

State of the Net report

Gustavus Community Network

Prepared by Nathan Borson, Co-Owner of GCN Administrator Corvid Computing, March 2011

Highlights

- The Gustavus Community Network (GCN) has three fewer subscribers than a year ago, but **sales are up 17%** as more subscribers switch to broadband.
- GCN customers **expanded broadband coverage** to the airport and Bartlett Cove.
- **Reliability remains a problem** due largely to current “if and when I feel like it” volunteer maintenance and operations. Current volunteers announced a year ago that their volunteerism ends July 1, 2011.
- GCN is **alive and better than ever**. Big cost reductions coupled with increased broadband sales are projected to pay for **professional operations and maintenance** starting July 1, without city financial support and without raising prices, making GCN fully sustainable (without relying on volunteers) for the first time in its 16-year history.
- Beginning in July the **Gustavus Public Library** will pay GCN either \$316/month more, or \$399/month less, than they do now depending on whether they continue to get their service from GCN. The \$8,580 annual difference has a big impact on the GCN budget, but can be accommodated by adjusting the number of upstream T1 circuits.
- **Community-wide broadband** is no closer to realization than it was two years ago, but GCN continues to doggedly pursue it, now looking further ahead to “the Gustavus dock of networks.”

Membership and Finances

Sales are up substantially over the previous year even though GCN has lost several members since then.

Membership

Overall slight decline hides big change within membership.

- **Lifeline down:** Over the last year we lost 29% of our remaining lifeline (dialup) customers, already down over two-thirds from our peak membership in 2005, now down a total of 80%. GCN now provides quality, reliable dialup service over ACS phone lines, which allow faster connections than they did before the debacle of November, 2006. Even so, lifeline customers continue abandoning the service. Clearly dialup is inadequate for today’s communication needs. Even mayor Jim Mackovjak, who once said we would have to pry his “classic dialup” from his cold dead fingers, is giving it up to get his own satellite dish.

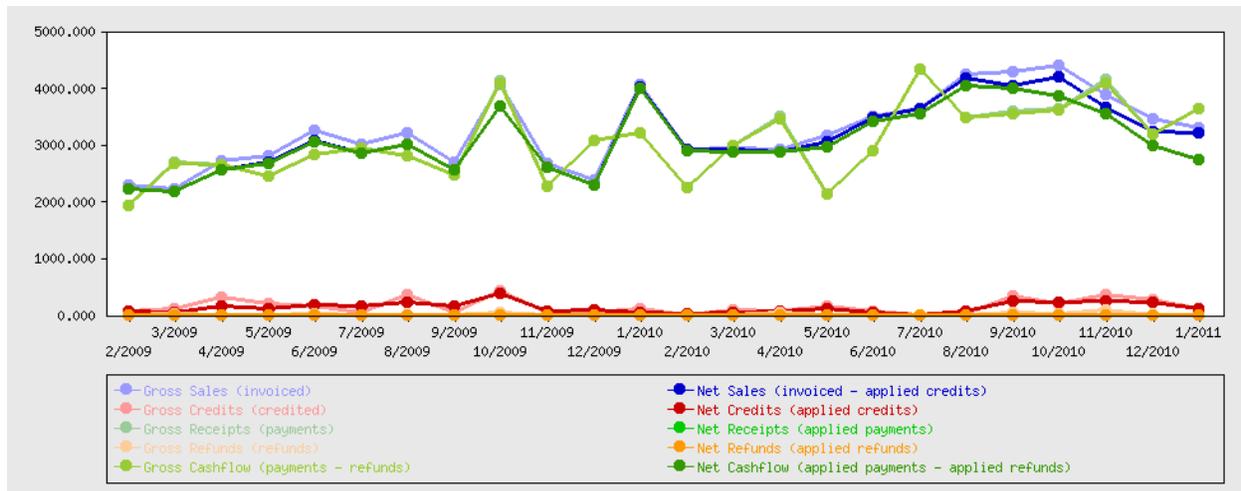
- **Broadband up:** We gained almost enough broadband customers to make up the number of dialup customers lost. Customers have paid to expansion our broadband coverage to the airport and Bartlett Cove.

