Tillamook County Public Safety Communication System

Tillamook County Board of Commissioners

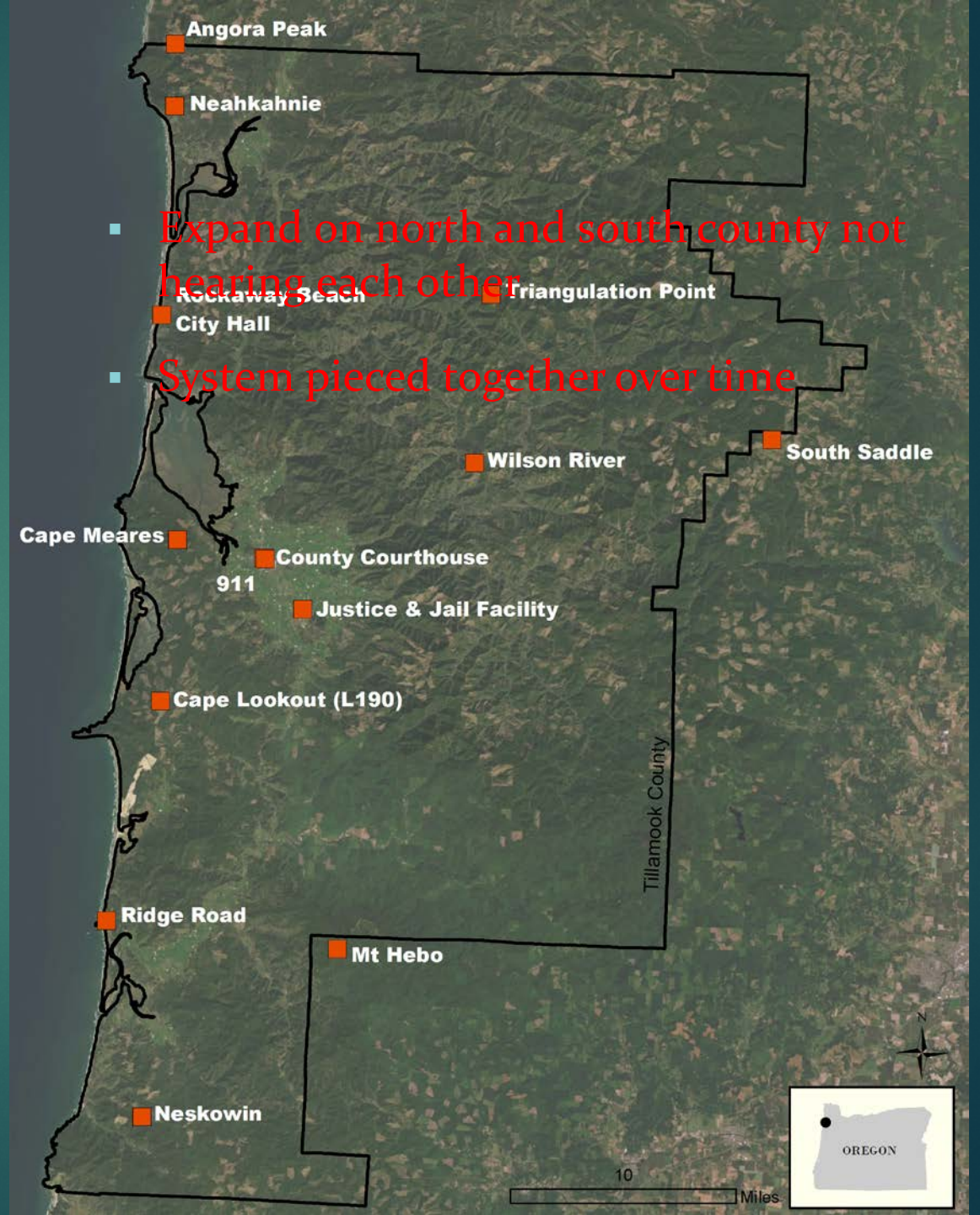
- David Yamamoto
- Bill Baertlein
- Mary Faith Bell

Tillamook County Communications Staff

- Rachel Hagerty – Chief of Staff/Communications Director
- John D. Spence – Communications Systems Manager/Tech

