

**Testimony of Stephen Merriam, Chief Executive Officer**

**Arctic Slope Telephone Association Cooperative, Inc.**

**SENATE COMMITTEE ON INDIAN AFFAIRS**

**Oversight Hearing on Universal Service Fund Reform: Ensuring a Sustainable  
and Connected Future for Native Communities**

**June 7, 2012**

*Chairman Akaka, Vice Chairman Barrasso, Members of the Committee:*

Good afternoon. My name is Steve Merriam. Thank you for the opportunity to testify today before this distinguished Committee on the subject “Universal Service Fund Reform: Ensuring a Sustainable and Connected Future for Native Communities.”

I serve as the Chief Executive Officer of Arctic Slope Telephone Association Cooperative (ASTAC), the local exchange carrier serving the North Slope Region of Alaska. I have worked in the rural telephony field for the last seventeen years and hold a Bachelor of Science degree in Business Administration from the University of Vermont and a MBA, specializing in Telecommunications Management from Alaska Pacific University.

ASTAC serves seven Inupiat Eskimo villages, the oilfields of Prudhoe Bay and Barrow, a land mass of over 89,000 square miles which is slightly larger than Minnesota and part of North Dakota. Our entire serving area is arctic, where we face rugged challenges due to extreme cold, harsh inclement weather, lack of roads, and sparsely populated and widely dispersed communities. Despite these challenges, we have digital switching in all exchanges and offer 2G wireless voice and data service as well as DSL.

It wasn't always that way. As late as 1980, our seven villages were served by one pay phone shared by the entire village. Every call was long distance and people stood in line, sometimes for hours, to have a less than private conversation. At the time, no one was interested in serving these communities, which eventually led the people to form a

Cooperative to provide local telephone service. With the assistance of a RUS loan, digital switches were installed into newly constructed central offices and a local network was built out, creating local service for the first time and connecting the communities of the North Slope to each other and the world.

The steady progress that the Cooperative has made would not have been possible without the covenant of universal service and the support it provides to the highest cost to serve parts of rural America. While the Transformation Order's stated intent, to bring access to broadband to all Americans, is a laudable goal, the reality is that there are unintended negative consequences for Alaska Natives because of the broad brush approach taken by the FCC in the Order, consequences that will raise costs to consumers, diminish or eliminate existing services, and will force the loss of jobs.

Most egregiously, it will penalize Native youth in numerous ways. There will be lost opportunity to participate in a digital world as a result of the FCC's decision to use alternative middle mile technology, specifically satellite in rural Alaska. The lack of broadband capacity on Alaska serving satellites will extinguish the dream of access to a good education, whether through earning an on-line college degree or vocational certification. Telehealth and telework will never be fully realized without robust broadband, nor the economic stimulus of wages brought back to a traditional subsistence community from an educated and skilled workforce. Communities will continue to stagnate relative to the rest of America, and hopelessness and depression will continue to plague rural Alaska Natives, who have a suicide rate five times the national average.<sup>1</sup>

As part of my written testimony, I will provide an engineering report<sup>2</sup> commissioned by TelAlaska that examines Alaska serving satellite capabilities. In the interests of time, I will summarize the findings as they relate to the Transformation Order:

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<sup>1</sup> <http://www.nytimes.com/2007/05/14/world/americas/14iht-alaska.1.5699923.html>

<sup>2</sup> See Appendix A for the complete report. In the TelAlaska study, that company's 1,552 DSL customers would exhaust approximately 26% of all available satellite bandwidth in Alaska in order to meet the "relaxed" FCC mandate for throughput from satellite, at a yearly cost of thirty million dollars.

- Minimum upload/download speeds for both fixed and wireless broadband specified for funding in the Order are unattainable via Alaska serving satellites due to a severe lack of capacity.
- Alaska satellite costs for middle mile transport alone will cause both fixed and mobile pricing to fail the comparable pricing to urban areas test.<sup>3</sup>
- Latency over satellite well exceeds the threshold for enabling real time applications such as VoIP.

