NOANET®

How the Northwest connects



A Public Utility Consortium Serving Washington State
with Broadband and Next Generation 911 Services

Mike Henson
Chief Operating Officer

Chris Walker
Senior Executive Director, Infrastructure Strategy

Broadband Technologies

TWO MAJOR MEANS OF CONNECTION: WIRED & WIRELESS

Things to Consider:

- How is the community connected to the backhaul infrastructure?
- How are households and businesses laid out in proximity to downtown district?

WIRED CONNECTIONS

- Legacy Connections (copper)
- Fiber

WIRELESS CONNECTIONS

- Satellite
- Fixed
- Mobile

Bandwidth Loss
over 100 meters (320ft)

COPPER	FIBER
94%	3%

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NoaNet Structure

A NON-PROFIT MUNICIPAL CORPORATION

We are a registered Telecom Carrier with WUTC, OPUC and FCC -- CLEC

WE ARE OWNED BY PUBLIC UTILITIES

- Formed through a Public Utility District (PUD) Interlocal Agreement (publicly owned)
- PUDs are publicly owned water, sewer, and/or power service providers
- Providing safe, reliable, and low-cost services to the public

OUR AUTHORITY

- Wholesale authorized by state legislature in 2000
- Full retail authority granted in 2021
- Subject to all rules of government agencies



Our Members

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Scope & Partnerships

EXAMPLES OF NOANET SCOPE AND PARTNERSHIPS:

- Introduction of private companies
    - P3's (facilitate partner builds)
        - Port Garfield project
        - Confederated Tribes of the Colville Reservation

- BTOP: 23 entities involved, both public and private
- Wholesale provider
- Many Interlocal Agreements (ILAs) with other public entities
- Grant writing support
- Feasibility research
- Washington State's 911 network (assumed liabilities & increased efficiencies)
- E-rate network

- Few limits to the structure in which NoaNet was formed…

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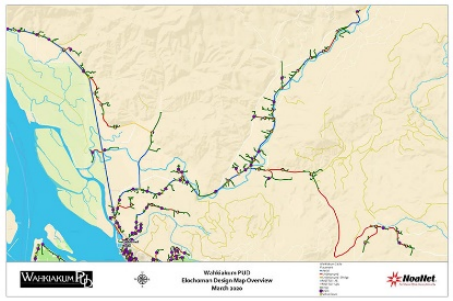
HOW do we do this?

1. Grant prep 2. Grant management 3. Network operation

BROADBAND STRATEGIC PLANNING

- Road to Broadband Toolkit
    - Community Surveys
- New Business development
- Network Design & Management
- Mapping (public document)
- Engineering
- Construction management







INFRASTRUCTURE PLANNING

- High Level System Design (Shovel Ready Projects)
- Outside Plant System Design and Engineering
- Network Design and Implementation; PON and P2P Ethernet
- Pilot Project Evaluations
- Network Operations, Maintenance, and Monitoring

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Network Coordinated Services

NETWORK OPERATIONS CENTER (NOC)

Delivering a first-class network management platform and customer support team to provide 24x7x365 systems management and escalations

COLLABORATIVE FIELD TECHNICIANS

Supporting day-to-day field support and emergency restoration services across every county and network

