




City Manager/General Manager | 334 Front Street, Ketchikan AK 99901 | (907)228-5603

## TRANSMITTAL MEMORANDUM

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TO: The Honorable Mayor and City Council

FROM: Lacey G. Simpson, Assistant City Manager Initials: 

DATE: March 29, 2023 File #: MGR23-167

RE: **4G-LTE Coverage, Options and Costs**

At the special budget meeting of the City Council on December 14, 2022, Councilmember Bradberry commented on the lack of adequate 4G-LTE coverage in the Bear Valley/ Sesame Street neighborhood and inquired if there are plans for addressing this. Attached for City Council review is a transmittal memorandum from Telecommunications Division Manager Dan Lindgren regarding wireless coverage in this area as well as the division's plans and thoughts on coverage enhancements for this and other sites in the community.

Mr. Lindgren will be attending the City Council meeting of April 6, 2023, should City Councilmembers have any questions and/or concerns.



**KPU Telecommunications**

2970 Tongass Avenue  
Ketchikan, AK 99901

Phone (907) 225-1000

Fax (907) 225-1788

**Memorandum**

**To:** Delilah Walsh, KPU General Manager

**From:** Dan Lindgren, KPU Telecommunications Division Manager

**Date:** March 24, 2023

**Subject:** **Report to City Council on 4G-LTE Coverage, Options and Costs**

The purpose of this memorandum is to inform the City Council of the 4G-LTE network status, options for increasing coverage and related costs.

**Background:**

At the City Council budget meeting on December 14, 2022 it was requested that the KPU Telecom Division advise the City Council regarding 4G-LTE coverage, build options and costs. The area of concern was Sesame Street below the library.

KPU started providing 4G-LTE service on May 5, 2014 through the LTE in Rural America (LRA) program with Verizon Wireless. KPU has continually operated the LRA network since, and has developed several additional sites since that initial roll out to increase coverage and capacity. The most recent additions include a new site in Ward Cove so that we could accommodate the additional traffic, while maintaining our Key Performance Index (KPI) metrics. We will be building a site on Thimbleberry Rd. this year to enhance signal coverage in the South Point Higgins area, which we had identified as our most significant coverage problem. Our current coverage map is included and we have the best coverage of all three providers in Ketchikan.

The options we have for deploying new sites falls into 4 main categories:

- Remote sector site: This deployment utilizes a 2212 radio and sector antenna. These systems are high power and utilize a sector antenna with a footprint that typically requires a larger tower or building structure. The cost to build a full sector site is approximately \$60,000, and would have a direct annual operating cost of approximately \$18,000.
- Microsite: This deployment utilizes a 4402 radio (4 X 5 watt) that runs on Band 4. It has a small range and does not penetrate buildings well. We deployed this system at the library and skate park. The cost to build a microsite is approximately \$30,000, and would have a direct annual operating cost of approximately \$6,000.

- Radio Dots: This deployment is generally utilized for high density public areas such as a stadium or large commercial building. We have not deployed radio dots in the KPU RAN network at this point. We have requested quotes for this system, but have not received them yet. This system would not be suitable for outdoor areas.
- In Home Signal Booster: We have utilized the weBoost home model in limited cases where there was a KPU business necessity to have more reliable cellular service at a location. Customers may purchase these devices themselves as well. They typically utilize an external antenna and are able to boost the already existing service. The home model sells for about \$350 and may be installed by the homeowner. There are more expensive devices that serve a larger areas and support more devices.

We continue to look at areas that could use signal enhancement including in the Bear Valley neighborhood. We did build a microsite at the Skate Park, and also at the top of Schoenbar Bypass due to regular call drops on 3<sup>rd</sup> Ave.

Our radio frequency (RF) propagation study in the Sesame Street area generally indicates a -85 signal strength that should support light building coverage. Unfortunately there are countless variables that can effect coverage at a specific location such as device, vegetation, buildings, weather, etc. Every customer will have unique experiences on a cellular network. We did make test calls from a vehicle and are were able to maintain calls throughout the neighborhood without a call drop.

