



# Lummi Nation - Rapid Deployment Plan

## Covid-19 Disaster Relief for Communications Infrastructure on Lummi Reservation

### Summary

Native Network will be implementing a network project to reduce the impact of COVID-19 on the Lummi Nation Reservation. The project provides critical bandwidth increases to anchor institutions along with critical residential connections and a strong mobility component for essential workers including Educators, First Responders, Police, Fire, Public Works, Tribal Government and others.

Currently, the network is designed as a hybrid network combining components from a national carrier by using, if available their Cell on Wheels (COW) facilities which are designed specifically to rapidly deploy to provide disaster relief. A fixed wireless system is also utilized to provide high-speed broadband to members in un-served and under-served areas of the reservation. Using multiple radio technologies, the network provides coverage to virtually all of the reservation. Cellular data/unlicensed fixed wireless and T.V. whitespace technology combine to provide this coverage. Due to the rapid nature of planning and deployment, network design and other elements may change during the process.

The network is designed to be able to build a foundation for the Lummi Nation Internet Service Provider (ISP) systems of the future. The cellular company's COW will be removed at a negotiated interval however work should begin early in the process to replace the temporary cellular site with transition to a permanent one.

The community benefits from the access to the broadband network in multiple ways;

1. Enables online learning
2. Strengthens tele-medicine
3. Mobile Connections for 1<sup>st</sup> Responders, Public Works and other essential
4. Government services
5. Economic Development

### The Situation

The Lummi Nation is currently experiencing a communications disaster. Due to the COVID-19 virus and subsequent Tribal government requirements to shutdown schools, non-essential businesses and a stay at home mandate, a heavy burden is being placed on the current networks on the reservation, leaving many homes with little or no broadband



solutions, as well as, limited mobility solutions for those essential workers now called upon to support, Educators, Public Safety, Public Works, Government, communications and a host of other workers.

## **The Need**

Increased bandwidth to anchor institutions, connect underserved homes and increase mobility for essential workers such as Public Safety, First Responders, Public Works and Teachers.

Applications Needed: Tele-medicine, Distance Learning, Work from Home (telecommuters), Public Safety

## **The Beneficiaries**

1. Anchor Institutions – Clinic, Police, Fire, Schools need increase bandwidth to facilities and increase mobility
2. Neighborhoods lacking Broadband service such Mackenzie and Smokehouse housing developments allowing support for tele-health and counseling, work from home and distance learning.
3. Remote home locations on the reservation connected with same benefits as the housing developments.

## **The Goal**

To rapidly put in place infrastructure that will provide hi-speed broadband service(s) and increase mobility capabilities to underserved areas on the Lummi Reservation. The infrastructure that is put in place should serve as the jump start for future ISP services as contemplated by the Nation prior to the COVID-19 situation. The goal would be to be able to salvage 80% of the installed systems for future use.

## **The Solution**

### **Hybrid Solution**

Targeted, fixed wireless zones such as MacKenzie and Smokehouse housing developments, would be covered by fixed wireless systems using mobile towers or temporary rooftop infrastructure. More remote homes and mobile requirements would be met via a Cell on Wheels (COW) sourced from AT&T (or other national cellular carrier) via their Disaster Relief programs. This unit would be set up in a central location best suited to cover the majority of the reservation and enhance mobility for first responders and public safety. Virtually all uncovered homes could access the internet via cellular data modems (Jetpacks) or smartphones with WIFI hotspot option enabled, to create WIFI hotspots in home. Mobile data connections or mobile Jetpacks for WiFi hotspots would be available as needed for public safety and government and other essential workers.

### **Fixed Wireless – Lummi ISP**

The fixed wireless network will be engineered to be strategically located as to provide service to critical locations primarily residential areas to include the MacKenzie and Smokehouse communities as well as have line of site to aggregation point on the reservation. Common readily available unlicensed and Pseudo licensed radio equipment would



be sourced. The fixed wireless systems will consist of standard Fixed wireless radio systems operating at two frequency ranges. 5.8Ghz (Unlicensed) and TV White Space (Pseudo licensed). The installed system will have a coverage ring of approximately ½ mile from center (given density of foliage) at the 5.8Ghz frequency with speeds up to 50 Mbps synchronous. TV Whitespace (470 MHz) would be used to extend the fixed wireless coverage out to up to 2 miles from center point to reach remote homes at speeds up to 25 Mbps.

