

You Need Coverage Where?

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N260

Presented by:

Adam Nelson
Senior Consultant
Federal Engineering, Inc.

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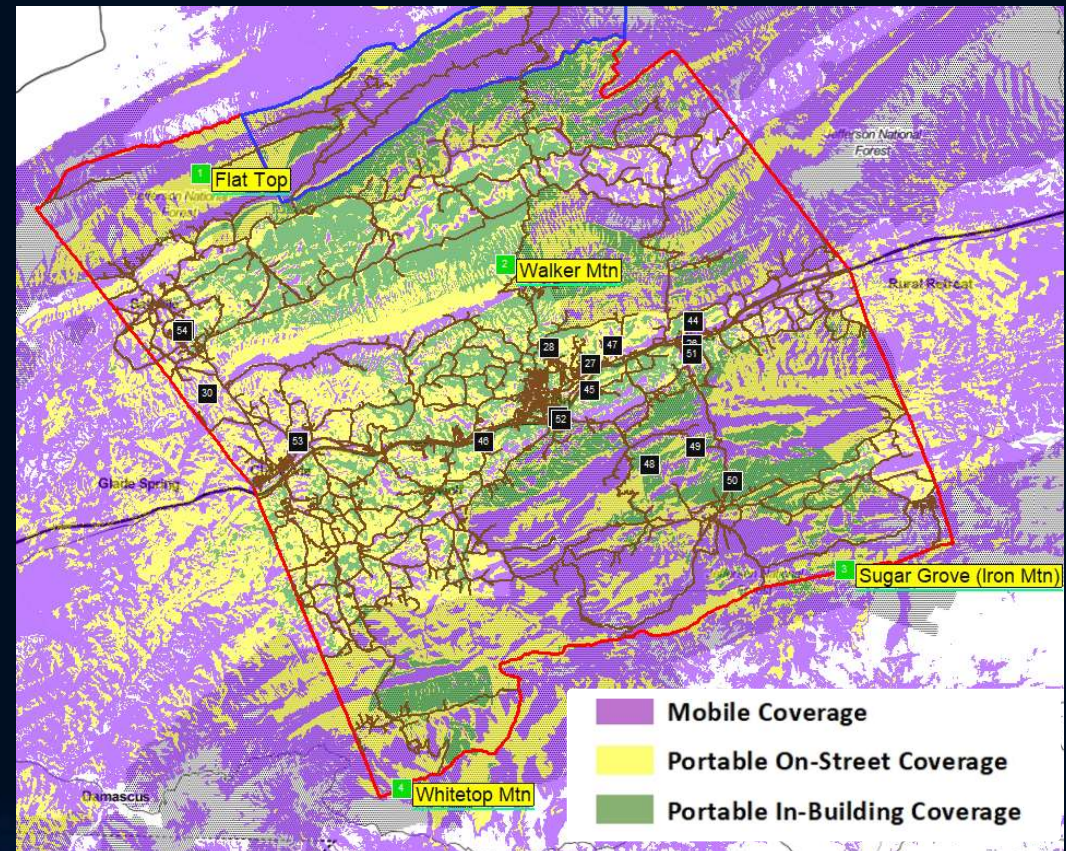
TOPICS

- DESIRED COVERAGE GOALS
- HURDLES WHEN GOING AFTER GOALS
- TYPICAL COVERAGE TARGETS
- HURDLES WHEN TRYING TO MEET TARGETS
- OTHER POSSIBLE COVERAGE TARGETS
- OVERCOMING THE GAP



