



# Broadband Initiative Prospectus

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San Juan County Economic  
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[www.sjcbroadband.com](http://www.sjcbroadband.com)

## **San Juan County Broadband Initiative Prospectus**

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## Summary

The mission of the San Juan County Broadband Initiative (SJCBI) is to drive economic development and support community services through universal, open access to broadband services via an advanced, world-class broadband network throughout San Juan County. The Broadband Initiative was begun in 2009 by the San Juan County Economic Development Council and the San Juan Island Community Foundation/CNTF.

The primary objective of the SJCBI is to ensure economic sustainability and competitiveness in the global marketplace via fast broadband connections, which have been clearly shown to spur economic development<sup>1</sup>.

With the FCC's definition of "broadband" currently at 4Mbps<sup>2</sup> and many urban areas of the U.S. enjoying connection speeds of up to 10Mbps<sup>3</sup>, it is clear that San Juan County faces a troubling gap between what is available to us for high-speed broadband, and what is desirable to spur economic development.

More worrisome is the fact that the bandwidth gap between what is available in San Juan County and the rest of the country – and the world – is widening every year. At the current rate, San Juan County will have speeds only *one tenth* of what's available to most businesses in developed nations within a year, making this county a "third world" technologically.

Unlike other rural communities struggling with the "fiber gap", however, San Juan County is starting with an advantage: much fiber infrastructure is in place, primarily through Orcas Power and Light Co (OPALCO, our power cooperative). OPALCO has invested in fiber to the mainland and has laid dark fiber in select areas through the islands.

Citizens expect a basic set of services to be delivered with a high level of reliability and quality – healthcare, education, emergency services, utilities (water, electricity, telephone, gas), and other businesses like banks and grocery stores. Access to reliable high-speed Internet is now as much of a necessity as all of these other basic services. Communities with all of these services can develop; communities where these basic services are lacking do not prosper.

San Juan County is currently underserved by broadband providers. While the county's main broadband supplier<sup>4</sup> advertises speeds of up to 1.5Mbps to more than three-quarters of its customers, the vast majority of its subscribers are unable to achieve access at anything close to these speeds.

“San Juan County will soon become a digital desert, with 90% of our maximum broadband connectivity a mere 1.5% of the rest of the world.”

<sup>1</sup> [http://www.designnine.com/library/docs/other\\_papers/BroadbandFactFiction.pdf](http://www.designnine.com/library/docs/other_papers/BroadbandFactFiction.pdf), accessed 4/21/11

<sup>2</sup> [http://www.fcc.gov/Daily\\_Releases/Daily\\_Business/2010/db0720/FCC-10-129A1.pdf](http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0720/FCC-10-129A1.pdf), accessed 4/21/11

<sup>3</sup> <http://www.websiteoptimization.com/bw/1010/>, accessed 4/21/11

<sup>4</sup> CenturyLink, Monroe, LA

As speeds below 4Mbps are considered by many as too slow for true economic development<sup>5</sup>, even if the advertised speed were the actual speed, county businesses do not have the connection they need to compete in an aggressive global marketplace.

Since in many parts of the world broadband providers offer speeds up to 100Mbps, San Juan County will very soon become a digital desert, with our *maximum* broadband connectivity (currently available to very few subscribers) a mere 1.5% of the rest of the world.

And as computing shifts to the cloud and applications become more bandwidth-intensive, the need for a fast broadband connection will become even more evident, and our access to the world even more remote.

## Initiative Goals

Our goals for this initiative are four-fold:

- Utilize this prospectus and initial vision to obtain funding for planning and feasibility study done by industry experts (estimated at \$38,000);
- Develop a plan for a public-private broadband consortium to deliver high-speed broadband to businesses and community services in San Juan County;
- Utilize the plan to obtain funding for a broadband cooperative;
- Implement the plan, creating a county-wide and universal business-driven broadband cooperative;
- Spur economic development through the accessibility of high-speed broadband.



“My use of the Internet has significantly shaped the evolution of my career and has allowed me to reach audiences around the world, all from San Juan Island.”