### **AxT&T Cell on Wheels (COW) or Other National Carrier**

Native Network will coordinate with AT&T / FirstNet to source a Cell on Wheels (COW) and select optimal location. Native Network will arrange for backhaul connections to the new COW.

- a. Deploy COW in strategic location to provide LTE/4G coverage across the reservation.
- b. A single unit should provide solid signal strength to the majority of the reservation
- c. This would provide service to cell phones and data only jet packs for in home WIFI
- d. The capacity of the AT&T site would not be enough to provide adequate throughput to
- e. All homes would be covered however cellular data will have a high price tag to provide than fixed wireless due to cellular company pricing models.
- f. Speeds vary depending up on signal strength. Initial calculation put average speed at 25 Mbps (Average Cellular data speeds in fair to good signal strength)
- g. Cellular Hotspots know as Jet packs would likely need to be sourced from the cellular provider as they would be carrier specific.

The COW is a temporary solution to provide broadband and critical voice communications for mobile essential workers and remote homes uncovered by Fixed Wireless solutions.

### **Backbone**

A fiber optic connection will be put in place in a pre-existing location (possibly Water tower) and terminate into the core network. Microwave links will be put in place to distribute the Internet to remote site locations. Speeds of 1Gbps or higher are expected on these backbone links which will provide hi-speed connections to up to 300 homes and also feed the AT&T (or other carrier) COW.

### **Core Network**

The additional load to support both AT&T and Lummi Fixed Wireless solutions will be provide through an additional fiber optic connection of 1Gbps from Native Network via Wave Broadband fiber optic network. A core router will terminate the connection and distribute to the critical infrastructure including the new towers and AT&T's COW. The new fiber connection will be located at a highpoint on the or near the reservation with Line of Site (LOS) to the new towers.

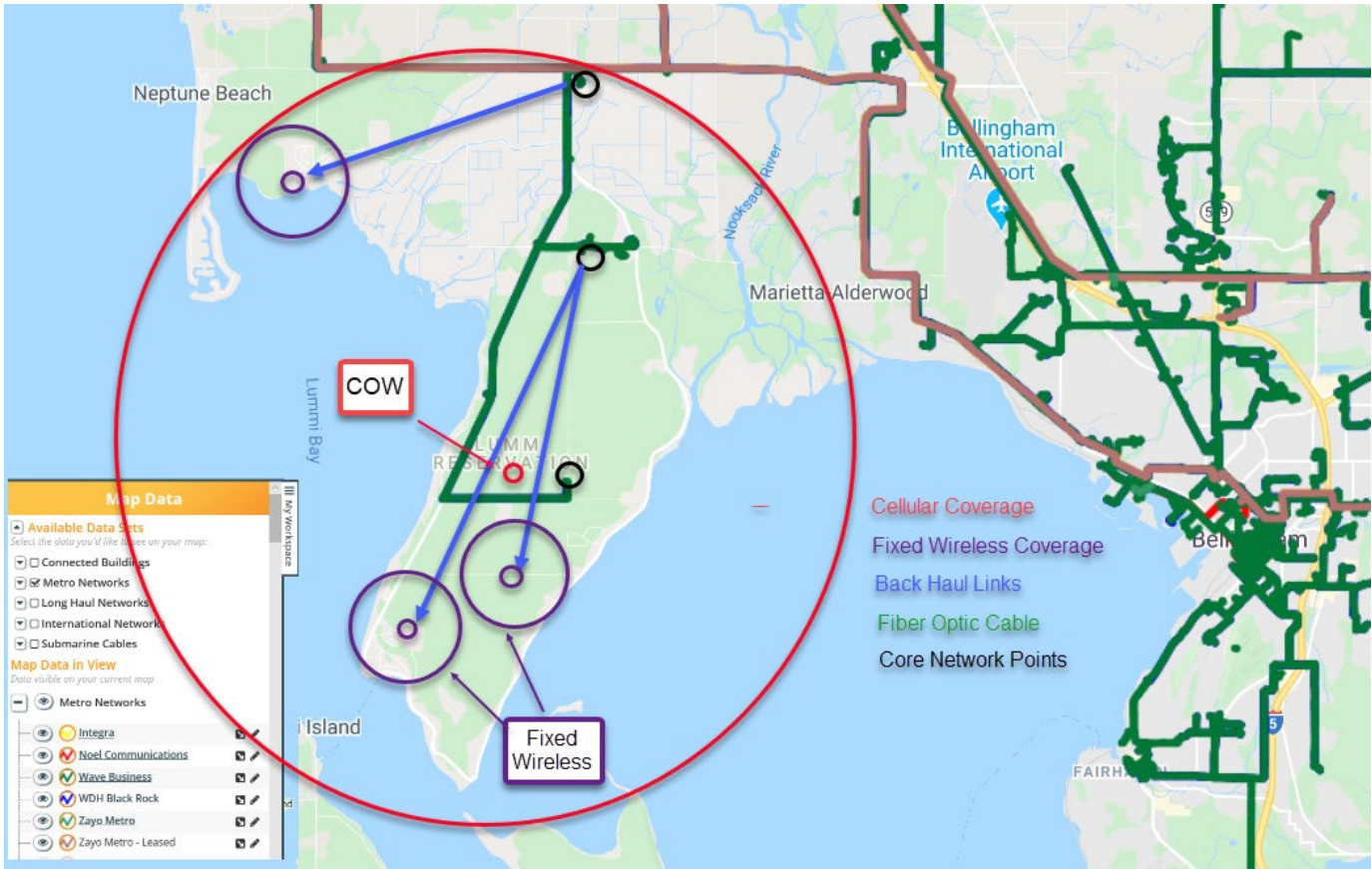
Simple ISP servers place in close proximity to the Core Router will provide for DHCP, DNS and provisioning functions as well and network management. These systems will be managed remotely by Native Network for the duration of the COVID-19 period plus a minimum of an additional 3 month period during which other arrangements for Lummi personnel to take over network will be made and or a longer term contract will be secured with Native Network for ongoing network operations.