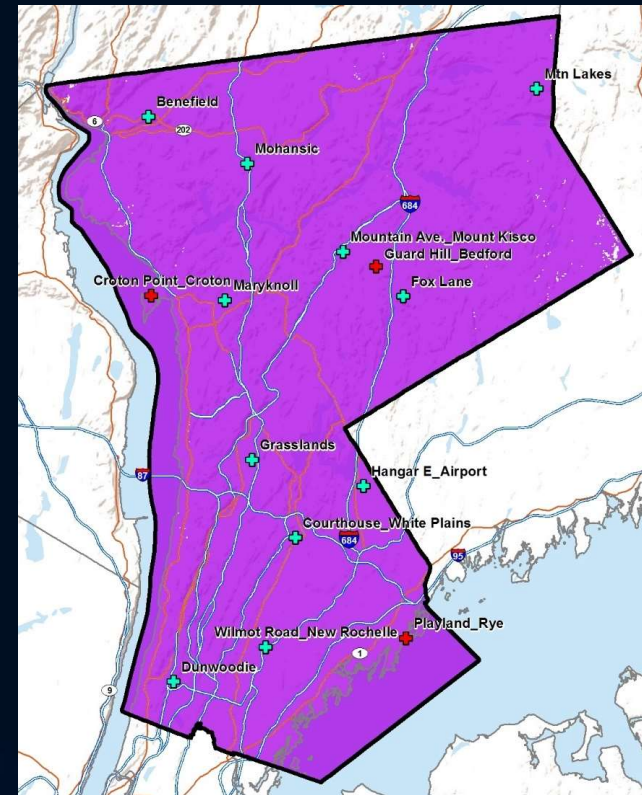
Frequently Desired Coverage Goals

- Improvements that Provide:
 - 100% Geographic Area Coverage in the Service Area
 - Coverage in 100% of All Buildings



Hurdles when Going After Coverage Goals

- RF is finicky
 - Fading
 - Interference
 - Atmospheric effects
- 100% coverage is not often practical or attainable
- **Maps might show it, but system vendors won't guarantee it (not without big bucks)**

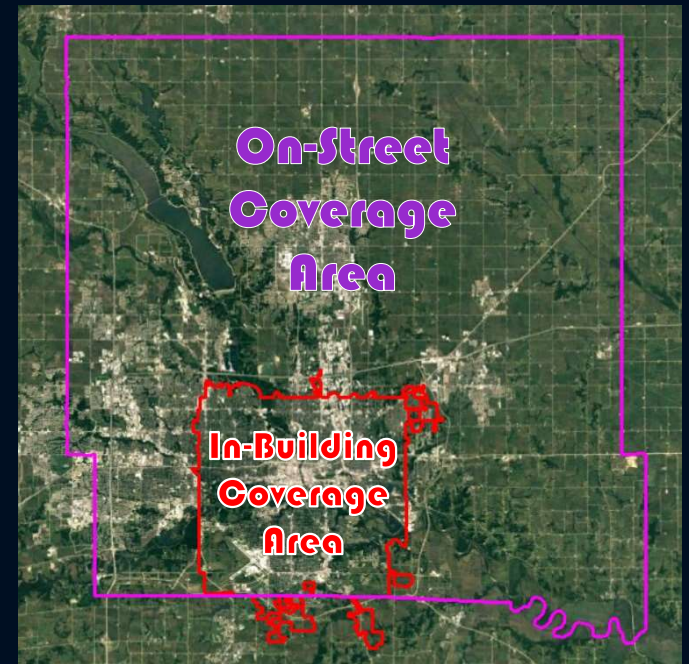


Hurdles when Going After Coverage Goals

- Building the amount of RF sites needed to meet very high coverage goals can be expensive (or impossible)
 - Local Zoning
 - Not In My Back Yard (NIMBY)
 - Connectivity
 - “Greenfield” Site Issues
 - Power
 - Site Conditions
 - Spectrum Availability

