

PROPOSAL - History & Strategies

First a Little History

The idea for a local fiber network started with a grant proposal published in June 2000 by Bill Graham of the Jefferson County PUD #1 in conjunction with the City of Port Townsend and Jefferson County. The grant proposal called for a feasibility study on building a Countywide fiber network composed of 6-7 fiber legs and 8-10 POPs. This resulted in a report by David Evans & Associates entitled: *Jefferson County PUD#1 Telecommunications Network Business Plan*. (See Attachments) This report, delivered in April 2001, contains information relevant to this proposal. Rather than repeat this work, those relevant sections are referenced here: All sections with the exception of sections dealing with Financial Analysis, Network Design and Revenues are relevant to this proposal.

During the summer and fall of 2002, David Brader, WSU Westside Technology Coordinator made public presentations illustrating a redundant loop fiber network design concept to the City, County, EDC, and Port Townsend Chamber of Commerce. David was instrumental in a partnership between WSU and Millennium Digital Media (MDM) to create an experimental fiber network point of presence (POP) at the Shold Business Park in Port Hadlock. That fiber POP currently serves the following public agencies: WSU Extension office, WSU North Olympic Peninsula Learning Center, Peninsula College, City University, Jefferson Higher Education Coordinator, North Olympic Salmon Collision, Jefferson County Conservation District, and the local WorkSource office. Currently, this is the only high-speed fiber public access facility in the County.

In April 2003, the County took delivery of a report entitled “Jefferson County Conceptual Metropolitan Area Network (MAN) Project Evaluation/Feasibility Study” from Black & Veatch Telecommunications. (See Attachments)

In September 2003, the County presented a project application to the Community Investment Fund advisory board entitled “Jefferson County Public Fiber Network.”

In June 2004, the County requested an alternative proposal to build and operate JCPFN from David Brader. The result was Version 1.0 of this report and set of recommendations. In September, 2005, David formed BraderComm Consulting to focus on rural fiber networks and in particular the JCPFN project.

This JCPFN design has many more fiber POPs or access points than the original 2000 PUD concept and utilizes a more secure, simpler, loop network architecture as opposed to the Black & Veatch MAN design. Ease of access, simplicity, scalability, and low operation cost are key in the design. The importance of a cohesive, consistent, well integrated design cannot be emphasized enough. Nor the importance of doing the full build to gain more than full benefits.

Version 1.1, September 16, 2005

“In addition to energizing the economy, the design of JCPFN will be an upgrade for most Jefferson County Public Agency facilities--Schools, Fire Stations, Sheriff, Libraries, City Hall, Courthouse, Port, Jefferson HealthCare, WorkSource, Post Office, Airport and many more. JCPFN will tie together all locations critical to public safety--Police, fire, health, community centers, etc.” -- D. Brader

Taking the Lead

David Brader (BraderComm Consulting’s Founder) has experience in both engineering and management of large scale projects such as the computerization of Grand Coulee Dam Project and the Viking mission to Mars for NASA. David has served as Chief Operating Officer for Emerald Valley Publishing with over 150 employees while he also served as Executive Editor of Home Computer Magazine. For ten years, he operated MACaid, Inc. with two stores and repair center for Apple Computer on the Olympic Peninsula. David has served the public on various boards over the years and is currently serving as the President of the Port Townsend Chamber of Commerce. He is uniquely qualified to lead the JCPFN Project via BraderComm Consulting.

David has developed partnering relationships for JCPFN with Millennium Digital Media (MDM) and the Northwest Open Access Network (NoaNet). He has identified WSDOT Ferry system, US Navy, WA State Parks as potential partners.

For three years, WSU supported David’s work as the Westside Technology Coordinator while developing the JCPFN concepts. The benefit to WSU was a no cost high speed fiber access and fees collected from other agencies in the Shold Business Park for fiber service support.

The work already completed in engineering, partnering, and consulting by David while working for WSU represent a public funds investment. BraderComm Consulting acknowledges the “Jefferson County Public Fiber Network - Proposal & Guide, Version 1.0” public funded document as the starting point for this Version 1.1. This and future BraderComm Consulting versions will be clearly marked to distinguish them from the public 1.0 version.

The following sections will explain the important strategies that when utilized together create a rural utility that is stable, strong and flexible for now and the future. These strategies are:

- Partnering--between public and private agencies
- Design--with several features uniquely combined to form a solid infrastructure.
- Funding--both construction and operations

The Partnering Strategy

A major design implementation factor for JCPFN is its public/private partnering strategy. Besides saving public funds for both construction and operations, the partners benefit in a fashion that further enhances service options to businesses and residents of Jefferson County.

BraderComm Consulting has two major partners actively engaged in talks regarding construction and operations of JCPFN. Some of the results of these talks follow:

Millennium Digital Media (MDM) operates a cable franchise in Jefferson County. MDM has installed many miles of fiber cable to support their cable TV and CableSpeed businesses. They wish to have more fiber cable in areas of shared interest with JCPFN. By using existing MDM dark fiber, JCPFN will only need to install about 2/3rds the fiber required for the JCPFN loop. MDM and JCPFN will share access to the combined JCPFN loop network.