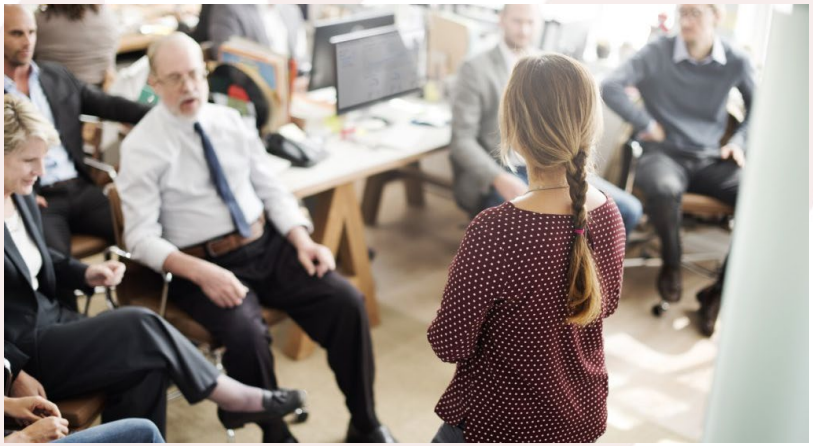
ENGINEERING & OUTSIDE PLANT

Designing and building networks

COMMUNITY BROADBAND SOLUTIONS

Facilitating grant and loan opportunities for community broadband projects including network planning, business modeling, demand mapping and community outreach





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Our Network

TODAY'S NETWORK

- 3,300+ miles of fiber
- Long haul, middle mile and local loop
- 96 channel active DWDM system with more than 40 Terabytes of simultaneous data transmission
- More than 260 ISP customers and 3,500+ end points and 250,000+ ends users
- $15 million annually invested into rural communities
- 600+ miles of microwave



THIS TOOK TIME

In 2001 we had 4 OC-48's of capacity, 6 employees and a big idea.

