

RF Usage and Facility Justification

TUMALT

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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.

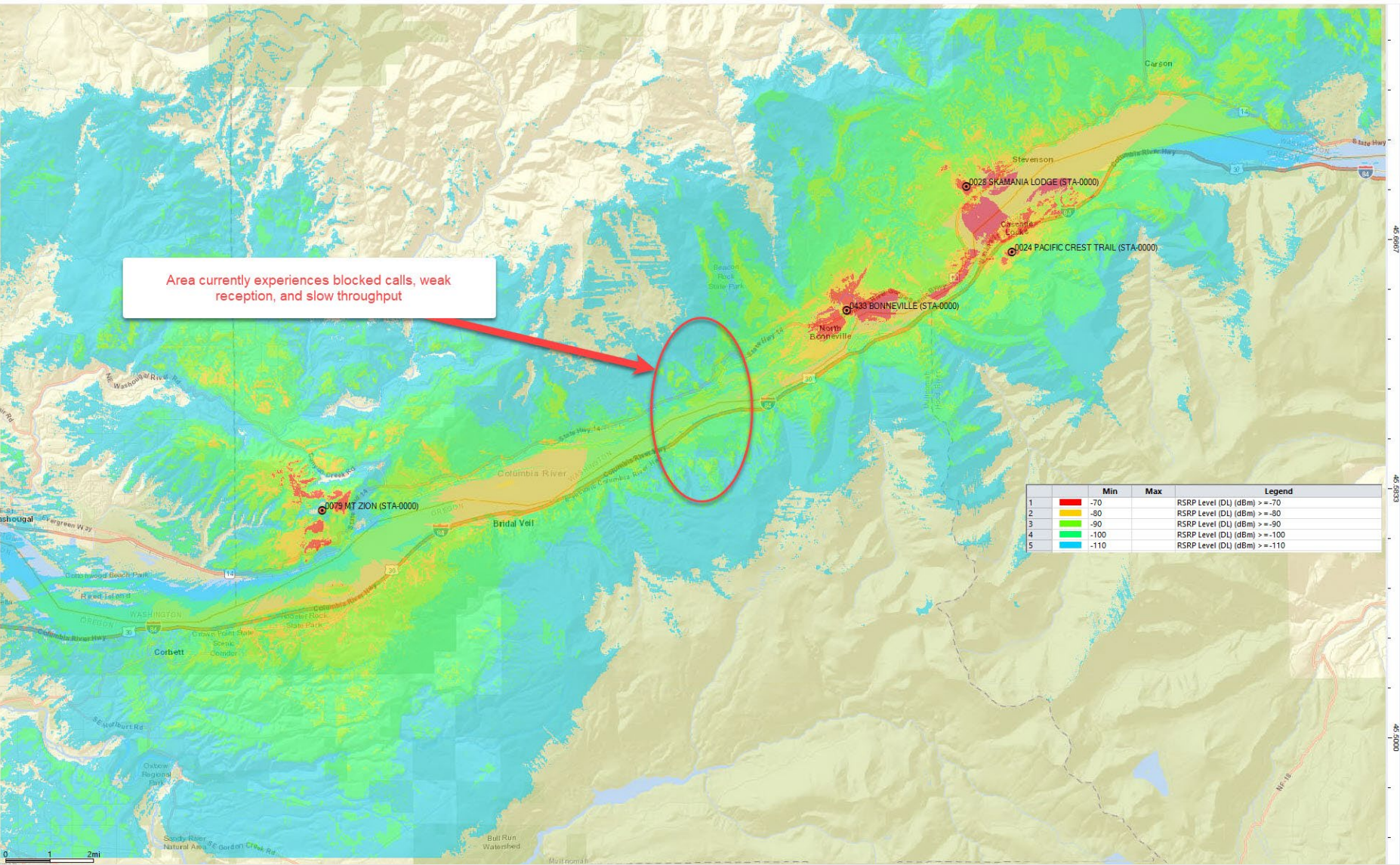
Capacity is the need for more wireless resources. Cell sites have a limited amount of resources to handle voice calls, data connections, and data volume. When these limits are reached, user experience quickly degrades. This could mean customers may no longer be able to make/receive calls nor be able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

