosed due to competitive reasons.
- The existing cell sites King City, Muddy Water, TigerHS are forecasted to reach capacity in the near future.
- The new cell site Durham will provide additional resources to existing sites. It will take some users off of existing sites, which will alleviate the capacity constraint.
- This will improve customer experience (faster webpage downloads and fewer drop calls).
- Without the new site Durham, existing sites in area will reach capacity which will negatively impact customer's ability to make/receive calls and browse the internet.

**Andrew H. Thatcher**  
*Environmental Health Physics*

July 13, 2017

To:

Acom Consulting, Inc.  
5200 SW Meadows Rd  
Suite 150  
Lake Oswego, OR 97035

Acom consulting has requested that I review the existing antenna site at 10699 SW Herman Road, Tualatin OR, and evaluate the interference potential due to the existing tree canopy as shown in Figure 1. In performing this evaluation I'll review the basics of wireless transmission, what cellular technology can compensate for and what results in a deficient site. Included in the review is Verizon's propagation models<sup>1</sup> for both their proposed Durham site and the existing ATC tower.

In a perfect world for wireless transmission, an un-attenuated radio signal would be sent by the antenna and received by the user without any interference. This is rarely the case as buildings, hills and trees all combine to make the signals propagate along multiple pathways. The three primary components of signal propagation paths are reflection, diffraction and scattering. Reflection occurs from large smooth surfaces such as roadways or buildings. Diffraction occurs when a large object is in the direct line of sight path, such as a hill or building. Scattering occurs when the radio waves contact objects similar or smaller than the wavelength of the frequency of interest. For wireless transmission that can be from 700 MHz (~17" wavelength) to 2100 MHz (~6" wavelength). Scattering would be the dominant interaction with trees while all sources of interference serve to attenuate the signal to some degree with each interaction.

So the presence of trees creates scattering which causes signal distortion in addition to signal attenuation. The transmitted signals received by the end user (a person's cell phone) will consist not only of the original (un-attenuated) signal but also several secondary signals traveling on different paths. These multi-path signals, since they are a result of scattering (since we're concerned with the effects of trees), travel a longer signal path and therefore arrive at an end user (cell phone) later than the original un-attenuated signal. These late signal arrivals become interference and can result in distortion of the original signal. This type of distortion is frequency dependent with greater distortion occurring at higher frequencies. Multi-path signals are a common occurrence in our environment but such multi-path signals are due to stationary objects such as homes, rooftops, and even trees at a distance. Such distortions can readily be corrected due to the use of a RAKE<sup>2</sup> receiver in the phone. However, for a tree canopy in a near field environment such as in Figure 1 the obstruction is not constant but in fact continuously

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<sup>1</sup> Propagation modeling provided by W. Nasr, Verizon RF Engineer, 7/5/2017.

<sup>2</sup> Briefly, RAKE receivers are used in the receiver phones of Code Division Multiple Access (CDMA) systems. The receiver collects and treats each time shifted version of the original signal as an independent signal and then combines them into a single signal provided the delay is not too long.



changing. The result is scattered signals that may be stronger than direct signal due to signal attenuation since the tree canopy density is not uniform and the signals going through the tree will be attenuated differently. Further, the motion of the trees with wind presents a continuously changing foliage density that results in selective signal fading with time. For the tree canopy shown in Figure 1, the near field environment could easily result in signal attenuation of 10 dB to as much as 20 dB. Combine this attenuation with the constantly changing signal fading environment and the result in a constantly changing delay (due to wind) that the RAKE receiver would have difficulty separating as noise. Reviewing Figure 1 again and one can see that the antennas are near the tops of the trees so the tree movement would include swaying of the trees in addition to individual branch movements.

Figure 2 is the predicted propagation to the residential location of interest from the existing antenna located within the trees. Figure 3 shows the same residential area with the antenna located in the proposed location. Both figures are provided to support the previous qualitative analysis. The figures show that the Reference Signal Received Power (RSRP) is at least 10 dBm lower for each location. Note that this analysis does not consider the effect of wind.

