

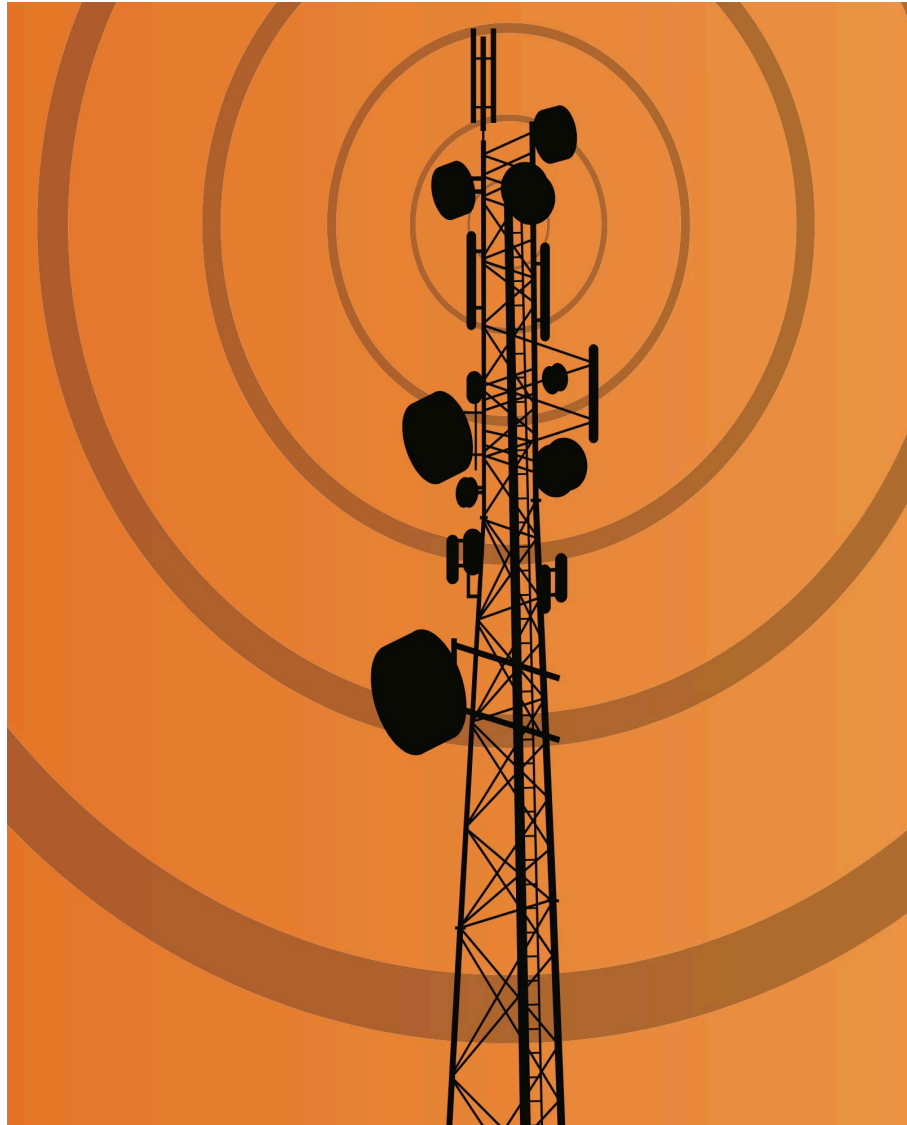


Dodge County, Wisconsin

*Phase 1 – Report Presentation to
Board of Supervisors
August 19, 2025*



tusa | Consulting Services
Raising the Bar in Critical Communications



Agenda:

- Introduction
- Needs Assessment Overview and Approach
- Radio System Review
 - Site Visits
 - User Interviews
 - Conceptual Designs
 - Conceptual Budgets

Needs Assessment

Overview of our Approach

- Investigation
- Interview
- Inspection

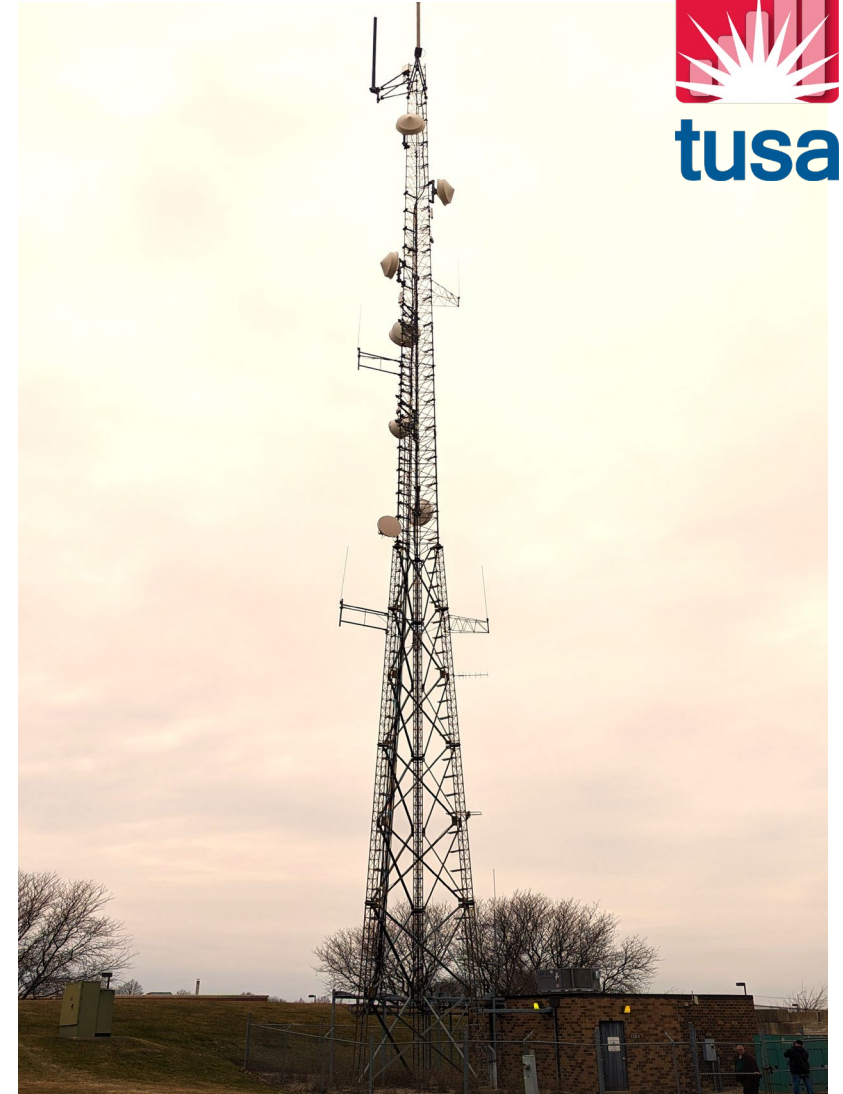


Needs Assessment Site Visits

TUSA visited the following sites:

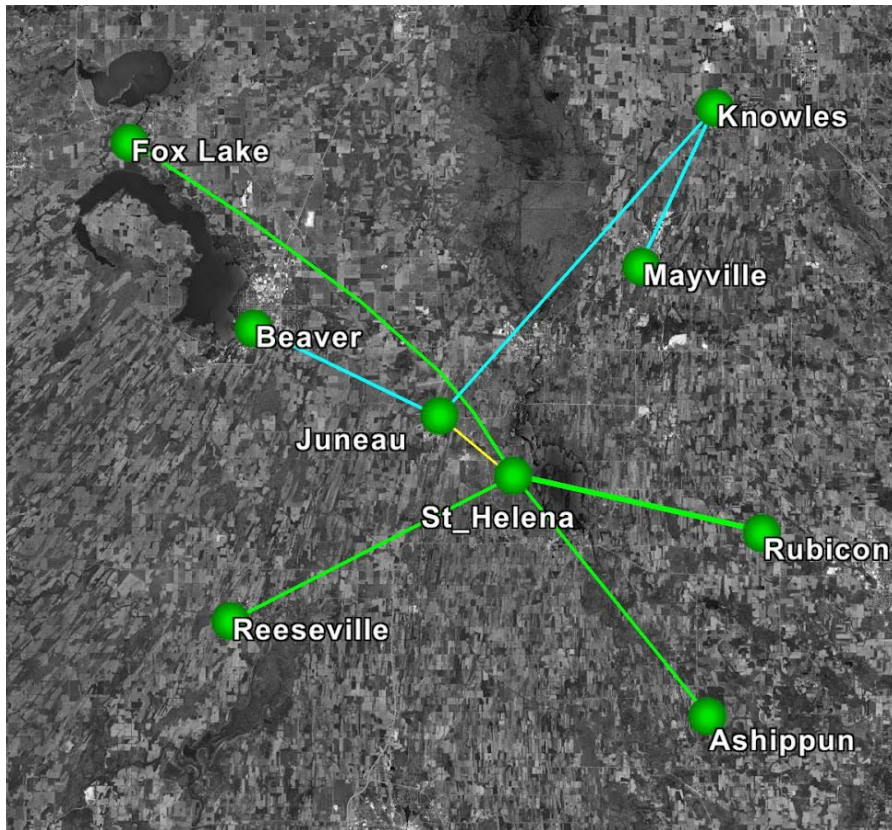
- Fox Lake
- Knowles
- Mayville
- St. Helena
- Rubicon
- Dispatch Center
- Juneau
- Beaver
- Reeseville
- Ashippun

Site condition details provided in report.



Needs Assessment Site Visits

Current VHF Simulcast System Configuration



Needs Assessment Site Visits (Highlights)

- System Preventative Maintenance – Several Years Behind
- Subscriber Preventative Maintenance – Non-existent
- Site Grounding – needs attention (not following industry standards and best practices)
- Generators – many not suited for modern day communication networks
- Civil Maintenance – needs attention
- Microwave – End of Life (scheduled for replacement)
- Consoles – Approaching End of Life 2030
- Base Station Repeaters – Approaching End of Life 2034

Needs Assessment User Interviews

- Online Questionnaires
- Face to Face Interviews with:
 - Department Heads (including EOC)
 - Sheriff
 - Local Law Enforcement
 - Fire and EMS
 - Dispatch
 - Roads and Bridge
 - Other County Users

Identified Radio User Needs



Coverage – There is inadequate coverage to support safe operations throughout the City, especially in building coverage.

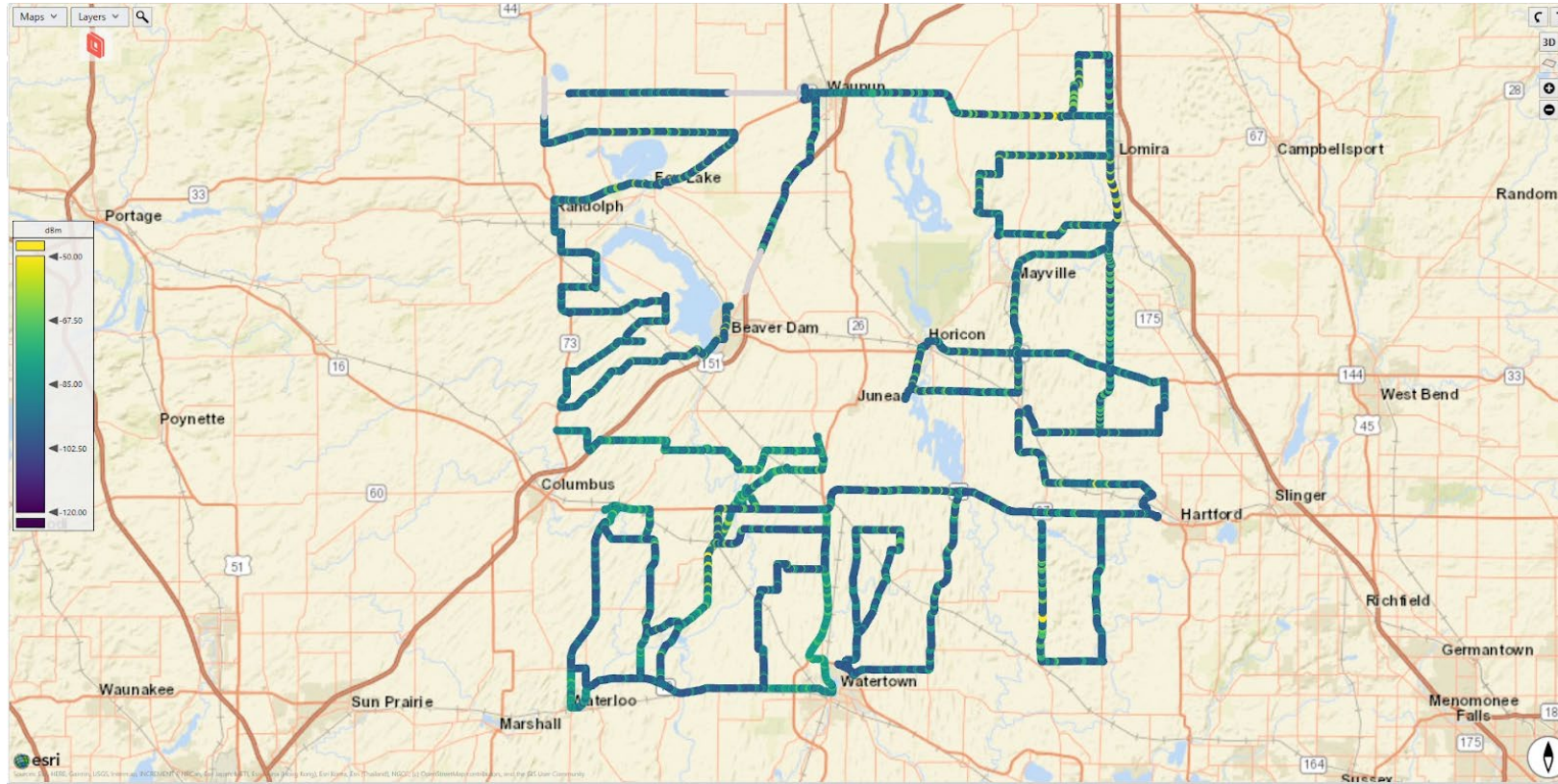
Audio Quality – Users experience broken and poor audio quality creating difficulties when communicating.