Communication System Sites

- 13 Sites (3 County Owned)
- 11 Towers with Leases (commercial, government, and private)
- 11 Sites with County VHF Radio Repeaters
- 4 Sites with Microwave Connectivity (backbone of 911 microwave network)
- 9 Sites with Commercial or “Shore” Power
- 4 Sites Rely on Off-Grid Battery (generator, solar, wind)
- 4 Sites with Fiber Optic Connectivity



- Expand on north and south county not hearing each other
- System pieced together over time

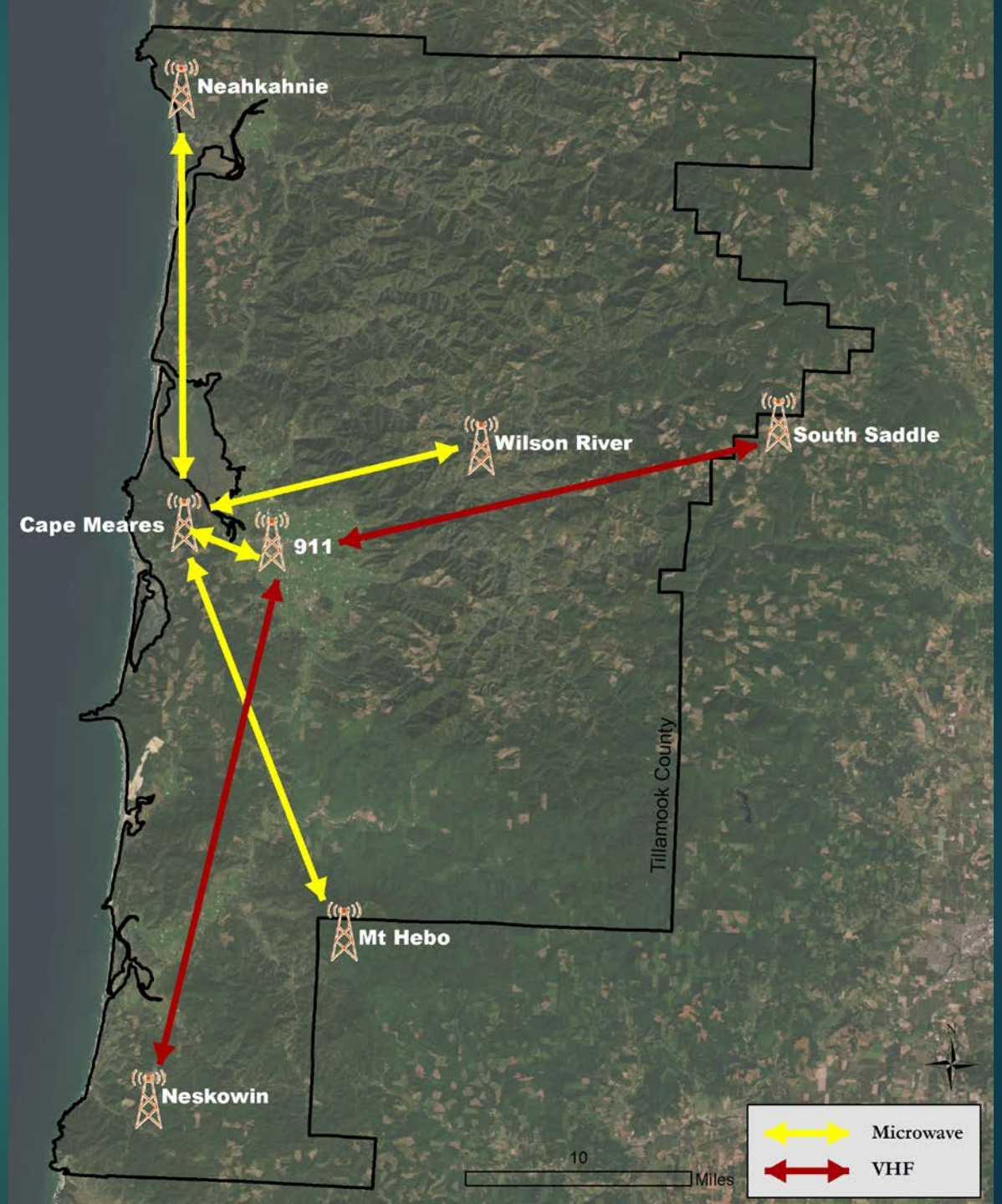
VHF / Microwave Paths

VHF

- Radio waves from 30-300 MHz
- Great for 1-60 mi or greater dependent upon topography, antenna design
- Power output can vary by need
- Examples: 88-104 MHz FM Radio
- Terrestrial Land Mobile Radio (LMR), marine channels, amateur
- Law enforcement, fire, ambulance

Microwave

- Radio waves from 300 MHz - 300 GHz
- Travel by line of site, highly directional
- Point to point communications link/wireless networks



How Does the Current System Operate?