Trees at a distance from the antennas may present acceptable interference as the overall impact could be managed. For antennas placed well beneath the tree canopy in a near field environment affecting all three radiating sectors, it would be difficult to envision a wireless network that could compensate for these factors, the presence of wind, and remain effective in terms of capacity for the site and successful integration with the surrounding wireless sites. The attenuation and scattering of the signal through the trees would result in a lower transmitted power level that could not be improved by increasing the power as that would only serve to also increase the power of the multipath signals. In short, such a setup in the trees would present a problem regardless of the transmitted power level.

To summarize, the existing ATC tower is not a suitable antenna site without substantial modification based on the information provided in this report.



Figure 1: Photo of existing tower surrounded by a dense tree canopy in a near field environment

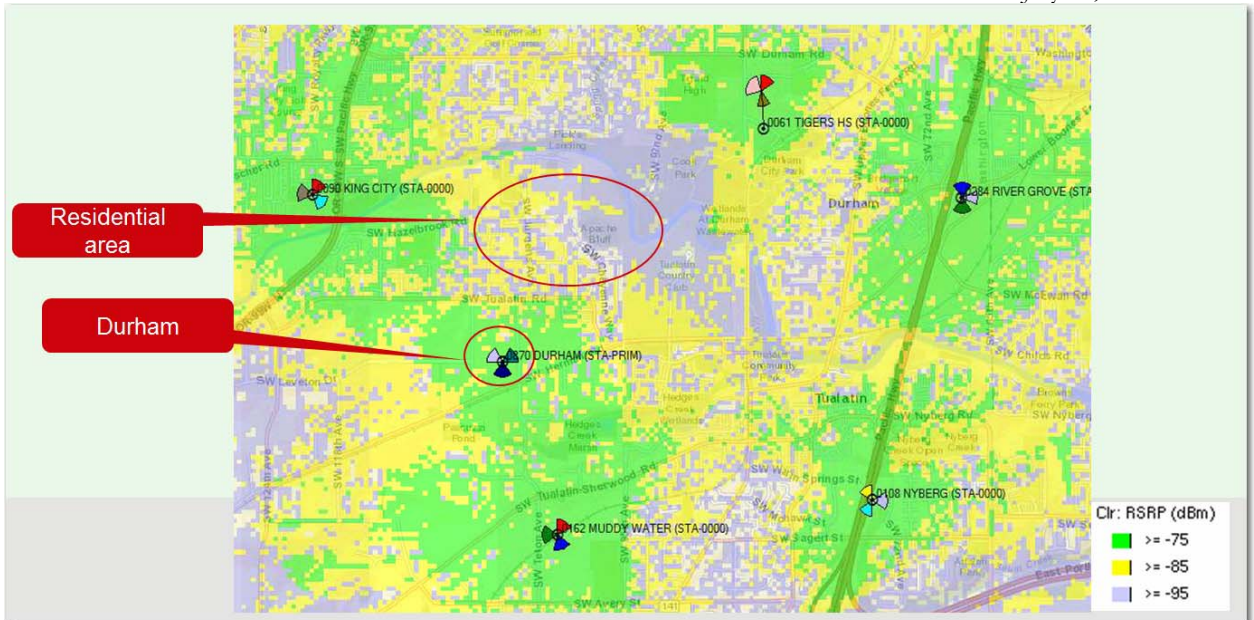


Figure 2: Predicted propagation model showing the residential area of interest from the existing antenna.