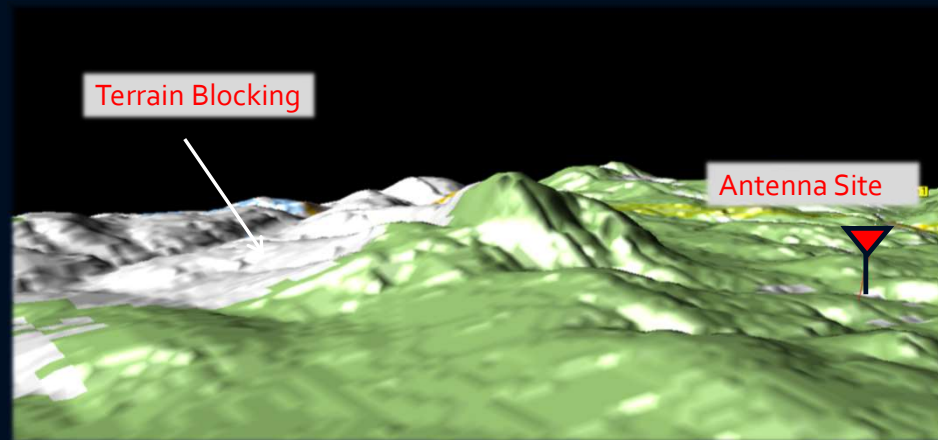
Common Coverage Targets

- 95% of Geographic Area with a Specified Audio Quality
- Portable On-street coverage, but maybe not in ALL buildings
- Portable In-building coverage in certain areas (city limits, downtown)
- Specific building coverage (e.g., BDAs, DAS)



Hurdles when Trying to Meet Coverage Targets

- Terrain
- Land Cover (Buildings, Trees, Etc.)
- Site Availability
- Costs
- Diminishing Returns



Green = Signals are strong
No green = Signals are weak or gone altogether

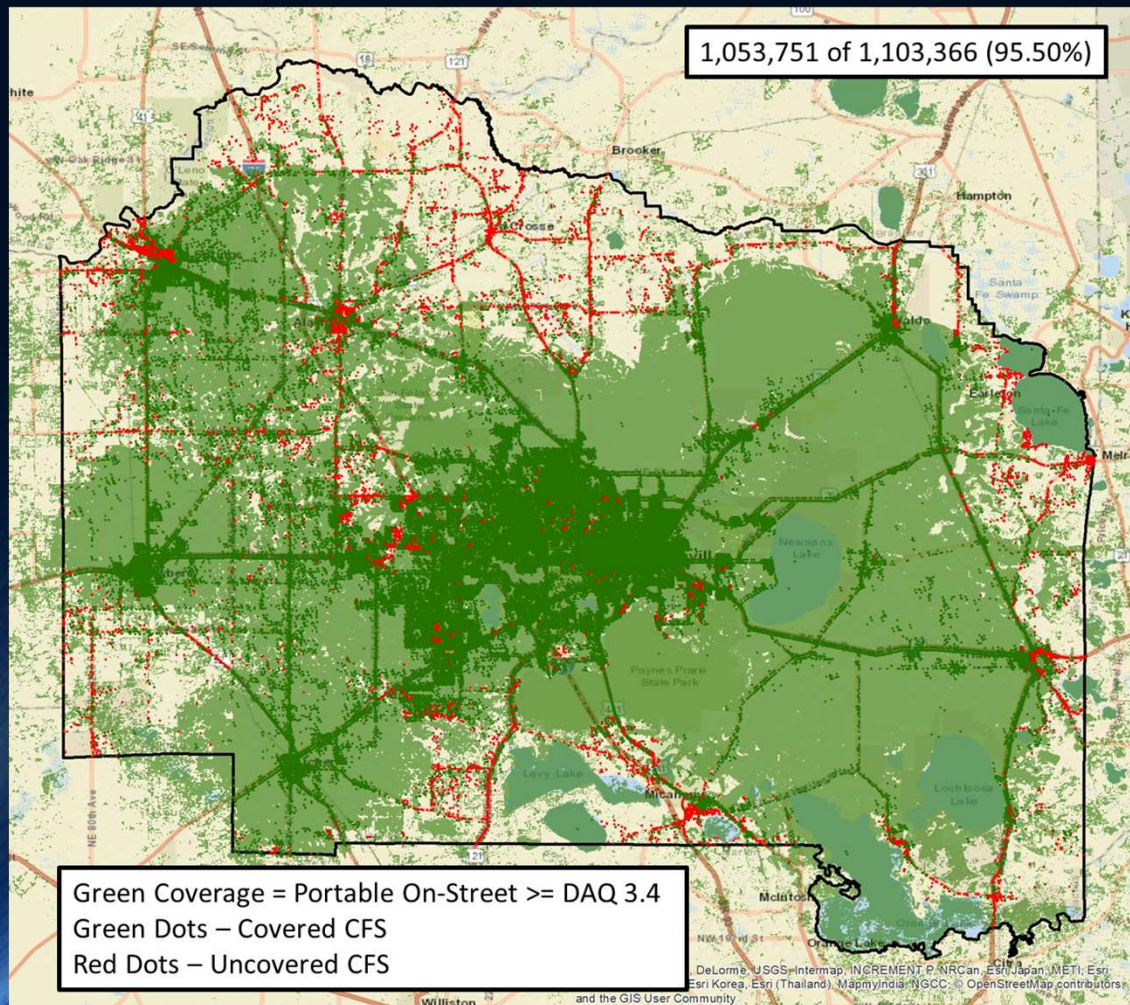
How to Determine Other Possible Coverage Targets