Interoperability Issues – Users struggle to communicate with the surrounding counties and the State.

Reliability/Performance – Users experience unreliable communications when operating in different parts of the city.

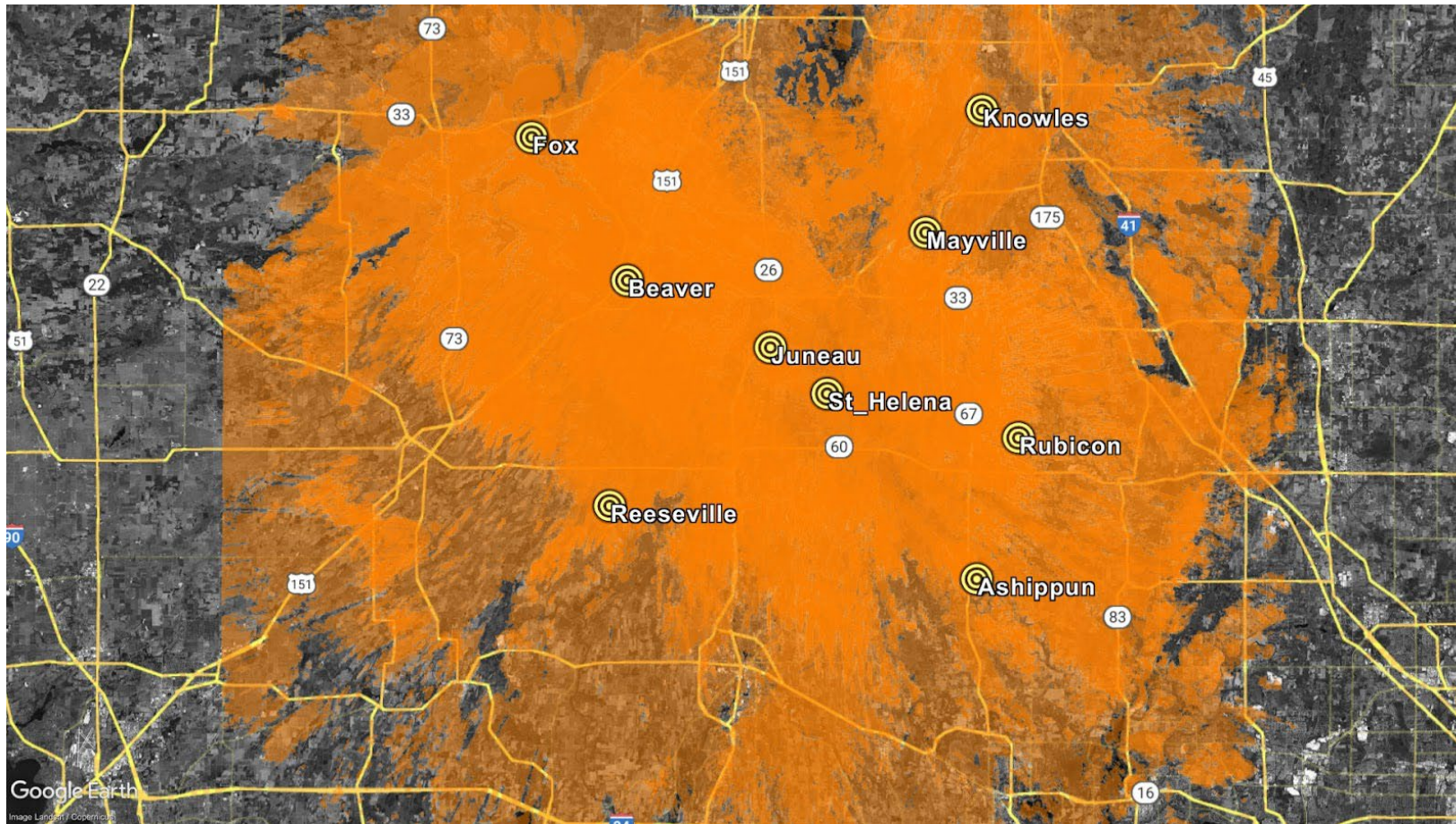
Training – Users found it difficult to use radios on incidents and to find common channels.

