



Connecting Citizens Grant Program Grant Recipient Final Report

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Contact: Mr. Harvey Janszen
Project: Saturna Net Co-operative: Network Development Project - P009-2009

Project Number: 2009-052
Grant Number: TEL-226
Grant Amount: \$50,000

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Technical Solution

Project Description

Saturna Net Co-operative (SNC), a non-profit cooperative registered in the province of British Columbia, is seeking grant funding to assist in the development of a new High Speed Internet service which will directly affect a minimum of 75 consumers and businesses. An expectation is that up to 120 end users will connect to the network at some point within 12 months of deployment. The project involves developing a wireless distribution infrastructure, establishing a point of presence and service agreement with TELUS, and developing a network management and billing solution which is easy to use and as automated as possible.

Community Connected

Saturna Net Co-operative successfully connected the south side of Saturna Island as a result of the Connecting Citizens Grant Program. This includes a coverage area of up to 200 homes (many of which are seasonal vacation homes). The connections were complete by the end of July 2010.

Technology Deployed

Last mile distribution technology used.

At the core of SNC's network are three servers which act as a control and monitoring solution created by Alekan Integrated Solutions. The network core includes a gateway, Authentication, Authorization, and Accounting server, Network Access Server, and a network monitoring application (which is hosted on a server capable of providing emergency spare parts for the other two servers).

From the core, services are delivered by fixed wireless radios manufactured by Ubiquiti Networks. The M5 series was chosen for Saturna Island and has proven to be a very reliable, affordable, and effective medium for distribution. These radios operate in the 5GHz unlicensed spectrum and, due to Saturna's remote location, do not appear to have interference issues. Radio throughput can be up to 150Mbps with an average of 40Mbps.

The Ubiquiti radios are using a proprietary TDMA protocol branded as AirMax.

Each member of the co-operative is required to have a router which connects to the fixed radio. The co-operative chose to provide the routers to minimize technical confusion by its members. The routers are mostly the same brand and model and are generically configured.

Network ISP

State the Internet service provider that set up and administers the network.

Saturna Net Co-operative is the only, non-mobile, non-satellite broadband service provider for Saturna Island and administers the network mostly on its own. For long term maintenance support, engineering, and organizational planning, SNC has contracted the services of Alekan Integrated Solutions Inc. Alekan was on site for the construction and installation of the new network and is able to perform proactive and reactive maintenance remotely.

Technical Solution

Changes To The Network

Was this the same technology, network architecture and ISP proposed in your application? If not, please explain.

For the most part, the broad architecture proposed in the grant application was implemented; however, after further lab testing, some refinements were made to the accounting functions located at the core of the network.

In the grant proposal, SNC had planned on changing gateway service providers from Navigata to TELUS; however, after reviewing the TELUS availability, costs, and service commitments, Navigata was shown to be a better value for the cooperative and its members. The originally anticipated benefits of switching providers were proven negligible.

Internet Gateway Provider

State the Internet service provider supplying the gateway and bandwidth provided for your network.

Navigata Communications 2009, Inc. provides SNC with a wireless feed from Bruce Peak, Salt Spring Island. The service provided by Navigata is a dedicated 10 Mbps symmetrical service which is open up to 15Mbps. The service contract is negotiated at a flat rate and has proven to be a reliable service.

Financial Reporting

Project Grant: \$50,000

Actual Total Project Spent: \$69,750

Variance: \$19,750

Description of Variance

How did you address the variance in your actual total project spent?

The total expenditure of the project was originally forecasted within \$1,360 of the actual project cost. Given this, the SNC board of directors had credit and cash available for the total cost of the project.

Some overage costs were experienced when the board of directors realized the need to provide members with pre-configured routers as the demarcation point. Also, unexpected additional cabling (and time) was encountered a result of a previous network's very poor installation practices.

Alekan offered a credit to the cooperative which has been fully paid. All other contractors have also been paid for their effort and time in pre-arranged agreements. Other than Alekan, contractors were hired locally and were members of the cooperative.

Currently the cooperative has balanced books.

Other Funding

Did you use the CCGP grant to leverage funding from other sources? If yes, please explain.

No other grant funding was leveraged as a result of the CCGP grant. Expenditures beyond the \$50,000 grant were paid for by regular monthly subscription fees collected from cooperative members.

Financial Reporting

Budget:

Attached in **Appendix A** is a final budget that reports on sources of revenue and project expenditures.

Project Accomplishments

Projected Number of New Subscribers

12

Actual Coverage Area

If project area has changed, then indicate the number of potential new subscribers

A total of 80 subscribers use the new SNC network provided, and funded by CCGP, on the south side of Saturna Island. Many of the non-served homes are seasonal vacation homes.

Anchor Tenants

Indicate if you have one or more committed customers (anchor tenants) on your network (i.e. business or government)

Saturna Net Co-operative has several anchor tenants (members) including: Parks Canada, Saturna General Store, Lighthouse Store and Pub, Saturna Island Family Estate Winery, Vancouver Island Health Authority (local clinic), Saturna Island Recreation and Cultural Centre, and more.

Marketing/Promotion

Attach any advertising, news articles or publicity for your network.

Due to SNC being a non-profit organization, no active marketing or promotional programmes are implemented by the cooperative; however the local news paper, The Saturna Sunset Scribbler, has provided SNC organization updates to residents and businesses. Also, the Saturna Island Property Owners Association has provided written support and updates regarding the cooperative and its broadband access activities.