- Use the info you have available to you
 - Publicly available datasets
 - System reports
 - Commercial datasets
 - GIS data

Calls for Service (CFS)

- Dataset of Response Calls, typically coded with lats/longs and/or addresses
- Where to get it:
 - System reports (e.g., CAD, AVL/GPS, NMS)
- **Example Target: Provide Portable On-Street Coverage over 95% of all CFS**

Calls for Service (CFS)



- 81% Coverage over Service Area
- 95.5% CFS Covered

Population Centers

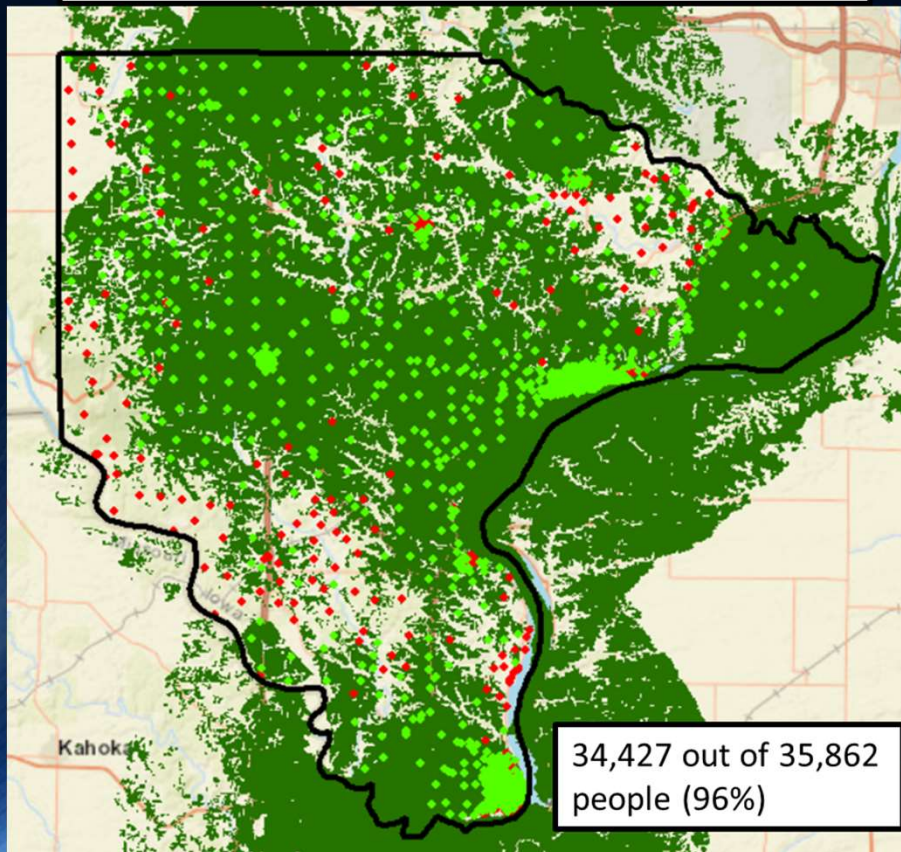
- Municipal boundaries, Neighborhoods, US Census Blocks
- Sources
 - USGS, Census Bureau, local government GIS clearing houses
- **Example Target: Provide Portable In-Building Coverage over 95% of all US Census Block Centers within Service Area**