Coverage – Current System Coverage Drive Testing



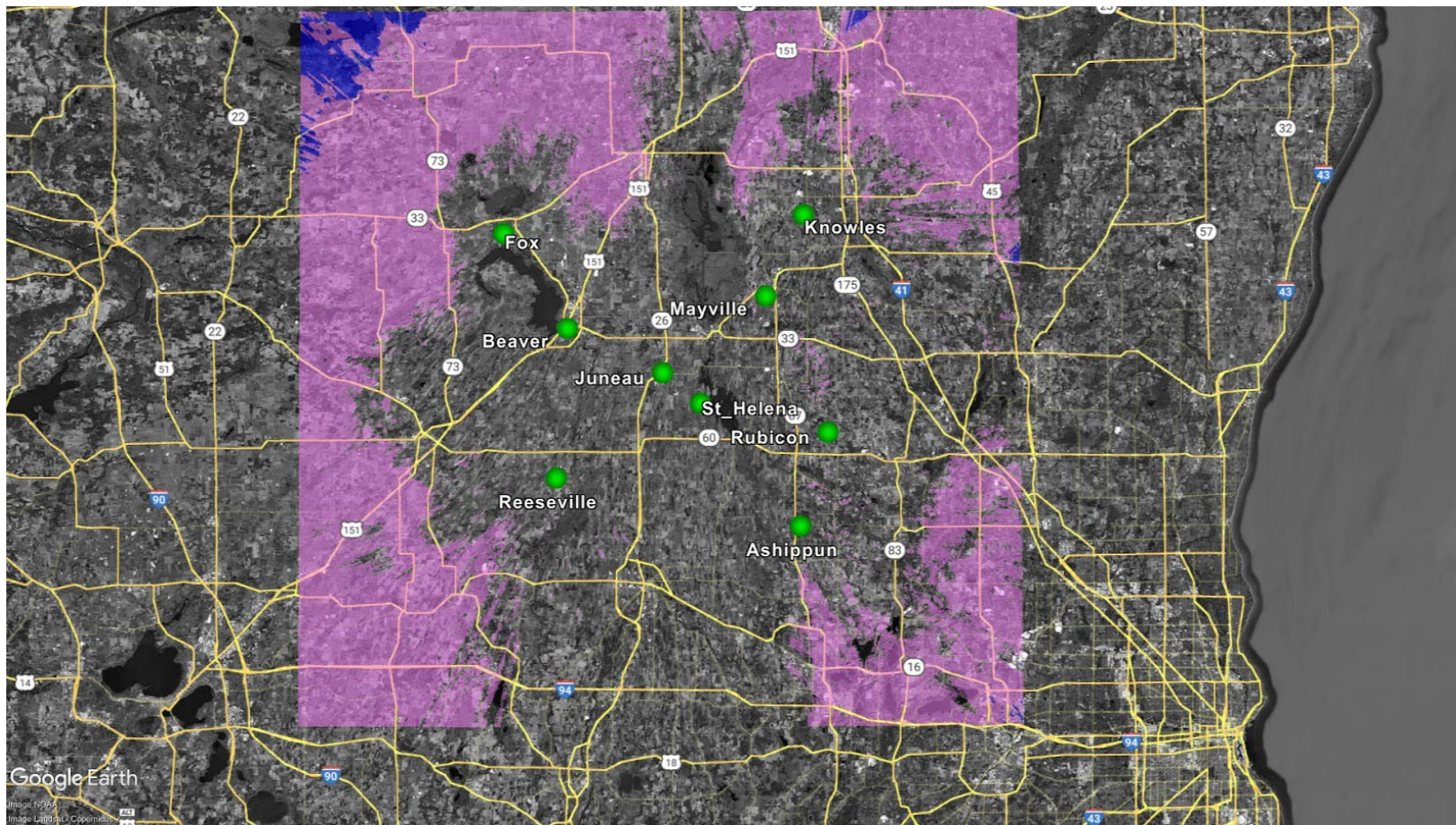
Measured Signal throughout the County

Coverage – Current System



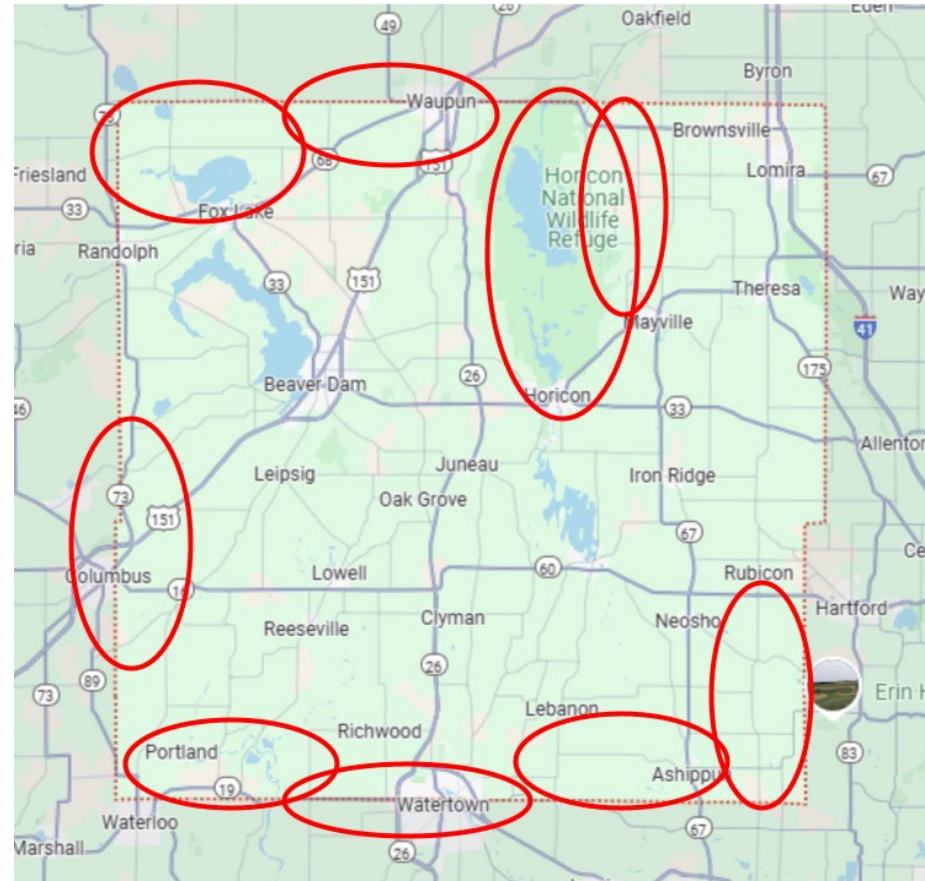
Predicted 9 site VHF Portable on-hip Talk Out - 10db Buildings

Coverage – Current System (Time Delay Interference/TDI)



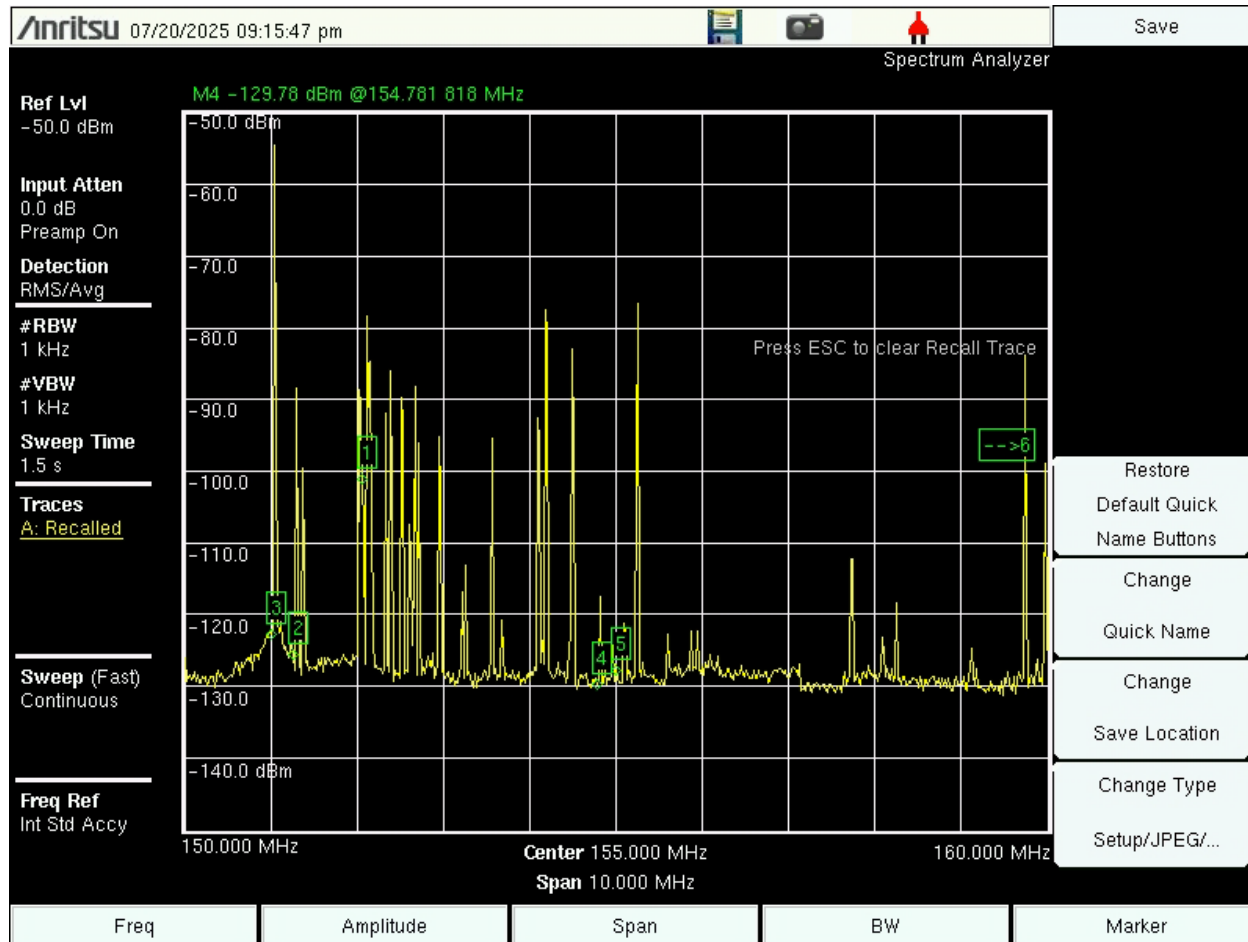
9 site VHF Simulcast TDI

Coverage – Current System (Identified Concerns)