NUMBER OF GCN SUBSCRIBERS

	March 7, 2010	March 3, 2011	Difference (no.)	Difference (%)
Lifeline/Dialup	42	30	-12	-29%
Broadband	19	28	+9	+47%
Flat (library)	1	1	0	
Total	62	59	-3	-5%

Sales

- Net sales for the 12 months ended January 31 were **up 17.1%** over the prior 12-month period (from \$35,181 to \$41,199)!
- Part of the increase is due to service to NPS residences in Bartlett Cove, made possible by NPS subsidizing the cost of the T1 circuit from the library to park housing.
- GCN did not start charging for Bartlett Cove service until September, so had less than half a year’s Bartlett Cove revenue in the reporting period, and almost none from the seasonal residents. Therefore, revenue from Bartlett Cove over the next 12 months will be considerably more than double what it was in the last 12 months.



	Feb 2009-Jan 2010*	Feb 2010-Jan 2011	Difference (\$)	Difference (%)
Net Sales	\$35,181	\$41,199	\$6,018	17.1%
Net Receipts	\$33,103	\$39,575	\$6,472	19.5%

Source: Freeside billing system reports

* Adjusted to include library income, which was not recorded in Freeside prior to July, 2009. To get comparable numbers, we adjust the prior year by adding \$399/month from Feb-June, 2009. That’s a total of \$1,596. So \$33,585 net sales reported by Freeside was actually \$35,181 including the library income. The Freeside graph above has not been corrected.

Net sales are recorded when service is provided (accrual method) so are the most accurate measure of business performance.

Net receipts are recorded when payment is received (cash method). This number matches bank deposits and the city’s

books.

Net sales and Net receipts average out the same over time but vary within any given period due to the timing of payments.

Profit, Loss, and Budget

This year GCN emerges from the red. And next year, telecommunications costs are projected to be much lower, based on a recent bid from an upstream access provider, and because we are reducing the number of dial-in lines as GCN customers switch to broadband. The savings will allow GCN to operate in the black and re-invest in the network next fiscal year whether or not the Gustavus Public Library continues to purchase its Internet access from GCN.

GUSTAVUS COMMUNITY NETWORK FY 2012 BUDGET OVERVIEW AND COMPARISON

	FY10 Actual	FY11 budget	NCO	FY11 Projected	No Library DRAFT FY12 Budget	Yes Library
Income						
Flat-Rate (library)	\$4,788	\$4,788		\$4,788	\$0	\$8,580
Other subscribers	\$31,449	\$30,866	\$5,390	\$36,256	\$38,911	\$38,911
Grants (City Reserves)	\$0	\$23,672		\$23,672	\$0	\$0
GCN Reserves	\$2,499	\$9,000		\$9,000	\$0	\$0
<u>Total Income</u>	<u>\$38,736</u>	<u>\$68,326</u>	<u>\$5,390</u>	<u>\$73,716</u>	<u>\$38,911</u>	<u>\$47,491</u>
Expense						
Telephone & Internet	\$28,257	\$26,610	\$183	\$26,793	\$17,135	\$24,797
Contractual Services	\$8,410	\$8,578	\$2,200	\$10,778	\$13,171	\$14,973
Capital Expense	\$0	\$28,672	\$2,107	\$30,779	\$5,783	\$4,933
Bank Charges	\$1,976	\$1,628	\$900	\$2,528	\$1,730	\$1,733
Other Expense	\$92	\$2,838		\$2,838	\$1,040	\$1,040
<u>Total Expense</u>	<u>\$38,735</u>	<u>\$68,326</u>	<u>\$5,390</u>	<u>\$73,716</u>	<u>\$38,859</u>	<u>\$47,476</u>
<u>Net gain (loss)</u>	<u>\$1</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$52</u>	<u>\$15</u>