My testimony highlights two problems facing Alaska Natives, one short term and the other more long term.

As noted above, satellite served communities in Alaska will fail all criteria to receive both CAF and Mobility funding. While the FCC has created a waiver process to provide possible relief, that process is extremely burdensome and expensive to use, particularly when the waiver is universal to rural Alaska because of misguided standards. A needed short term solution, that would save both the FCC and the rural Alaska satellite served companies time and resources, is for the FCC to adjust speed and latency requirements to match the limitations inherent to Alaska serving satellites. This would allow those companies to continue to invest in services for their members rather than waste those scarce resources on addressing a universally identified error specifically affecting rural Alaska. It would also acknowledge that satellite service in Alaska is not an alternative service as it is being characterized by the FCC in its Order, it is an inferior service. Disparity must be acknowledged before it can be corrected.

Likewise, service standards for Mobility Phase II should be lowered for Alaska to reflect the absence of satellite capacity to provide 3G or 4G service. A good working 2G wireless service exists in much of Alaska today but is set to be defunded by the phase down of identical support in two years. This will eventually drive these wireless services out of business and take away a margin of safety for Native Alaskans. Allowing 2G service standards in the short term, to reflect the reality of satellite limitations, will prevent the eventual elimination of wireless service for Native Alaskans in rural

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<sup>3</sup> See <http://assets.gci.com/tariffs/1544mbpst1speed.pdf> or Appendix B for an appended version for ASTAC's middle mile costs, which are quoted at \$14,447.00 per month for 1.544 Mbps middle mile transport.

communities, as well as avoid the ensuing political firestorm. Identical support could be phased down in Alaska on the proposed schedule, consistent with how the Order is written today. At the beginning of the phase down, competitive eligible telecommunications carriers (CETC's) may show their costs. Phase down of support would cease when it reaches the cost for the company to provide the wireless service. Companies that decline to show their costs should be phased down on an accelerated schedule.

These actions would redirect scarce dollars in the Mobility Phase 1 & 2 auctions to other rural areas that have no service today and would maintain some level of competition, and the service quality that competition brings, to rural Alaska and its people.

The longer term problem quite obviously is that Alaska Natives are being left behind, absent government intervention to solve the middle mile bottleneck and achieve the broadband speeds being received by much of the rest of the country. The FCC and the Administration proclaim that all Americans have a right to access broadband. In Alaska, we believe all Americans must include the first Americans.

For too many years, Native Alaskans have been marginalized with substandard services that much of the rest of the country takes for granted. Having identified both the problems and some solutions, I urge you to act boldly and decisively in your leadership capacity, drive change, and do what is just, so when in the future the Congress and the FCC say "all Americans must have access to broadband," it rings true, and is truly consistent with our nation's communications goals.

Thank you again for the opportunity to testify in front of this distinguished committee.

## Appendix A



## Satellite Internet Review

January 30, 2012

### **Purpose of Review:**

To determine if there were any satellite providers that can supply 1 Mbps download and 256 Kbps upload sustained data rates to each data subscriber in the Mukluk and Interior exchanges where Satellite is the only method of access.

### **Mukluk and Interior locations considered in this review:**

The locations with satellite services include: Cold Bay, Glena, Fort Yukon, Nome, Brevig, Teller, Shishmaref, St. Michael, Stebbins, Shaktoolik, white Mt, Little Diomedea, Wales, Golovin, Elim, Unalaska and Koyuk.

### **Satellite Spectrum Analysis:**

There are 1552 Internet subscribers in the Mukluk and Interior exchange locations served by satellite. To determine how much spectrum is needed we used the following calculations:

- 1552 users at 1 Mb/s down at 36MHz/ per transponder Telalaska will require 17 transponders to serve this portion of the bandwidth requirement
- 1552 times 256 kb/s at 36 MHz per transponder, the required return transponder space is estimated to be 10 transponders
- To serve the 1552 customers will require 27 transponders
- This traffic will be terminated at the Teleporter location

Rough order of cost for 27 transponders on a C-band and/or KU Band satellite is estimated to be 30 Million per year or \$4000 per user per month.