OPTION 1

Emergency Responder

↓ Analog VHF ↑

County Equipment
(Neahkahnie, Hebo,
Wilson River, Cape Meares)

↓ Digital Microwave ↑

911 Equipment/Dispatch

OPTION 2

Emergency Responder

↓ Analog VHF ↑ Repeated Analog VHF

County Equipment
(South Saddle, Cape Lookout,
T-Point, Rockaway City Hall)

↓ Repeated Analog VHF ↑ Analog VHF

911 Equipment/Dispatch

OPTION 3

County Public Works, Health,
Communications

↓ Repeated Analog VHF ↑ Repeated Analog VHF

County Equipment
(Neahkahnie, T-Point, Hebo)

LIMITATIONS

Repeaters not linked, user must pick based on geographic area, resulting in poor/no coverage if wrong site chosen

No dispatch, only mobile units and VHF repeaters

Who Depends on the System?

PRIMARY

- Tillamook County Sheriff's Office
- Tillamook 911
- Adventist Health Ambulance
- Manzanita Police
- Rockaway Beach Police
- Tillamook Police
- Nehalem Bay Fire & Rescue
- Nedonna Rural Fire
- Garibaldi Fire
- Tillamook Fire
- Netarts-Oceanside Fire
- Nestucca Rural Fire
- Residents & Visitors

SECONDARY or POTENTIAL

- Tillamook PUD
- Oregon State Police
- ODOT
- ODF
- USFS
- BLM
- US Coast Guard
- Tillamook County Public Works
- Tillamook County Health
- Tillamook County Community Develop.
- Tillamook County Transportation
- Near Space Corp

The uncomfortable reality is everyone will likely need law enforcement, fire, or medical response at some point

What's the County's Role?

- Site Maintenance & Management
  - VHF repeaters, amplifiers, antennas, combiners, duplexing systems
  - Buildings for radio and periphery equipment, primary and alternative power, power retention systems
  - Troubleshooting, routine and emergency maintenance/repairs
- Administration
  - FCC licenses, site rental leases
- Site Security
  - Loss prevention, hardening of sites against potential sabotage
- Partnerships
  - Tillamook 911, law enforcement, fire, Adventist Health Ambulance, Tillamook PUD, and numerous others

What are the Issues?