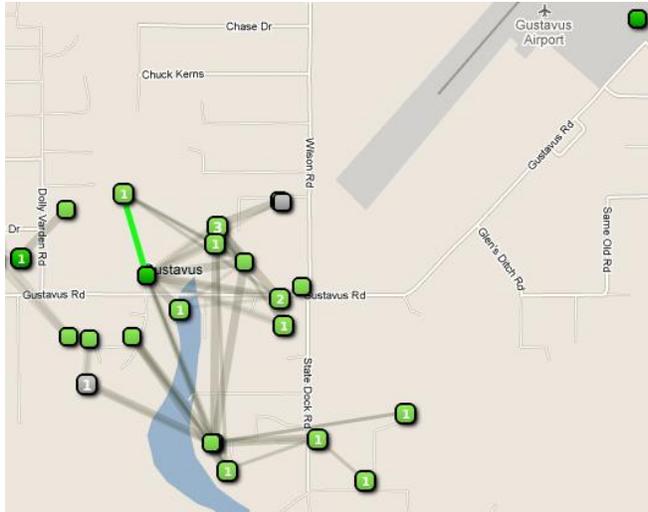
FY11 budget as amended by FY10-27 NCO, FY11-04NCO, and FY11-05NCO. Draft FY12 budget from GCN Administrator has not yet been reviewed by the GCN Board or City Council.

Accomplishments and Failures

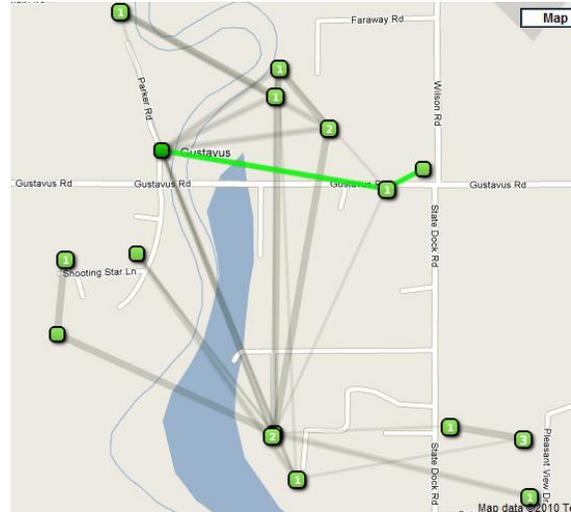
The Good News

- As mentioned above, service has been initiated to the **NPS housing area at Bartlett Cove**, thanks to the National Park Service (NPS). NPS pays ACS for a T1 circuit from the Gustavus Public Library to the NPS housing area at Bartlett Cove. NPS also built and maintains a wireless network in the housing area. GCN sells Internet access directly to customers in the housing area just as it does to other broadband customers in Gustavus, and at the same price. The GCN Internet access is completely separate from, and in no way connected to, the government-only NPS network. Unlike the NPS network, anyone who pays can connect any device to GCN and access any Internet content. The NPS network can be used only by NPS employees (not their families, visiting researchers, etc.), only government equipment may be connected to it, and content filters block many sites of interest (such as "humor").

- The **Open-Mesh wireless network grew** from about 16 to 24 active nodes (radios), including a new one at the Gustavus Airport. The number of gateways (where the mesh is connected to the Internet) rose from one (City Hall tree) to three (adding Salmon River Business Center and Air Excursions).