MDM already has maintenance trucks and crews available in Jefferson County to maintain outside “plant” reducing operating costs for JCPFN.

The Northwest Open Access Network (NoaNet) is a nonprofit regional fiber network provider that would like to have a fiber access Point of Presence (POP) in Jefferson County. When JCPFN funds this regional POP, NoaNet will provide key network operating services to JCPFN.

Partnering with MDM and NoaNet will save up to 31% of the construction and 75% of the operational costs for JCPFN while creating a more reliable network.

The Design Strategy

The main goal is to provide the best telecommunications infrastructure for now and decades into the future serving public and private needs alike. To do this required careful consideration of several factors. Here are design strategy main points for JCPFN:

As we design a fiber network (like a “data railroad”) looping around and through Jefferson County and Port Townsend, we must carefully select the points where data can get on and off this network. Each of these access points (like “railroad stations”) is a major investment so the location must be stable and allow maximum access to public agencies and commercial users.

Consider there has always been a certain relation between government office locations and business locations. They tend to be located near each other. In addition, public schools tend to be in residential areas. Also, government facilities, public schools, libraries, etc. tend to stay in physical locations for decades.

So, it makes good sense to locate these “data railway stations” in public agency facilities. A fiber network “data railway station” is known as a “Point Of Presence” of the fiber network or POP for short. *Location of the POPs of the network is a key design strategy.*

Picture in your mind for a moment a child’s toy train setup. Most are arranged in a track pattern that forms a closed loop so the train can run around and around the path. Now imagine that track has one damaged section and the toy train cannot pass that section to get around the track loop by moving ahead. By moving in reverse around the loop, the toy train can still reach the point on the other side of the broken track section.

This is the main reason to design a fiber network as a closed loop path: If a tree breaks the fiber path, the data can move in the reverse direction to reach the point on the other side of the break in the fiber. *The design reliability of a closed loop network for JCPFN is a key design strategy.*

To maintain the best bandwidth and security, the entire JCPFN loop must be all fiber. No section of the JCPFN loop itself shall be wireless or copper (both of which decrease bandwidth and security). *The complete JCPFN loop being fiber is a key design strategy.*

Currently, public agency data traffic shares the older copper existing network with all the residents and businesses. At certain times this results in busy signals, modems that fail to reach the speeds hoped for and delays in data moving through the network. Even though a fiber network will have lots more capacity, why not separate the public agency data from the rest of us? The cost is minimal and it doubles the data capacity of the network. We can do this by using two different colors of light in one single fiber. Lets say **red light for public agency data** while **green light carries residential and commercial data**--Like two rails of a railroad...

Isolating the public agency data traffic from the residential and commercial data traffic allows for enhanced security to the public agency data traffic flow without affecting the residential and commercial traffic flows. *Separating the public agencies data from the commercial data with different light paths is a key design strategy.*

So to summarize the key design strategies of JCPFN: Provide the best telecommunications infrastructure now and in the future by locating key POPs in public agency facilities, building a closed loop design using fiber only, and using two separate “light rails” for isolation of public/private data traffic.

The JCPFN design itself adds value missing from most public and commercial fiber networks. Adhering to these design strategies will make JCPFN a model for the nation.

The Construction Funding Strategy

The goal is to obtain the funds needed for construction through public agencies' investment and grants from State, Federal and other sources. Low debt service helps the public fiber network maintain low operating costs.

To start the project, we need to create and fund the JCPFN Public Development Authority. It was recommended that \$125,000 from the Jefferson County PIFB fund be allocated for this purpose. Those funds will qualify as "matching" funds from the County. In addition, we have partnered assets/services from MDM, NoaNet, and BraderComm Consulting for "in-kind" matching of grant funds. There are good indications that the Washington State CTED agency will be a major supporter of JCPFN. In some cases JCPFN may qualify for CERB funds up to \$1,000,000. The Washington State Ferry system (part of WSDOT) has funds and interest in fiber access at the Port Townsend Ferry dock. The US Navy is exploring the possibility of being a funding partner to gain fiber access at the tip of the Coyle Peninsula. There is a local Homeland Security funded public safety group, OPSCAN that may help in funding fiber access in Gardiner and Cape George. As the project gets underway, BraderComm Consulting will continue to identify and develop other funding partners.

Washington State Parks actually has fiber at Fort Worden that may be used to deliver services to clients within the Park.

The Operations Funding Strategy

Short term, as JCPFN is constructed section by section it will be phased into operation. This means that the JCPFN construction management tasks, over time, will morph into JCPFN operations management tasks. Because the JCPFN project management tasks will be budgeted into the construction funding, the startup operations tasks cost will be covered. The operations funding strategy for the first 3-5 years will be to cover the costs out of construction grant funds.

Long term, the most important strategy affecting operations is that fees charged to JCPFN clients must be kept competitive in order to sustain economic growth. The down side is that fee income will not cover operations costs in the first decade. Just like other public infrastructure, JCPFN operations cost will become a budget line item for the City and County. This budget line item could be in lieu of JCPFN service connection fees from the City and County or the City and County fees could be adjusted to compensate.