Areas of Concern

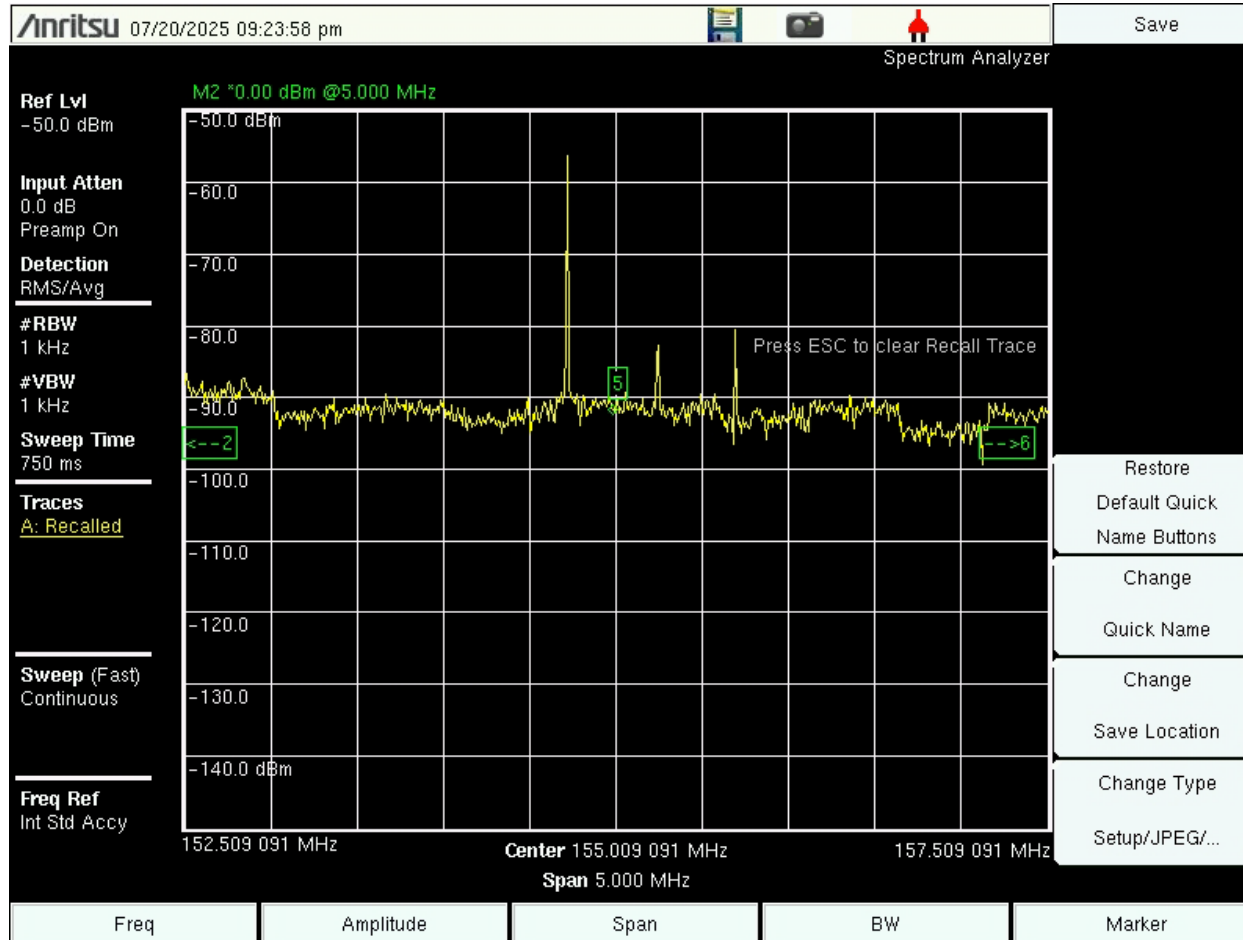
Coverage – Current System (Noise Floor)



Fox Lake – decent noise floor (-130dB)

Fox Lake

Coverage – Current System (Noise Floor)

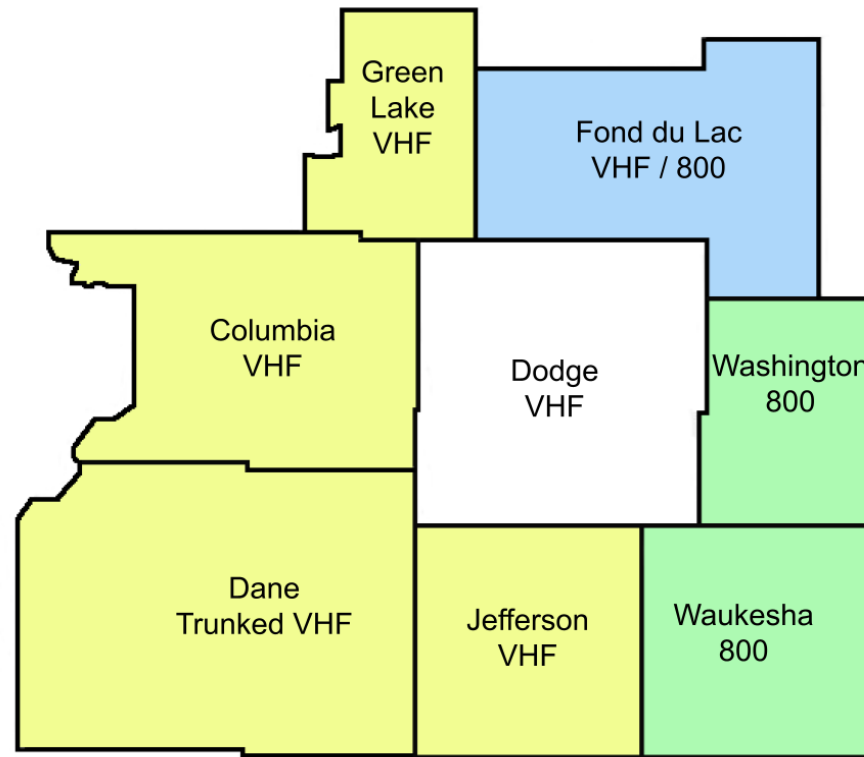


Reeseville – high noise floor (-90dB)

Reeseville

Interoperability

Interoperability Challenge



Surrounding Counties and Frequency Bands

Needs Assessment

Conceptual System Solutions

- 5 site/7 channel VHF Conventional P25 Simulcast
- 9 site/6 channel 7/800 Phase 2 P25 Simulcast
- 9 site /6 channel 7/800 Phase 2 P25 Simulcast WISCOM2
- 9 site /6 channel 7/800 Phase 2 P25 Simulcast WiSPN