– Alex Shapiro, world-renowned composer, San Juan County resident

<sup>5</sup> <http://images.tmcnet.com/online-communities/dark-fiber/press/Successful-snapshot-09-10.pdf>, accessed 4/25/11

It is our goal that funding will be obtained by July, 2011; planning work completed by November, 2011; and the broadband cooperative implemented by mid-2013.

## Key Accomplishments

Key accomplishments of the San Juan County Broadband Initiative to date include:

- A Broadband Action Session, involving members of the community, civic leaders and elected officials;
- Discussions with OPALCO on a potential broadband cooperative;
- Discussions with other business and government leaders;
- Visioning and creation of a prospectus;
- Creation of a preliminary concept to bring world-quality broadband to businesses in San Juan County.

## Current Infrastructure

1. **Orcas Power And Light Cooperative (OPALCO):** a Rural Electrification Cooperative, OPALCO provides “open access” to their fiber network (coverage maps are available upon request). Available bandwidth is tariffed at 10Mbps, 100Mbps and 1Gbps. Services include backhaul, Internet access, and “middle-mile” fiber transport. No other typical Internet services are available (e.g., no domain, web, or email hosting). Backhaul is provisioned with 12 strands of owned fiber to the mainland, then via leased fiber (provisioned by Black Rock Cable) to a PoP (Internet point-of-presence) in Bellingham.
2. **CenturyLink:** The Incumbent Local Exchange Carrier (ILEC), claims some coverage “up to” 4Mbps using antiquated DSL phone lines, and roughly 78% penetration at “up to” 1.5Mbps. In addition to legacy (“POTS”) telephony services, CenturyLink also provides typical ISP services (dial-up and ADSL last-mile connectivity and domain hosting), although no other data transport services are available. No raw fiber availability nor bandwidth options beyond traditional telco services (DS1, DS3). All DSL service provisioned in San Juan County terminates at the CenturyLink Central Office in Gig Harbor.
3. **Rock Island:** A local, Friday Harbor- based Internet Service Provider (ISP) and Wireless ISP (WISP). Provides WiFi in Friday Harbor and Motorola Canopy (a point-to-multipoint wireless technology) to some of the county. Backhaul provisioned with “route diverse” DS-3 and gigabit ethernet connections to PoPs (Internet “points of presence”) in Bellingham and Seattle. Uses CenturyLink DSL lines to provide some services.

“I am a broadcast television producer who lives on San Juan Island. With multiple shooting locations, clients, and vendors around the world, I need a reliable and fast connection to conduct my business.

The service on San Juan Island is spotty at best for speeds and connectivity, even at the fastest hubs, and I have a patchwork quilt of solutions which I utilize on the island, depending on the project phase.

As a result, I often have to go to the mainland in order to work on a project with vigorous demands.