Open-Mesh in March, 2011 (24 nodes)



Open-Mesh in March, 2010 (16 nodes)

- After years of effort and a bracing request for quotations process, a contract for construction of the **Gustavus Communications facility** (tower in the Falls Creek hydroelectric project area) was finally awarded to Glacier Bay Construction last fall. The project is to be complete by May 31. The tower is funded from GCN reserves (about \$11,500 including engineering and project management) and from city reserves (\$23,672). The multi-purpose facility will allow not only expansion of GCN's wireless broadband network, but improved emergency, mobile, amateur radio, and other communications.
- **GCN is not dead yet!** In fact, surprisingly strong broadband revenues have put GCN in the black this fiscal year, and telecommunication cost savings next fiscal year will cover the cost of professionalizing operations and maintenance. GCN is emerging as a stable self-sustaining organization again after a three-year crisis that drained its reserves and burned out the last of its volunteers. It now appears GCN can continue indefinitely, even without building the community-wide broadband network until recently thought necessary to raise revenues enough to professionalize service and make the operation sustainable. I feel better!
- GCN has received a **better bid for upstream Internet access**. It appears GCN will be able to save hugely on its largest expense by purchasing from a national provider with flat-rate pricing insensitive to distance. Like the pre-paid calling cards many Gustavus residents use, a flat national rate is greatly to our benefit, in this case being nothing less than the salvation of our community network.

Bad News

- Current volunteer maintenance and operations on an “if and when I feel like it” basis results in low reliability, especially since “if and when” becomes rarer and later as volunteer burnout progresses.
- All efforts to fund a community-wide broadband network have come to naught. At this point our best bet is a state capital request for planning and design. If funded, that effort could start soon after July. When it is complete, we will be back where we were in August 2009, with a funding-ready plan. The difference is this plan would be for a much faster, more reliable, almost “future-proof” (but also much more expensive, probably fiber optic) network than the inexpensive wireless network proposed for broadband stimulus funds in August 2009 and to Gustavus voters in October, 2010.
- Our current network suffers from unreliable links and congestion. We have had several lengthy outages in the last few months.

FY12 And Beyond

Professionalizing Operations and Maintenance

Did you know? The vast majority of operations and maintenance is currently performed by Nathan Borson, Sean Neilson, and Phoebe Vanselow on an “if and when I feel like it” volunteer basis. So when something breaks, usually no one is paid to fix it. GCN does pay for some repairs and upgrades but these are the exception. Sean, Nate, and Phoebe are co-owners of Corvid Computing, which is paid to administer GCN – the work that Bruce Paige did for free until 2008. So when you call about your account, we are paid to help you. But we are not paid to work on the network. So it’s little wonder GCN’s reliability is fair to poor.

Poor reliability is not the only problem with volunteer maintenance and operations. It has also burned out the volunteers. Nate announced in April, 2010 that volunteer maintenance and operations would end June 30, 2011. At that time, there was insufficient revenue from subscribers to pay for maintenance and operations; GCN was barely breaking even. Nate suggested building a community-wide broadband wireless network using city funds. Even very conservative estimates projected such a network would easily generate enough revenue to professionalize maintenance and operations, with enough left over to repay the city’s capital investment over about 8 years, while also re-investing in capital improvements in the network. The city council chose to put that proposal to a vote in the October election. A majority voted in favor of the project but, because the funds would have come from endowment fund principal, a two-thirds majority vote was required for the measure to pass, and that bar was too high for this project.

Meanwhile, customer-funded broadband network expansions have resulted in unexpectedly high revenue (see sales, above), and a cheaper upstream Internet connection has become available to GCN. The combination of cost savings and increased revenue now promises to make professional operations and maintenance possible without increasing prices and without financial support from the city. The

GCN Board and city council are working on a request for proposals for professional administration, operations, and maintenance.

Gustavus Public Library, GCN, and OWL

The Gustavus Public Library has been an “anchor customer” of GCN since 1998 when the new library was built and the GCN (then “Gustavus SEAKNet”) equipment was moved there from the school. The library has been a great customer because the Universal Service Fund pays 90% of the cost of library Internet access using E-Rate discounts. As a result, the library and its patrons can afford the bandwidth they require, and all GCN subscribers enjoy the resulting economies of scale. Sharing benefits everyone, as long as it is done with the right accounting and bandwidth controls.

Beginning July 1, the library will upgrade its Internet access from the current “Flat 960” GCN service to 1.5 megabits/second. The Flat 960 service guarantees only .64 megabits/second so this represents a welcome speed increase for library patrons. GCN has submitted a bid to provide the faster service.