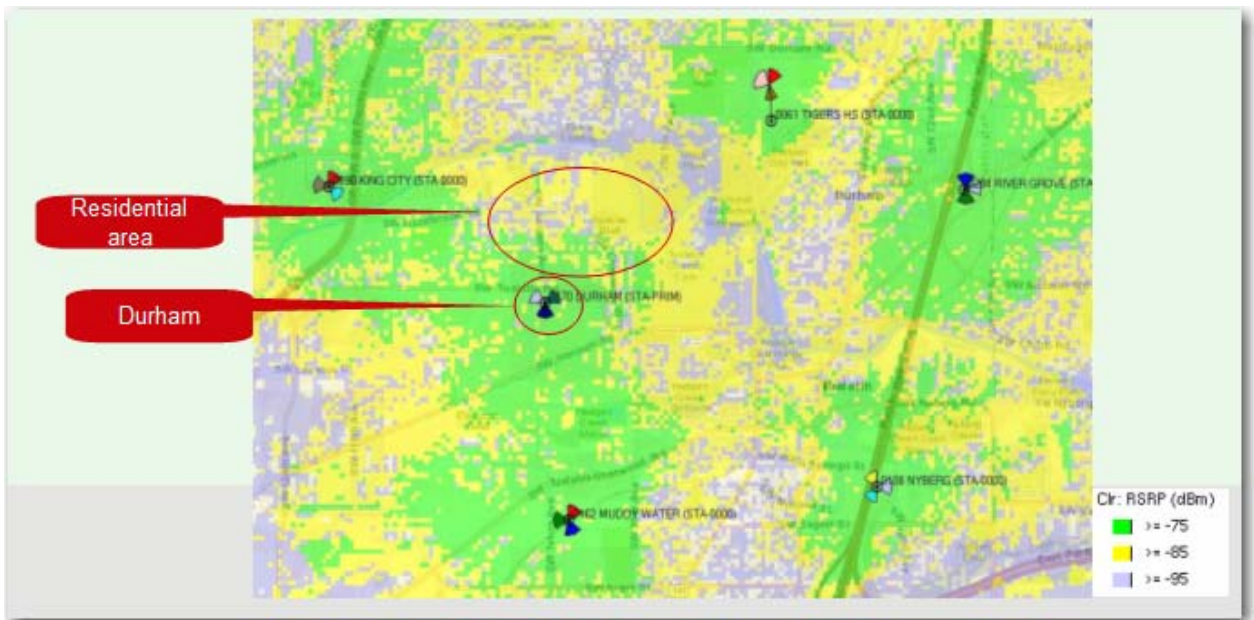


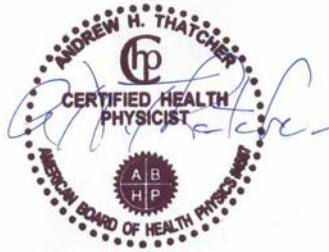
Figure 3: Predicted propagation model showing the RSRP for the residential area of interest with the proposed antenna location.



## Qualifications

I am a member of the IEEE, the Institute of Electrical and Electronics Engineers as well as a member of the Health Physics Society. I am a board certified health physicist with a masters in health physics from the Georgia Institute of Technology. I have over 29 years of experience in the evaluation of both ionizing and non ionizing radiation sources. I am a consultant to the ACGIH Threshold Limit Values for Physical Agents Committee as well as a non ionizing subject matter editor for the Health Physics Journal.

Regards,



Andrew H. Thatcher, MSHP, CHP



September 12, 2017

RE: PI Tower Development Project OR-Tualatin-Durham / 10290 SW Tualatin Road

To Whom It May Concern:

T-Mobile West LLC has been seeking to address a significant gap in network coverage in and around the subject vicinity. After assessing the viability of the existing infrastructure in the area, we have identified the proposed PI Tower Development wireless telecommunications facility to be located at 10290 SW Tualatin Rd in Tualatin, Oregon, as the only candidate that will address and eliminate this network gap in coverage. As a result, once the site is completed, T-Mobile intends to proceed with entering into a lease agreement with PI Tower Development and ultimately install equipment on site.

Best regards,

A handwritten signature in black ink, appearing to read 'Julio Brown', written over a horizontal line.

Julio Brown  
Sr. RF Engineer  
T-Mobile West LLC  
Portland, Oregon