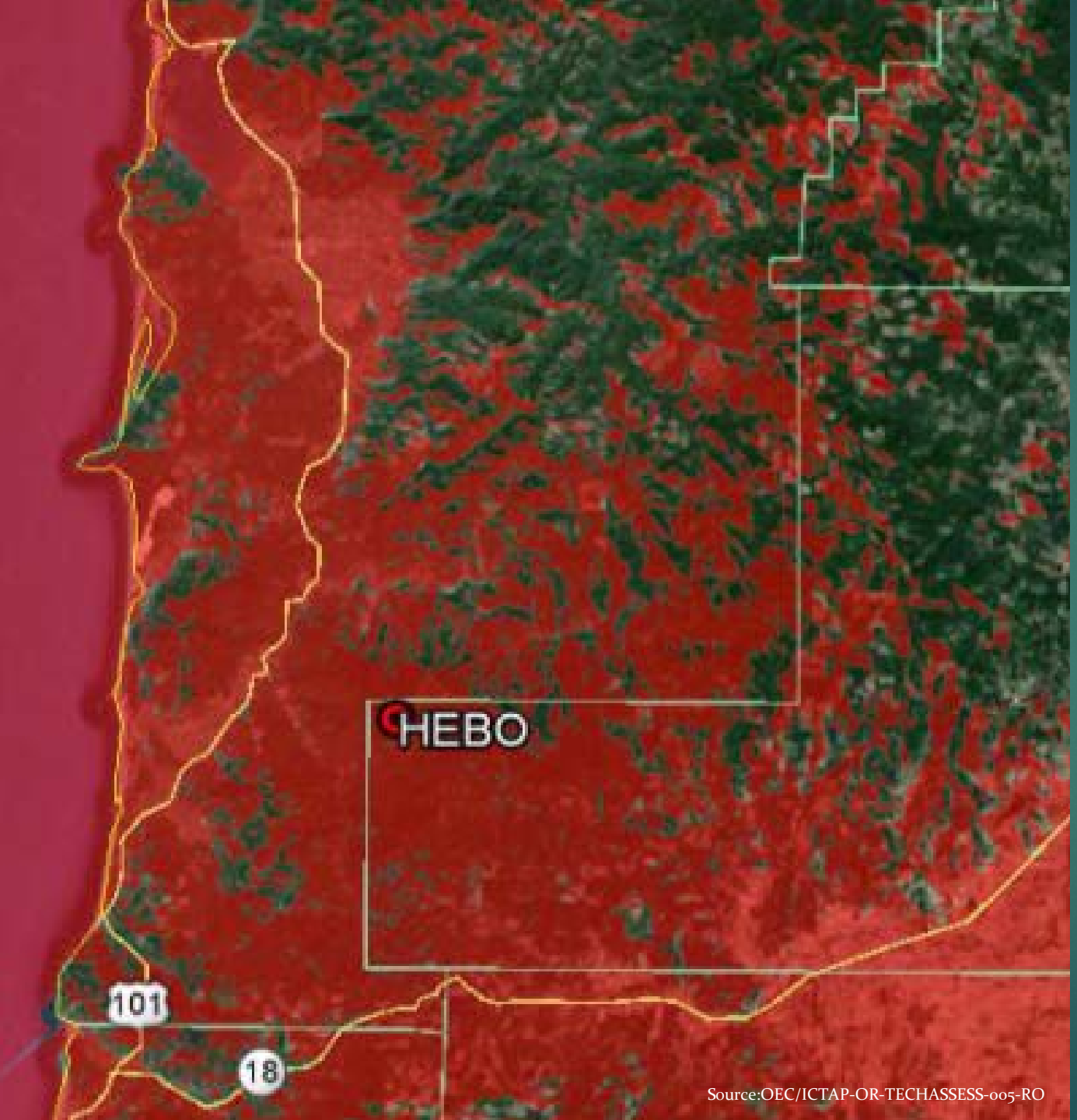
- 2001: Voters approve 1-year property tax levy ($0.25/1,000) to improve system
- 2002-2003: System augmented
- County owns VHF components and 911 owns microwave components
- Need a regional unified system

Funding

- County General Fund pays nearly all costs of VHF components
- Tillamook 911 pays for all costs of microwave components
- No user fees

Coverage

- Lacking reliable, overall county-wide coverage
- Radio waves require un-impeded air to travel
- Varying topography limits reach of VHF radio, cause signals to lose power, deviate, or be absorbed
- Critical areas with poor coverage: Miami Foley, Highway 6, Sand Lake, N. Pacific City, Little Nestucca