### **Additional Notes:**

Lummi Nation will own all equipment after paying in full for all invoiced equipment, hardware, installation and services.

Due to the rapid deployment nature some equipment may be subject to change due to availability and or suitability to deployment environment.

## Rapid Deployment - Disaster Relief Network / Proposed Coverage



### About Native Network Inc.

Native Network helps Native American tribes connect with communications technology so they are empowered to reduce costs, generate revenue, create jobs and ultimately diversify their economy. Founded in 2016, the Company’s corporate headquarters are located Wenatchee, Washington and facilities in Seattle and Spokane, Washington. The CEO Andrew Metcalfe has over 30 years’ experience in telecommunications networks and systems.

### Project Implementation Plan & Tentative Dates

Project implementation and installation will take place between April 2020 to June 2020 and may extend additional months after due to unforeseen circumstances. Due to the rapid nature of planning and deployment, project and other elements may change during the process.



## Wireless Internet Installation - What To Expect

A fixed wireless system will be built to provide high-speed broadband to members in un-served and under-served areas of the reservation. Installation is planned between April-May of 2020. Crews will be installing wireless equipment and devices at residences throughout the reservation. There will be a scheduling process with the homes selected to receive installation. If your address is selected, you will be contacted and receive instructions on scheduling your home installation. There has been strategic planning to ensure there is minimal interaction and social distancing for a safe and healthy environment during home installations. More details will be announced in the coming weeks.

## Safety & Health – High Priority

Native Network takes the health of our customers & employees seriously. We are committed to protecting our staff and customers from exposure to this viral emergency and providing a safe workspace as has always been our #1 priority.

- 1) Schedulers will ask if anyone has been sick in the home during the last 2 weeks. If so, we will reschedule for the safety of our employees. We ask that customers immediately call us to report an illness, even on the day of your appointment.
- 2) Installers will avoid entering the house unless necessary. If needed, they will wear shoe covers, and gloves when entering the home. If the customer desires the employee to wear a mask, please ask! All trucks are equipped with face masks.
- 3) All installers will carry hand sanitizer on their person. \*If not available due to shortages, they will have water and hand soap on their vehicles.
- 4) Contracts will not be signed at this time; Installer will place a wall hole near a window access, and leave extension cord out the window, so that work can be done from outside. Homeowner will need to pass the cord and router through the window to the technician.
- 5) We ask customers to respect the social distancing rule and stay 6 feet away from our employees when on-site.
- 6) If the Installers feel any potential medical threat, they have my full support to suspend the installation (at no charge to the customer) for their personal safety, and we will reschedule.
- 7) We will suspend the \$50 charge to cancel an appointment within 24 hours if due to illness. However, it will still apply if you fail to show for appointment. We will no longer be able to accept cash payment for installs.
- 8) If any of my staff becomes ill, they will be immediately sent home with pay, regardless of the extent of their illness.

## Project Contact Information

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