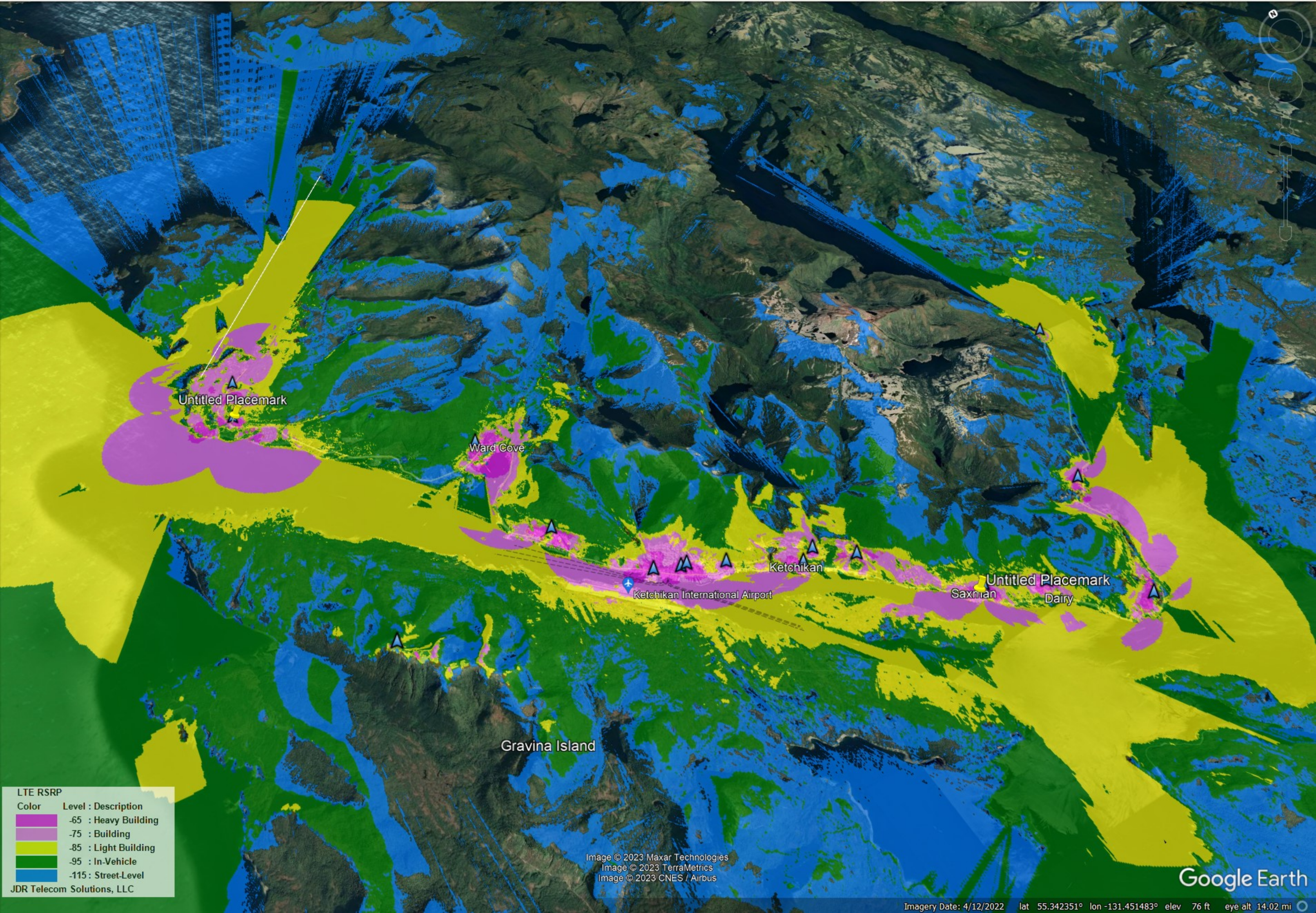
To help customers in weaker signal areas we recommend changes to phone settings (Wi-Fi calling on, roaming on). Signal boosting equipment will also help with in-building service.

The KPU provided radio access network (RAN) that supports Verizon devices is far better than the other local providers' coverage and signal strength. KPU very much cares about the quality of the KPU provided RAN services and complies with the stringent KPU metrics that are contractually required by Verizon.

The 2023 budget for 4G-LTE was targeted to refresh the backup battery systems and old model radios which have already been deferred and are critical. To the extent we may accomplish more with the 2023 budgeted funds we could certainly look at other signal enhancement projects.

Cc: Lacey Simpson, Assistant KPU General Manager  
Michelle Johansen, Finance Director





LTE RSRP	
Color	Level : Description
Red	-65 : Heavy Building
Orange	-75 : Building
Yellow	-85 : Light Building
Green	-95 : In-Vehicle
Blue	-115 : Street-Level

JDR Telecom Solutions, LLC

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