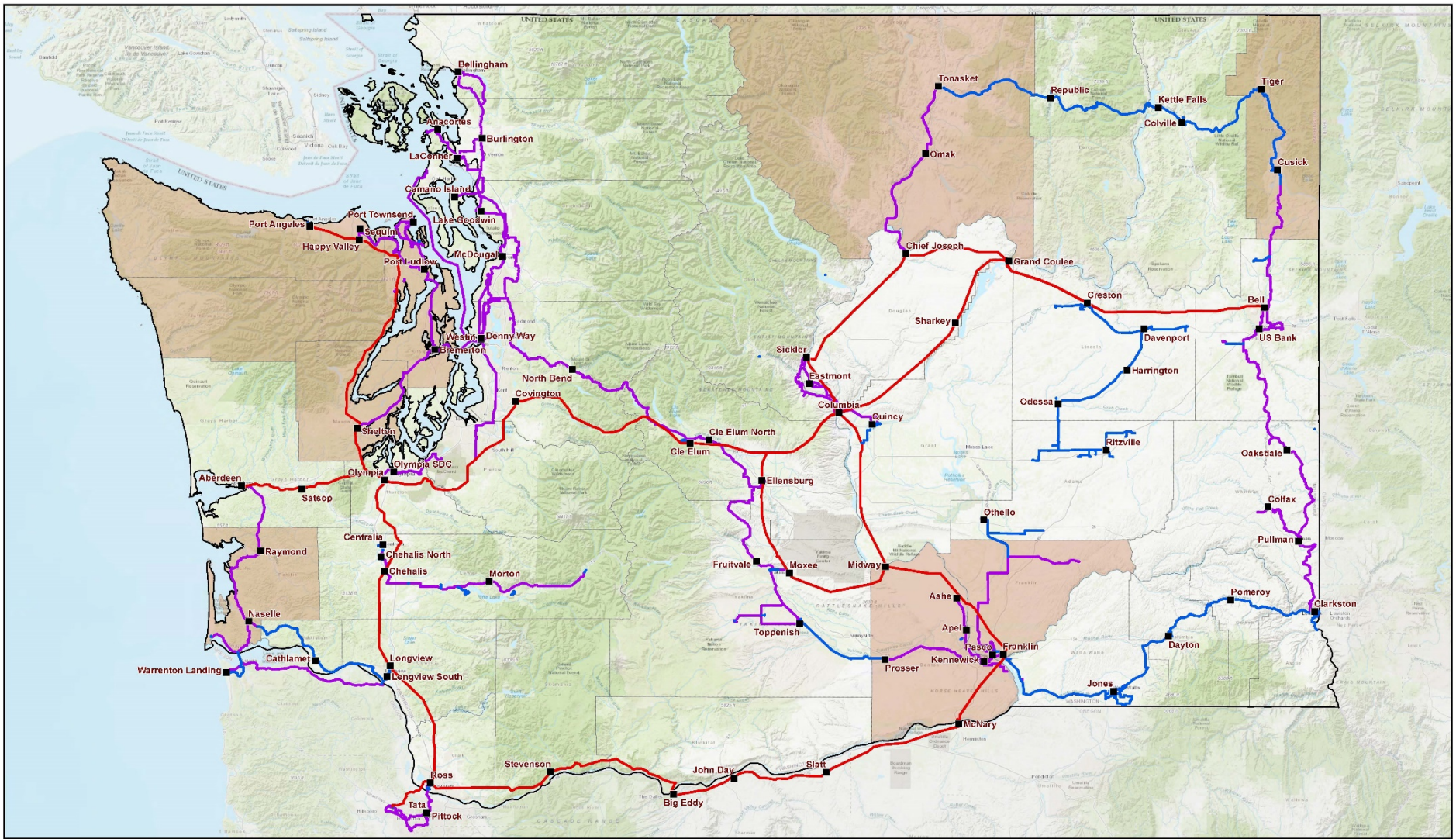


CORE BROADBAND SERVICES

Multi-platform Internet, Ethernet, Data Center, VOIP, Access, Surveillance, and OTT

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2021 Network Map



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Northwest Open Access Network

N W E S

0 12.5 25 50 75 100 Miles

Washington State Network Fiber Map 2021

Legend

- Buildings

Cable Owner

- BPA
- NoaNet
- Other

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NOANET®
Northwest Open Access Network

The Road to Broadband: A Virtual Workshop for Communities

November 30th and December 16th from 1pm-4pm

DAY ONE: NOVEMBER 30th

1pm-2pm: **BROADBAND 101**
We'll start at the beginning! This session will review terminology, technologies, and other need-to-know broadband basics in plain English.

2pm-3pm: **MAPPING THE PROBLEM: THE MARKET ANALYSIS**
In order to solve any problem, it's important to know where you're starting... this is true for broadband too! We'll talk about how to gather the information needed in order to create a solid plan of action.

3pm-4pm: **DESIGNING A NETWORK**
We'll dive into feeds and speeds, equipment, and how to apply different technologies successfully in this crash course on how broadband networks are designed and how they function.

DAY TWO: DECEMBER 16th

1pm-2pm: **BROADBAND BUSINESS MODELS**
There are many different successful approaches to broadband. In this session, we'll review various models being utilized here in Washington and nationally.

2pm-3pm: **BROADBAND GRANT OPPORTUNITIES**
Our panel of experts will discuss current and future opportunities, as well as share tips and strategies for success!

3pm-3:30: **NETWORK OPERATIONS SOLUTIONS**
Building a broadband network is only one piece of the equation. We'll discuss practical network operations considerations.

3:30-4pm: **OPEN FORUM Q&A**

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Thank you.
Questions?

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State NoaNet History

2001 → Primary Transport System award lowering State transport costs,

2005 → First 10G statewide system and introduction of Microsoft and Yahoo into Quincy, WA resulting in over a billion dollars in investment

2010 → *BTOP awards* $180 million funding for middle mile expansion, 23 public and private partners across the state

2013 → 300+ cell towers in rural WA connected for 4G and 5G service deployments and still growing

2017 → NG911 Project involving 16 public and private entities across the state

2020 → *Drive-in WiFi,* more than 300 access points in 60 days across 45 different public and private entities.

2021 → Exploring other short term broadband solutions…

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Washington's PUDs and NoaNet have invested over $800 million dollars in fiber optic and wireless network and facilities in our state.

Today, NoaNet operates a fiber network totaling more than 3,300 fiber miles throughout Washington State

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