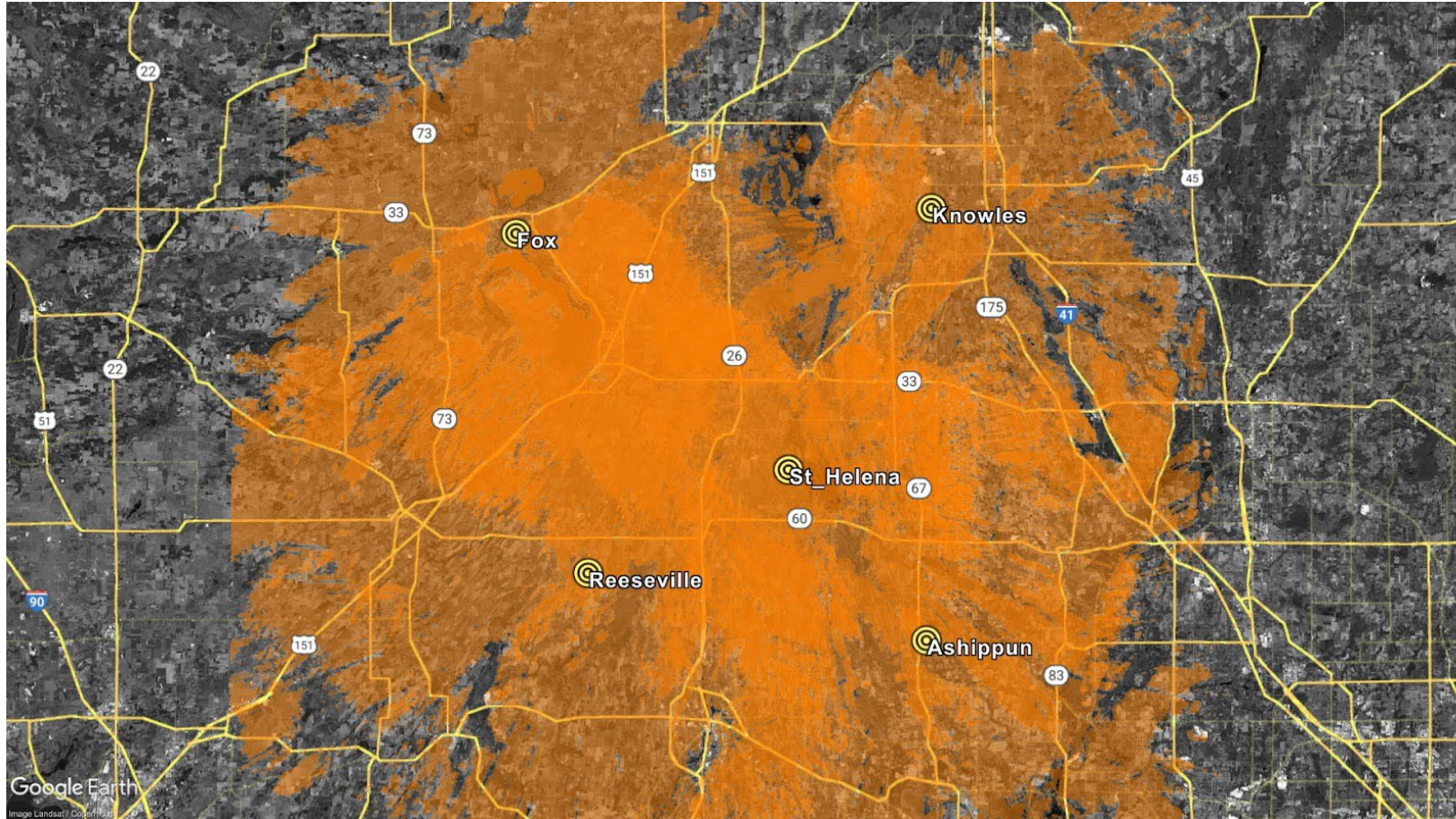
What is P25 Simulcast?

- **Project 25** (P25 or APCO-25) is a suite of standards for interoperable digital two-way radio products allowing usability between vendors.
 - P25 was developed by public safety professionals.
 - P25 radios are commonly implemented by dispatch organizations, such as police, fire, ambulance and emergency rescue services.
 - P25 phase 2 products provides two TDMA voice channels in the same RF bandwidth.
- In a **Simulcast** system the same radio signal is transmitted by two or more towers on the same frequency from different locations.
 - Reduces the quantity of frequencies needed for the system.
 - The received signal is a composite of all of the transmitters in range.

Needed Coverage

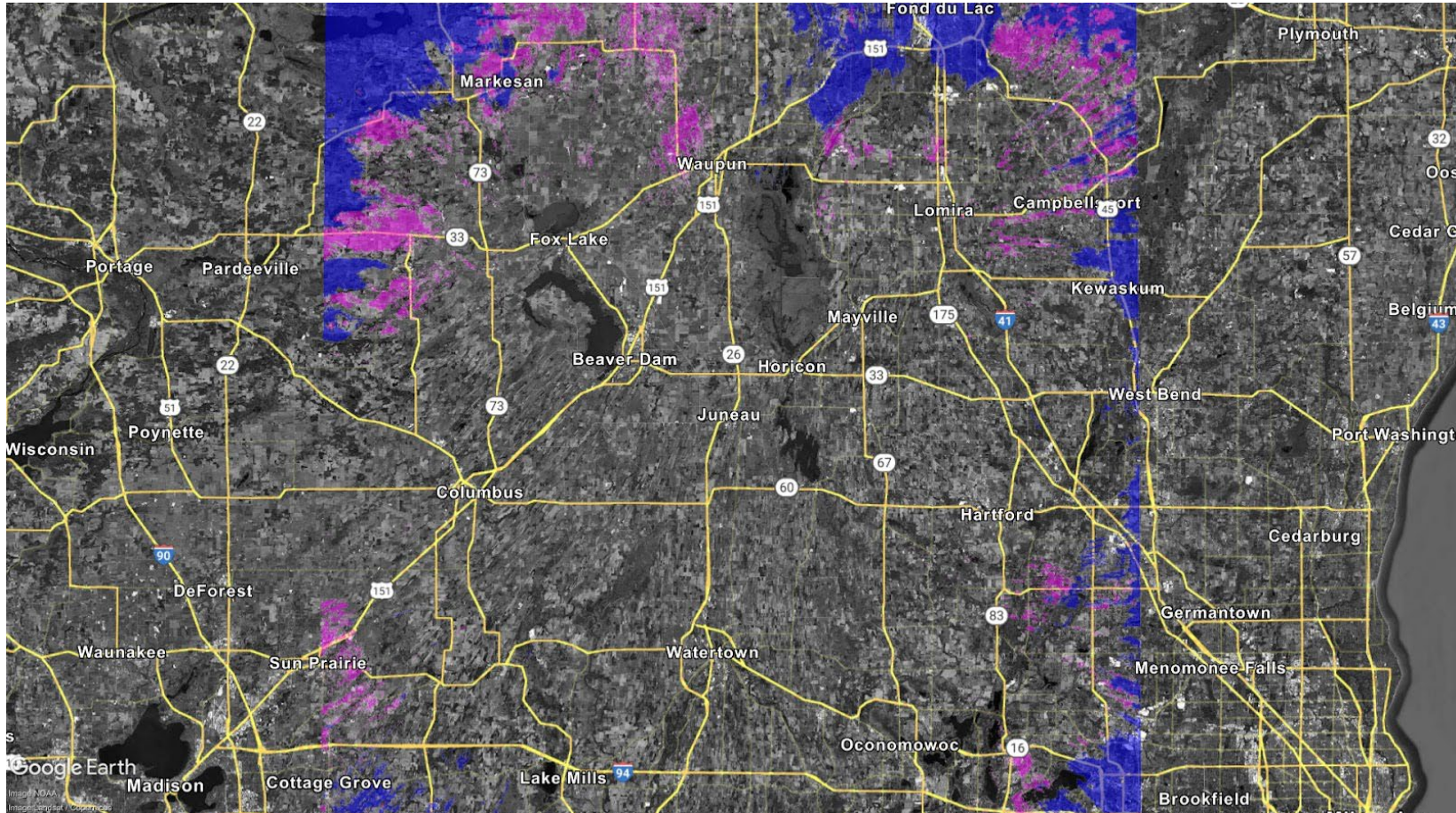
- Anticipated coverage for portables on the street.
- Anticipated coverage for portables in different density of buildings. 10dB
- Based on a portable worn on the hip using a $\frac{1}{4}$ wave, or short, antenna.
- All solutions are designed with identical coverage predictions.
- TUSA recommends coverage for 20dB buildings.