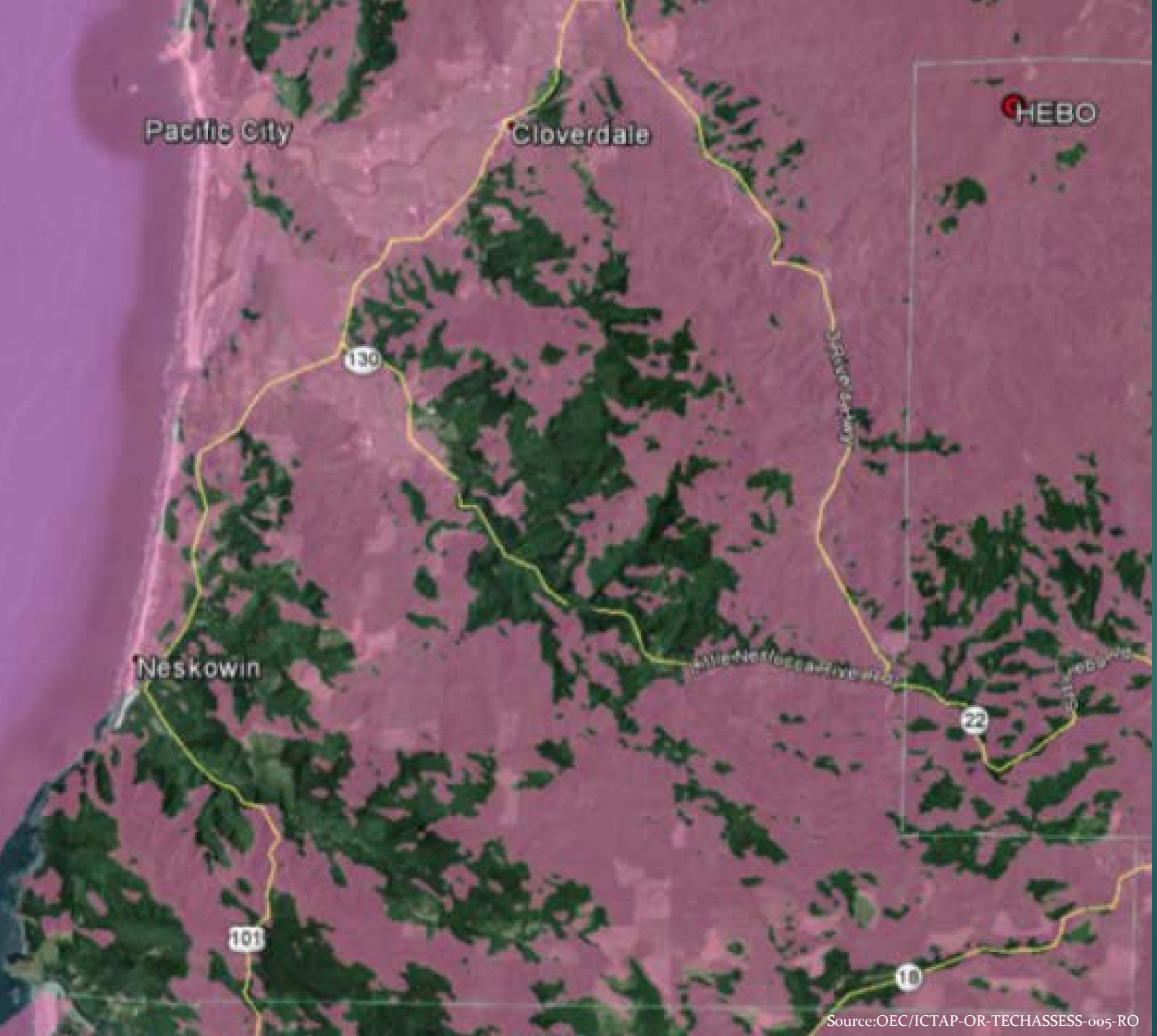
Mt. Hebo Coverage Limitations

Land Mobile Radio (LMR)

- Stationary unit mounted in a vehicle
- Transmit at up to 100 watts
- 4-5’ mounted antenna