Meanwhile, the Alaska State Library obtained a multi-million dollar federal broadband stimulus grant to build a statewide network to be called OWL, connecting every library at 1.5 megabits/second or better, as well as providing computers and videoconferencing equipment and services. The state is awarding a contract to GCI to build the network, which will be separate from any current State of Alaska networks. OWL will probably also offer service to the Gustavus Public Library, assuming they can get all their contracting and network provisioning in place by July.

Because the federal grant pays for OWL operations, GCN may be unable to compete successfully for the library’s Internet service. If the library switches to OWL, GCN will have \$399/month less in library revenue than it does now. \$4,788 per year is a big loss for a community network that operated slightly in the red last year and that is losing its volunteer maintenance and operations. However, a combination of higher revenues and cost savings will enable GCN to survive the loss of its biggest single customer as described in its proposed budget.

If the library accepts GCN’s bid, there will be another \$8,580/year in revenue. However, this is not a windfall, because GCN would have to upgrade its upstream Internet access by purchasing a second T1 circuit to deliver a dedicated 1.5 megabits/second to the library. The cost of the T1 circuit is about the same that the library would be paying for service, so there would be little change to the bottom line. But because bandwidth unused by the library would be available to other GCN customers, service would be faster for them. Everyone benefits by sharing, as long as it’s done right.

Community-Wide Broadband Network

With the October election results, the elusive goal of a last-mile broadband network to serve every home, business, and other facility in Gustavus has receded back into the future. But maybe we didn’t want that cheap stinkin’ wireless network anyway. I have re-thought the whole idea of a last-mile network and set my sights higher. Instead of a wireless network that barely serves today’s needs, let us look further into the future and build a network that can meet the national broadband plan’s goal of 100 Megabits/second to 100 million American households by 2014.

“Gustavus dock of networks”

“Future-proof” is a term rarely applied to any information or communications technology. But it is often used with fiber-optic networks because of their vast capacity and unrivaled performance and reliability. We have not seriously considered this option in the past because of the high cost – such a network would not generate enough revenue to repay the high capital cost so would almost certainly require public grant money and plenty of it. But given the extreme difficulty we have had so far getting a community broadband network built, it makes less and less sense to build one that will be barely adequate when it is finished. And the cost of a fiber network that will last 20 to 30 years is small compared to many of the recent and upcoming Gustavus transportation projects. We replaced our single-lane wooden trestle causeway with a steel structure that will serve the community’s needs for many decades to come. GCN has re-cast its strategy for a community-wide last-mile broadband network in a similar mold, considering the actual purpose and need over what we can afford to build with local resources.

Plan and design

The Gustavus City Council submitted to the state as its highest priority capital request for FY11 a project to plan and design a future-proof last-mile community broadband network:

<http://cms.gustavus-ak.gov/services/planning/annual/fy-2012/2012-CIP-GCN2>

If funded, the project could result in a funding-ready design in time for the FY13 budget cycle. Conceivably, construction of such a network could begin in the summer of 2013, but given past experience that seems incredibly optimistic. More likely it will take at least a year or two longer to see construction begin; At this point I would be surprised to have a complete community-wide network before 2017.

Interim measures

Given that a skookum last-mile broadband network is probably still at least 5 years away, what is GCN’s plan until then? Fortunately, the communications tower will be built. This will allow us to expand our wireless broadband network where and when it makes sense to do so and as subscribers can afford. This probably does not mean we will cover the entire community, and the expansion will proceed slowly, as it has until now. And it does not mean we will have a perfectly robust and reliable network. But we should be able to increase the number of customers for GCN broadband, and it will remain the best service available to those who are within range.

Sadly, individual satellite dishes will remain the best available Internet option for most Gustavus residents needing something faster than dial-up until the community-wide broadband network is built. By then I won’t be the only one calling satellite service “the next dialup,” because it will serve about as well for tomorrow’s Internet use as dial-up does for today’s.