VHF 10dB Coverage – 5 sites



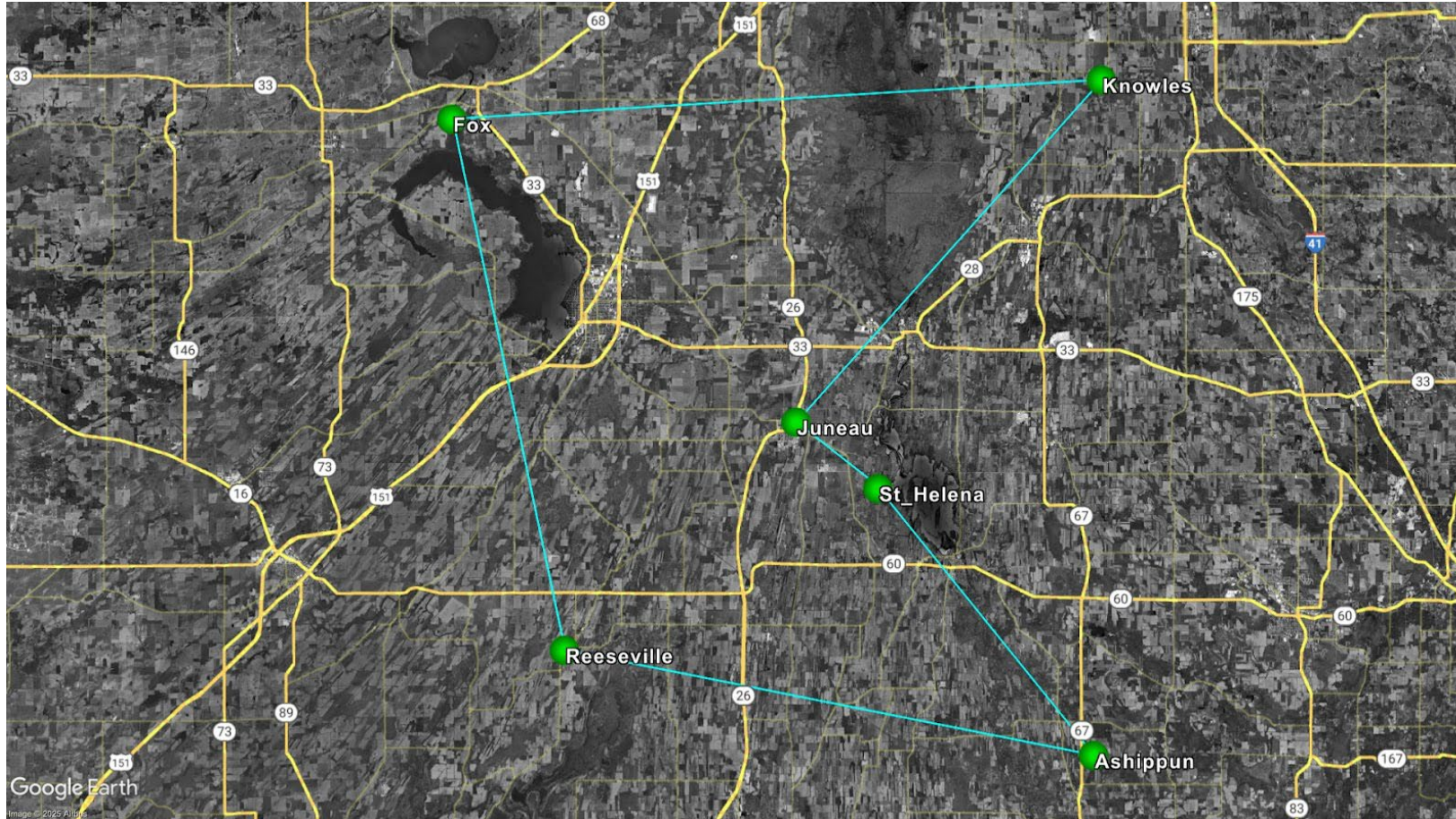
Predicted 5 site VHF Portable on-hip Talk Out - 10db Buildings