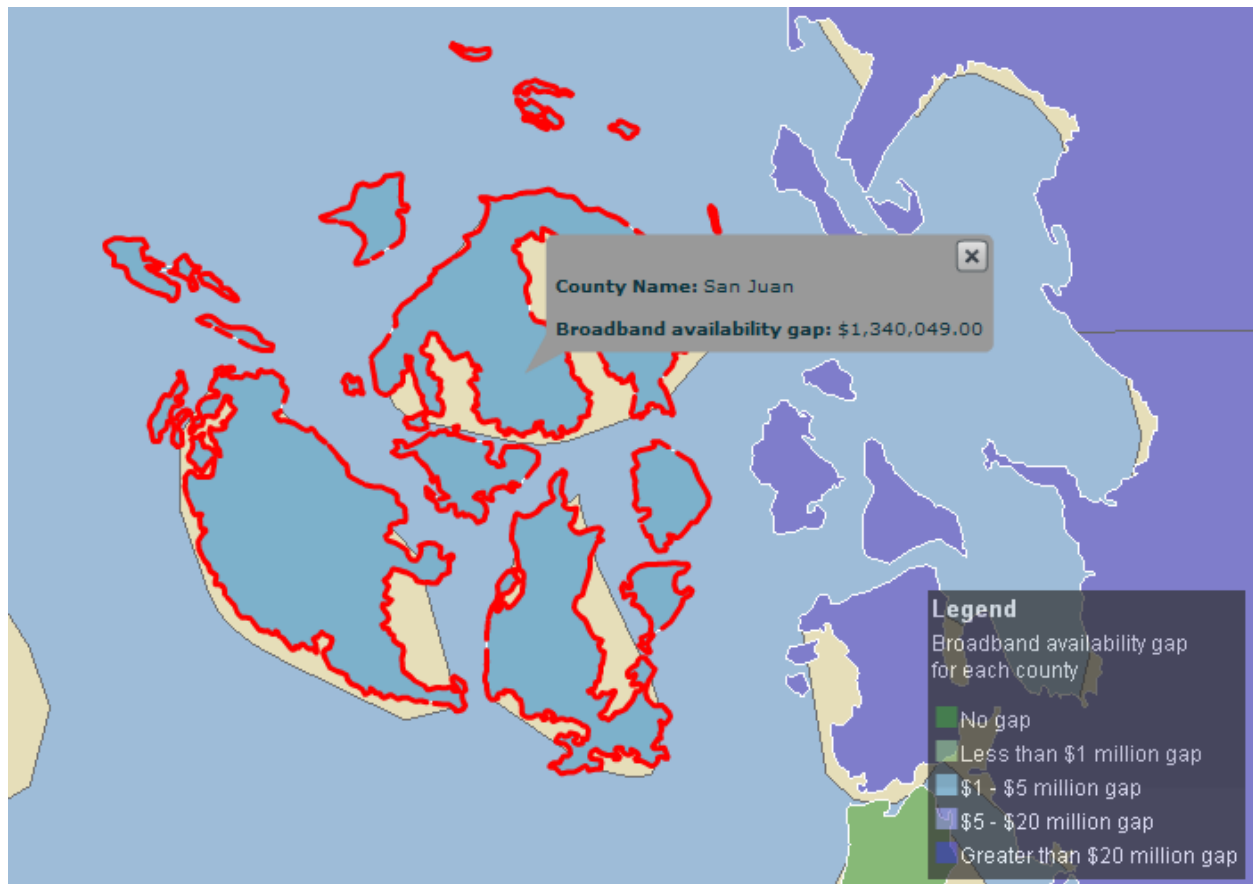
This takes me away from my family and my home simply in order to maintain effective communication with the outside 21st-century world and its business requirements.”

- John Gomez, Producer

4. **Windjammer Cable:** A small digital cable TV provider, Windjammer can also provide Internet access (up to 5Mbps), but only in the Town of Friday Harbor.
5. **Clear:** A WISP delivering Internet access over “WiMax” wireless technology, Clear provides good bandwidth in small areas: for example, WiMAX Release 2 (based on the IEEE 802.16m standard, and due in early 2012), is expected to provide 120-Mbps downloads and 60Mbps uploads in close proximity to an access point (less than 1 mile). Clear’s current service (WiMAX Release 1, or 802.15e) provides up to 30Mbps down and 10Mbps up. Clear is currently only limitedly available in parts of Friday Harbor and Eastsound.

## Broadband Gap

The gap between what is available in San Juan County for broadband infrastructure gap and what is needed to attain the modest 4Mbps goal of the FCC is estimated at \$1,340,049.<sup>6</sup>



<sup>6</sup> <http://www.broadband.gov/maps/availability.htm>, accessed 4/25/11



## Industry Needs

The need for high-speed broadband in San Juan County has reached a critical level for economic development, as well as for healthcare and emergency services.

### Economic Development

The future of a community's economy is often directly related to that community's public infrastructure. Good schools, adequate roads and transportation, access to affordable health care, and quality of life factors such as parks and cultural venues all play a role in whether communities will attract new businesses and residents and be vibrant.