Population Centers

Green Coverage = Portable In-Building \geq DAQ 3.4

Green Dots – Covered Census Block Centroids

Red Dots – Uncovered Census Block Centroids

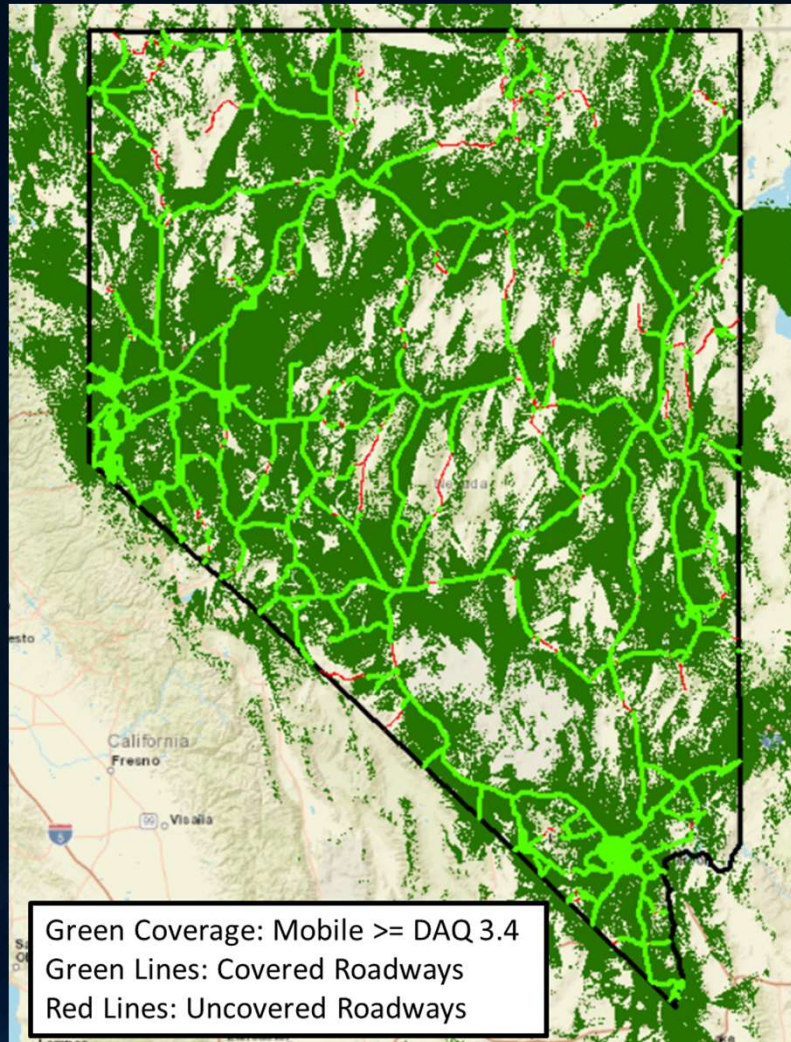


- 75% Coverage over Service Area
- 96% Census Block Centers Covered (in-building)

Roadways

- Interstates, US highways, State highways, major roads, all roads
- Sources
 - USGS, government GIS clearing houses
- **Example Target: Provide Mobile Coverage over 95% of all Roadways in an Area**

Roadways



- 65% Coverage over Service Area
- 97% Total Roadway Miles Covered (Mobile)

Where the People Go

- Geo-tagged images, location-based posts, congregation areas
- Sources
 - Volunteered Geographic Information (VGI)
 - APIs from social media sites
 - Local knowledge
- Issues:
 - Availability/usability/reliability of data
 - Is the data representative of the general population?
 - May be too granular

Where the People Go



- Heat map of walking/running routes
- Source: Strava (fitness app)

Performing the Analysis

- Acquire the data
- Review it in GIS/mapping software
 - Esri, Google Earth, QGIS
- Analyze potential coverage with propagation analysis software
 - EDX, Atoll, ATDI, Spectrum-E, RanPlan

Overcoming the Gap

- In-building Antenna Systems
- Low-profile sites/microcells
- Vehicular Repeaters
- Commercial networks (terrestrial or satellite)
- FirstNet
- Wi-fi

Conclusion

- Building a system that provides 100% coverage everywhere, while ideal, is not always practical, feasible, or economical.
- If desired goals can't be reached, make sure the coverage goes where you need it.

Questions



Contact Information



Adam Nelson, Senior Consultant

- Direct: 540-809-6096
- Email: anelson@fedeng.com