VHF 10dB Coverage – 5 sites



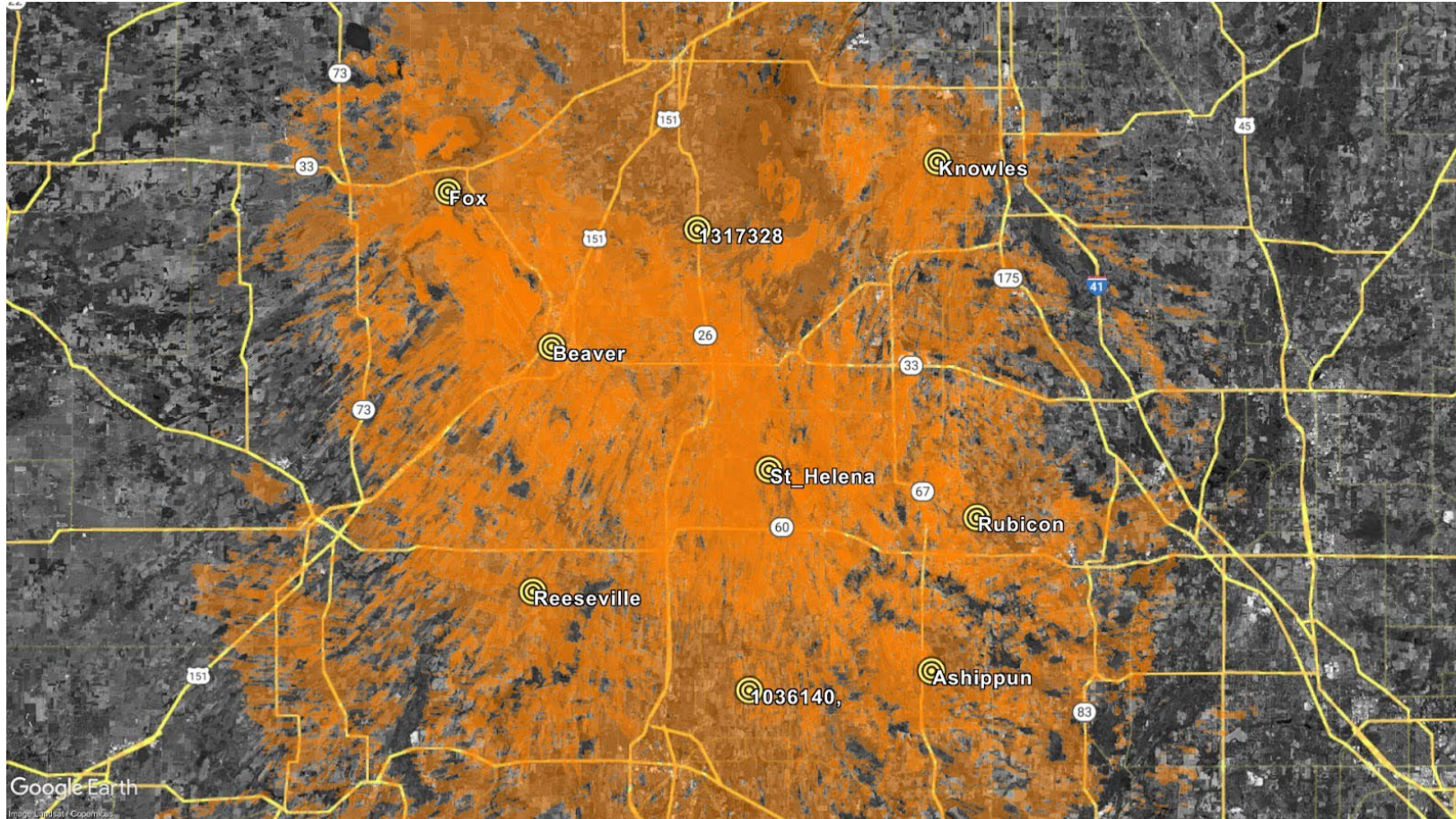
Predicted 5 site VHF TDI

VHF Microwave Design – 5 sites



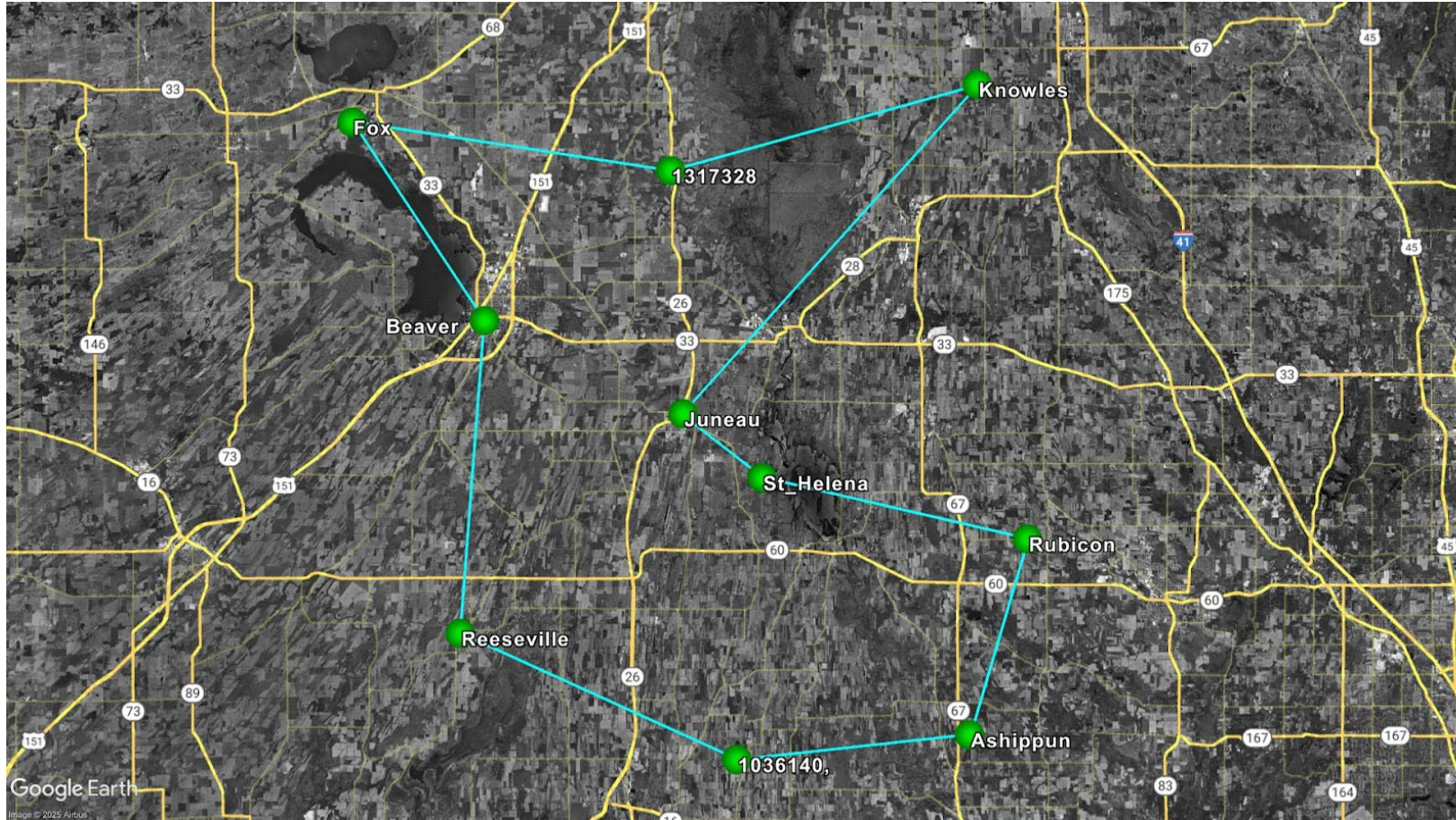
Microwave Ring – 5 site VHF

7/800 10dB Coverage – 9 sites



Predicted 9 site 7/800 Portable on-hip Talk Out - 10db Buildings

7/800 Microwave Design – 9 sites



Microwave Ring – 9 site 7/800

Needs Assessment

Conceptual System Solution Budgets (details in report)

- 5 site/7 channel VHF Conventional P25 Simulcast - \$22,097,892
 - Total Cost of Ownership 20 years - \$31,710,517
- 9 site/6 channel 7/800 Phase 2 P25 Simulcast - \$35,521,681
 - Total Cost of Ownership 20 years - \$50,346,097
- 9 site /6 channel 7/800 Phase 2 P25 Simulcast WISCOM2 - \$34,691,469
 - Total Cost of Ownership 20 years - \$48,226,185
- 9 site /6 channel 7/800 Phase 2 P25 Simulcast WiSPN - \$33,659,844
 - Total Cost of Ownership 20 years - \$45,015,643

NEXT STEPS

- Obtain Quotes for Preventative Maintenance on Current System, Subscriber Radios, and any other deferred maintenance items
- Approve and Select Conceptual Solution
- Create Request for Proposal (RFP)
- Explore State WISCOM2 Grant Opportunity

What questions do you have?