Project Accomplishments

Testimonials & Success Stories

Attach any customer testimonials or positive feedback you have received for your network.

"We moved to Saturna Island six years ago and found that the only Internet service available to us was "Dial-Up"...After a year, the Saturnacan Internet service had a wireless signal accessible to us. For the two years we subscribed, we found their service to be very problematic. Access speed varied enormously, but was always consistently slower than our friends' service in larger centres... My spouse, who conducts online courses for Aurora College, NWT, was particularly negatively affected. Many times online classes were terminated or lost due to connection issues originating with Saturnacan..."

"...The Saturna Net Co-op is providing a first class high-speed Internet service to this island. Our access is now fast, reliable, consistent and well serviced. It is better in fact than what I have found in stay while traveling across Canada.. The Saturna Net Co-op's hard-working volunteers and the Phase 2 Connecting Citizens grant money provided by the BC Ministry of Citizen Services are a perfect example of well placed effort and dollars achieving maximum benefit."

Michel Bourassa
145 Winter Cove Road
Saturna Island, BC

"We are writing this letter to tell you how very pleased we are with the high-speed Internet service that has been provided since you received Network BC's Connecting Citizens Grant through the BC Ministry of Citizen's Service. This is a perfect example of government funds spent for maximum benefit for this isolated community..."

"...Our Internet service has improved to a dramatic degree. We used to have continual break downs and be without Internet service for extended periods of time.

Since the new equipment has been installed, we have enjoyed a superior service with faster uploads/downloads, more bandwidth, and almost no interruptions..."

Carol & John Money
187 East Point Road
Saturna Island, BC

"...The new Saturna net has proven to be very reliable, with almost all outages linked to BC Hydro power failures. It works very well.

"...I regularly use the net to check the status of the nest-egg which pays our bills, as well as to contact the financial advisor who manages it. The net allows me to exchange research project files and data with colleagues both in Canada and abroad. ...The net lets us know if our BC Ferry is running on time (or if it's not running at all) and if BC Hydro is planning any power outages. Several times, I have used the net to download repair manuals..."

"...We rely heavily on this service..."

D.E. Nelson, BSc, PhD, FRSC
Professor emeritus
Simon Fraser University &
Saturna Net Co-op

Additional Comments

Please include any other information you think would be important to be a part of your final report.

The Saturna Net Co-operative has very successfully established itself as a viable, reliable, and accessible Internet service provider for Southern Saturna Island. SNC hopes to carry the success of the southern network to North Saturna Island in the spring of 2011 so that homes in this area may experience the benefits of good quality high speed Internet access.

The fixed radio network deployed by the cooperative delivers users an average symmetric data rate of 6.5Mbps with some users geographically near the core accessing 15Mbps symmetrically and the farthest users from the core (in geographically difficult locations) accessing 3.5Mbps symmetrically.

Because SNC is a cooperative and a non-profit organization, users of the service have no access caps and there is a flat billing rate. Delivery is best effort with a minimum access delivery rate of 1.5Mbps down and .5Mbps up.

The greatest challenge experienced by the cooperative was the dense topography and varied geography. Many relay stations were required to "pass" the service from one location to the next; not a problem with a cooperative membership model. The new network, however, significantly reduced the number of relay stations required.

The quality of installations was significantly improved, setting a new standard for the cooperative. Previous cable installations were found to be inadequate (wrong cable types), dangerous (fire hazards), and incorrect (bad termination and wiring blocks). The poor quality of the previous network's cable and installations resulted in a significant labour cost overrun due to the time required to fix them.

Offsetting the labour overrun was a decrease in equipment costs including the core network servers and radios. Also, the cooperative did not choose to proceed with switching gateway service providers to TELUS, saving several thousand dollars from a required TELUS construction charge.

Overall, the new network has been very well received by the residents and businesses of Saturna Island who are now experiencing reliable, available, and accessible high speed Internet access. The new network has significantly reduced maintenance requirements and is mostly self-sustaining. SNC will work towards bringing the same quality and quantity of service to residents of North Saturna Island in the coming year.

Many thanks to Network BC for its support in helping Saturna Island achieve access to broadband Internet, a truly essential service.

Appendix A:

Project Expenditures

Expense	Cost
Construction Charges	\$2,558.72
Electrical & Cable	\$727.56
Tree Climbers/Fallers	\$1,852.20
Misc Supplies & Materials	\$1,504.88
Network Core	\$12,474.85
Radios	\$20,453.44
Alekan Supplies & Materials	\$4,071.59
Member Routers	\$2,861.60
Labour & Travel	\$23,232.96
Total	\$69,737.80

Current Operating Budget

Saturna Net Co-operative has a fairly static revenue and expenditure due to its membership and non-profit model. Because of this, the monthly operating budget should look like this (based on figures from the past 12 months going forward):

Item	Cost
Subscription Income	\$5,591
Gateway ISP Fees	-\$3,117
Technical Maintenance	-\$500.00
Technical Equipment	-\$150.00
Misc Expenses	-\$20.00
Banking & Legal	-\$15.00
Total	\$1,789.00

SNC expects the current operating budget to continue along this path (and potentially increase with a planned upgrade and implementation to North Saturna Island). The revenue generated as a result of subscription fees will be banked for long term replacement and maintenance plans. Equipment will be cycled every three to five years depending on need.