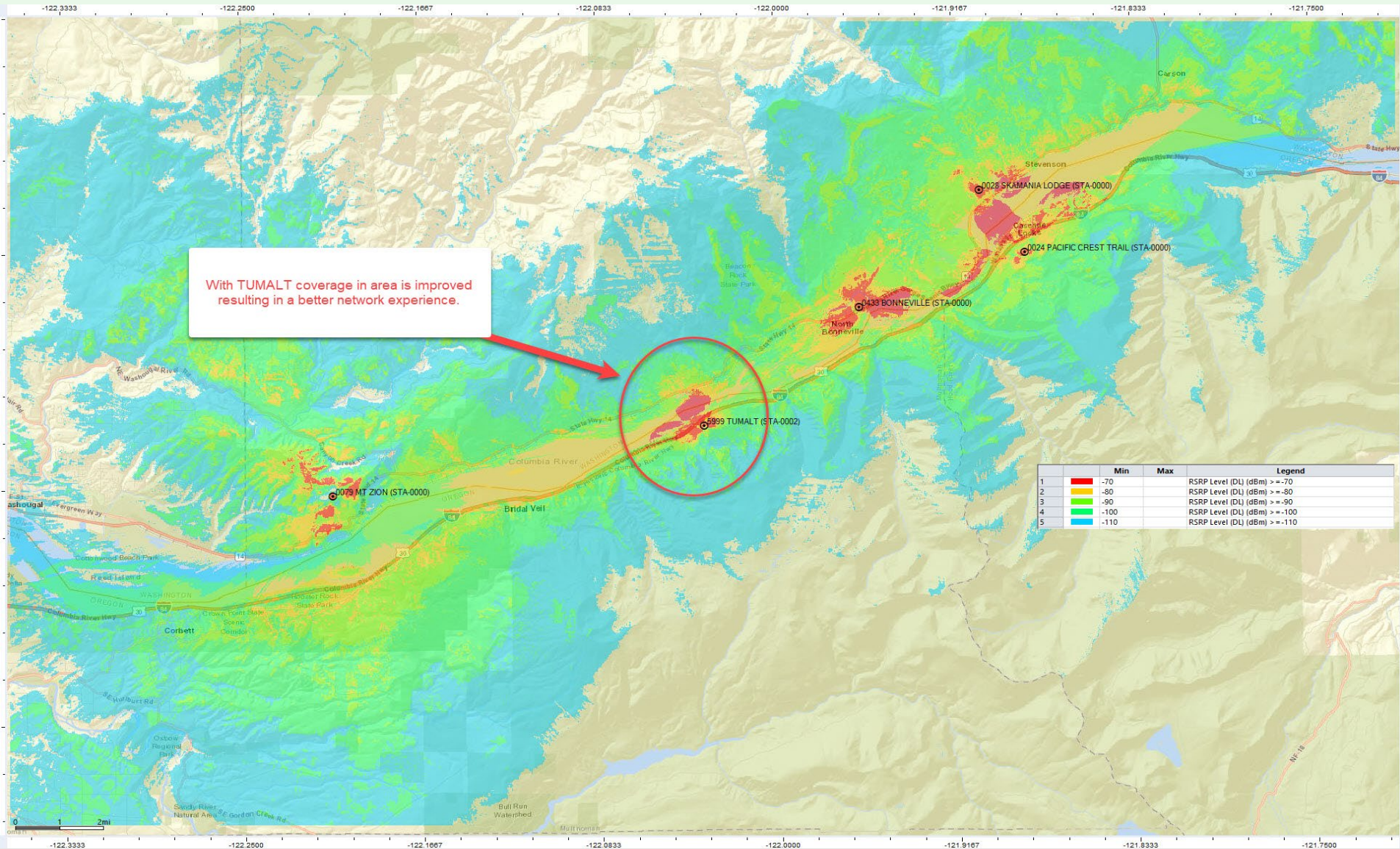
Location, Location, Location. A good capacity cell site needs to be in the center of the user population which ensures even traffic distribution around the cell. A typical cell site is configured in a pie shape, with each slice (aka. sector) holding 33% of the resources. Optimal performance is achieved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

Coverage Area of Existing Sites

The proposed TUMALT location is a coverage site.
This site will improve coverage along I-84 in Oregon and
SR14 in Washington.



Coverage with TUMALT added



Need Case for: TUMALT

Summary: The existing sites in the area do not adequately cover I-84 in Oregon or SR 14 in Washington.

Detail below:

- Exact data about sites is proprietary and cannot be disclosed due to competitive reasons.
- The new cell site TUMALT will provide additional resources along I-84 and SR14 . Surrounding sites do not adequately service this busy interstate. The importance of these routes increases during winter and fire seasons.
- This will improve customer experience (faster media downloads, quicker uploading of posts, more seamless video experiences)
- It is generally accepted that a RF antenna systems performance is negatively impacted by vegetation. Broadleaf and conifer trees attenuate and scatter RF signals resulting in degraded performance. Placing antennas above a tree line generally results in better performance such as fewer blocked calls and faster web surfing with less latency. Reducing vegetative attenuation can help reduce the number of needed antenna locations to achieve coverage goals.