Economic research shows that public infrastructure investment is a powerful driver of business productivity, investment, and economic growth.<sup>7</sup>

The Bureau of Economic Advisors estimates that for each \$1 invested in broadband, a local economy will reap benefits of nearly \$3 – but unless a private communications provider can gain the lion's share of that economic benefit, its incentive will be to under-invest in broadband infrastructure.<sup>8</sup>

While exact estimates are impossible to obtain, the development and improvement of community broadband infrastructure has been shown repeatedly to spur economic activity up to 100% with little impact on the environment.<sup>9</sup>

Econometricians from Carnegie Mellon and MIT have found that, "Even after controlling for community-level factors known to influence broadband availability and economic activity, we find that... communities in which mass-market broadband was available...experienced more rapid growth in (1) employment, (2) the number of businesses overall, and (3) businesses in IT-intensive sectors."<sup>10</sup>

Industries which would be expanded through improved broadband speeds would include the development and digital delivery of media, including movies and video segments; software development; integrated circuit designs; art and photography; graphic design; off-site data storage.

"Without serious thought and effort, San Juan County will soon be a digital ghetto."

– Mark Madsen,  
Library board member  
San Juan Island

<sup>7</sup> Research on the topic include, e.g., D. A. Aschauer, *Is Public Expenditure Productive*, 2005; K. J. Button, *Transport and Industrial and Commercial Location*, 1995; E. Gramlich, *Infrastructure Investment: A Review Essay*; I. Nadiri and T. Mamuneas, *The Effects of Public Infrastructure and R&D Capital on the Cost Structure and Performance of U.S. Manufacturing Industries*.

<sup>8</sup> Bureau of Economic Analysis, *Input-Output Accounts Data*

<sup>9</sup> [http://www.designnine.com/library/docs/other\\_papers/BroadbandFactFiction.pdf](http://www.designnine.com/library/docs/other_papers/BroadbandFactFiction.pdf), accessed 4/23/11

<sup>10</sup> <http://www.eda.gov/PDF/2006%20Measuring%20Broadband%20Report.pdf>, accessed 4/23/11

Clearly, development of data-dependent businesses will be enhanced by improved broadband speeds in San Juan County, but existing industries like real estate sales and tourism will also be well served by the same improvements.

Additionally, cloud computing, the use of application resources on-demand through a computer network – an industry trend – could be used successfully in the county. Currently, cloud computing cannot be implemented successfully in most businesses in San Juan County, as the available bandwidth will not allow for it.



Peace Island Medical Center on San Juan Island will require broadband speeds of 45-100Mbps, to transfer patient data of technologically advanced imaging and diagnostic equipment.

Examples of cloud computing applications today include web-based applications that perform call center management, digital image editing, and government income taxes.

San Juan County businesses could potentially either use cloud computing applications or could even offer them, as applications providers.

The enabler for businesses to take advantage of these benefits of cloud computing is the availability of sufficient broadband bandwidth.

## Solution Model

The expectation is that the need for broadband – and its implications for economic development – is analogous to the need for electric power distribution in the 1930s. The Rural Electrification Act of 1936 spawned many member-owned “Rural Electrification Cooperatives,” of which OPALCO is an example.

After the Rural Electrification Act was extended to include telecommunications in 1949, similar cooperatives were established to provide telephone services in remote rural areas. Most of these “Utility Cooperatives” (both electric and telecommunications) still exist.

Similar cooperatives have begun to appear in some small rural regions to provide members with broadband Internet access – especially

where commercial ISPs might consider it too difficult and/or expensive to deploy broadband, or where existing ISP’s have chosen not to invest in improved broadband infrastructure because of little promise of return on investment.



These cooperatives, typically known as “broadband cooperatives” or “fiber cooperatives” have sprung up in remote, rural areas – for the same reasons that small power and phone cooperatives existed in rural areas in the mid-Twentieth Century. It is expected that such a model should succeed in San Juan County, just as our local power utility cooperative (OPALCO) has.

Leveraging the backbone available from current service providers (most notably, OPALCO’s fiber) will provide the connectivity to the mainland PoPs which required to distribute Internet access in our small rural communities. Distribution from the mainland to the various islands of San Juan County would be considered “middle mile” distribution – while the “last mile” distribution would be from there to the consumer.

This is exactly analogous to the electric coops that purchase power from wholesale providers. In OPALCO’s case, electric power is purchased from the Bonneville Power Administration (BPA) – one of four power marketing associations within the US Department of Energy. BPA, created by an act of Congress in 1937, operates all hydroelectric projects in the Northwest and sells the power to customers in Washington, Oregon, Idaho and Montana.