Talk <u>Out</u> Coverage <u>to Mobile</u>

Red = Good
Orange/Pink = Fair
Green = Poor/None



Source:OEC/ICTAP-OR-TECHASSESS-005-RO

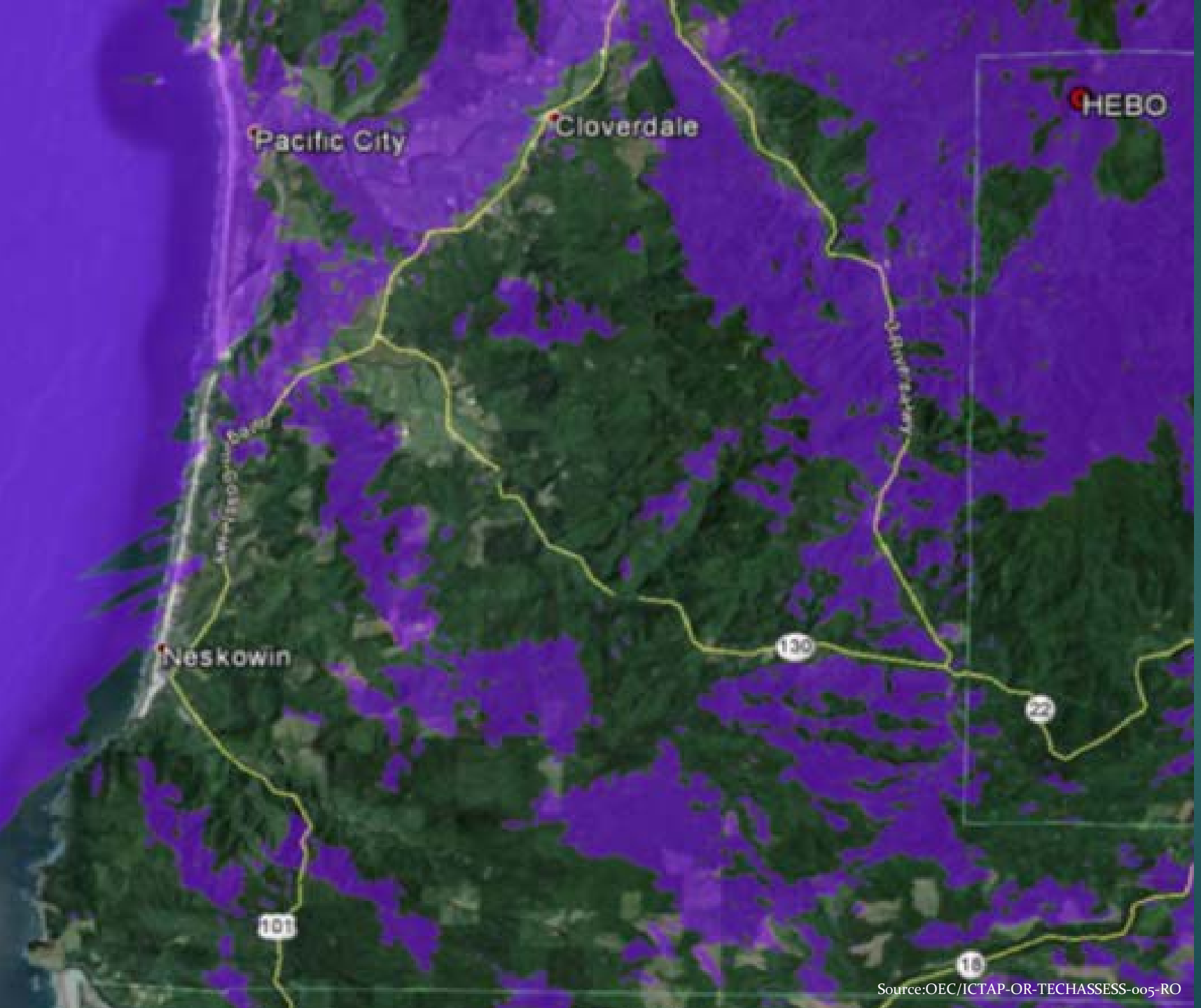
Mt. Hebo Coverage Limitations

Portable Radios

- Handheld or body worn unit that transmits in a range of 5 watts
- Small antennas for ease of use
- Poor for dense areas and long-distance communications
- Experience attenuation (loss) due to the human body or gear
- 1st responders use when away from mobiles

Talk Out Coverage to Portable

Purple = Good
Lavender = Fair
Green = Poor/None



Mt. Hebo Coverage Limitations

Talk <u>In</u> Coverage <u>from Mobile</u>

Dark Purple = Good
Light Purple = Fair
Green/Lt. Green = Poor/None

What Kind of Coverage Solution is Possible?

EXAMPLE: Talk Out Coverage to Mobile

- Addition: New Repeater Site in Neskowin
- Result: Improved South County Coverage

Bright Red = Excellent
Dark Red = Good
Green/Lt. Green = Poor/None

Current

Neskowin Addition & Hebo

Next Steps

Project Team

- Leading effort to upgrade system
- Funding and public outreach for multi-year, multi-million project

Strategy

- Phase 1: Assessment — 3 months
- Phase 2: Conceptual Design — 2 months
- Phase 3: Engineering Design — 2 years
- Phase 4: Construction — 2 years
- Long Term Maintenance
- Future Technology Integration — 15+ years

Contract

- Phase 1 & 2: Federal Engineering, Inc.

Tillamook County Project Team Contacts

- Rachel Hagerty
  - 503.842.3404 – rhagerty@co.tillamook.or.us
- John D. Spence
  - 503.842.3481 – jspence@co.tillamook.or.us