This prospectus proposes to initiate a feasibility study and develop a plan to create such a utility cooperative whose goal is to distribute broadband Internet services in San Juan County, building on OPALCO’s existing middle-mile infrastructure, extending it where needed, thus creating a vehicle for delivering and administering last-mile infrastructure to the customer.

## Opportunities

San Juan County presents a unique opportunity for the planning and implementation of high-speed broadband in a truly isolated rural environment. Because of that isolation, the lessons learned from the project will provide both a strong and measurable return on investment and provide a model for management and implementation of broadband in many other rural communities.

The following factors contribute to the opportunity:

- San Juan County is an isolated, island community surrounded by water serviced only by ferry and air and only limited cell phone coverage.
- OPALCO, our local member-owned electric energy cooperative has already laid all of the underwater cabling including a fiber optic backbone that reaches all of the major islands. Although originally intended for electric grid monitoring, the fiber backbone is being made available to institutional customers on a limited basis and they are willing to partner with a local organization to interface the backbone with all potential users.

“OPALCO’s fiber optic system to date has been made available to limited public and private institutional users.

We might find a way, in concert with others, to extend access to this system more broadly.”

- George Mulligan,  
OPALCO board member  
San Juan Island

The impact of the recent economic turndown has been particularly difficult for local businesses which traditionally have largely depended on a tourist based economy. Broadband will enable the development of a broader industrial base that will be more resilient to future economic fluctuations.

- Improved broadband will help keep the county a desirable area for retirees and semi-retirees, and for new working residents, improving tax rolls and keeping our extremely depressed real estate market viable.<sup>11</sup>



**“Don’t just talk.  
Take action”**

*– Mark Anderson,  
Strategic News Service,  
San Juan Island resident*

- The rural isolation of the community enhances the challenge in the delivery of public services (healthcare, emergency services, government programs) most of which are critically dependent on high bandwidth communications.

- The San Juans, due to its physical beauty, benefit from a small population of wealthy residents. These residents have been particularly generous in supporting local projects (\$10Million for the new hospital) and are likely willing to assist in cooperative funding for the implementation of a broadband cooperative.

- The same rural isolation will contribute positively to the tracking and measurability project outcomes.

Due to these factors the return on investment for the project is expected to be positive and have implications far beyond the local community.

### **Proposed Feasibility & Scoping Study**

As stated earlier, it is the goal of this Prospectus to secure funding for a Feasibility and Scoping Study. This study would contain the following elements:

- Technical assessment of current San Juan County broadband infrastructure

- Identification of alternatives, their benefits, and their costs for improving broadband speed availability

- Recommendation of a preferred alternative

- Proposed implementation plan for the preferred alternative, with phases, timing, and costs identified

The recommended alternative would necessarily include a number of different kinds of organizations. A public-private consortium co-operative organization is envisioned that could procure, operate, and manage backbone elements of the network. This co-op could then sell capacity on a cost-recovery basis to last-mile independent broadband service providers.

<sup>11</sup> <http://www.eda.gov/PDF/2006%20Measuring%20Broadband%20Report.pdf>, accessed 4/23/11

This study will require the skills and abilities of an industry-recognized expert consultant in broadband infrastructure, including backbone and last mile approaches. When funding is secured, a Request for Proposal will be issued.

The estimated cost to develop this Broadband Initiative Feasibility and Scoping Study for the County is \$38,000.

## Leadership

<b>Jim Hooper, President</b>	San Juan County Economic Development Council
<b>Charles Anderson, Chair</b>	San Juan Island Community Foundation
<b>Patty Miller, Councilmember</b>	San Juan County
<b>Martin Taylor, CEO</b>	ASIC specialist
<b>Victoria Compton, Director</b>	San Juan County Economic Development Council

## Key Funders of this Prospectus

San Juan County Economic Development Council  
San Juan Island Community Foundation  
San Juan County  
Town of Friday Harbor  
Port of Friday Harbor  
Port of Lopez  
Washington State Department of Commerce

## Contact

San Juan County Broadband Initiative  
PO Box 3053  
Friday Harbor, WA 98250

info@sjcbroadband.com  
[www.sjcbroadband.com](http://www.sjcbroadband.com)