### **Satellites Available to serve Mukluk and Interior Communities:**

There are only a couple of satellites serving the majority of the northern Telalaska communities.

The first satellite system to be considered is the Telesat Satellite systems which operate three satellites, the Anik F1R, Anik F2 and Anik F3, which serves northern Canada and Alaska on the fixed-service satellite band.

Only Anik F2 and Anik F3 provide broadband Internet service. The F2 satellite, serves Canada's northern territories through providers like SSI Micro and Northwestel. The Anik F3 satellite supplies broadband Internet to providers in northern Ontario, Quebec and Alaska.

The Telsat organization has indicated if F2 falls out of the sky, every community in northern Canada would go dark. They have reserved bandwidth on Anik F3 in case of an F2 failure and would point all those F2 customers to Anik F3.<sup>4</sup>

The Anik F3 satellite is the primary satellite serving Telalaska needs today. It is presently 80% utilized today<sup>5</sup>

Another satellite system to consider is the Galaxy 18 satellite which can serve the Mukluk and Interior communities. Galaxy 18 is a Space Systems/Loral (SS/L) 1300-series hybrid communications satellite owned by Intelsat and located in geosynchronous orbit at 123° W longitude, serving the continental United States, Alaska, Hawaii, Mexico, and Canada with 24 C-band, and 24 K<sub>u</sub> band transponders.<sup>6</sup>

Galaxy 18 is the home of many free-to-air television channels used by several national TV stations. This satellite is also used by other wireless carriers such as Clear Channel and GCI in Alaska.

Intelsat's quarterly report completed in 2011 indicated that the private broadband networks for global organizations continue to see increased demand for their capacity. In the second quarter of 2011, Bell Canada, Canada's largest communications company, renewed and expanded an agreement with Intelsat to provide a global IntelsatONE network broadband solution for a widely-dispersed civilian government network.<sup>7</sup> This means transponder space is in high demand in Canada and other northern markets. This increased demand will make it difficult for one carrier to obtain a large portion of transponder space.

We also discover these satellites have limited transponder capacity and there is no near term plan to upgrade bandwidth on Anik F3 and Galaxy 18 in the near future.<sup>8</sup> This means there is a finite amount of transponder space.

The newest satellite launched to meet the growing data demands was the Viasat 1. The ViaSat-led project was developed by Loral to propel a series of satellites into space which was meant to enter the mainstream of broadband access choices alongside DSL and cable. This satellite was put into space on October 19<sup>th</sup> 2011.

Because Viasat-1 satellite was just launched late last year, there are limited coverage maps on this satellite. The only one we could find was on Satbeams.com. It indicates the satellite should be able to serve most of Alaska:

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<sup>4</sup> Excerpts from a 2010 report <http://www.fridgefta.info/forums/printthread.php?tid=14640>

<sup>5</sup> This was indicated by Suzanne Palmieri of X2Nsat in January 2012

<sup>6</sup> [http://en.wikipedia.org/wiki/Galaxy\\_18](http://en.wikipedia.org/wiki/Galaxy_18)

<sup>7</sup> [http://www.intelsat.com/\\_files/investors/financial/2011/2011-2Qer.pdf](http://www.intelsat.com/_files/investors/financial/2011/2011-2Qer.pdf)

<sup>8</sup> Anik F3 has 24 transponders in the C band and 32 transponders in the KU band. Galaxy 18 has 24 transponders in C band and 24 transponders in Ku band.



Here is a map of the expected coverage of Viasat-1<sup>9</sup>

The concern should be not whether the satellite can provide service to the communities but if the companies supplying the signal can support the local residence and businesses in those areas. This support doesn't just stop with the just providing a signal to the residence and businesses in the communities but should be able to meet the local service and support needs to the residence, businesses, schools, libraries and the community.

When we tried to contact a Wild Blue representative the website identify a local reseller out of Anchorage. We contacted that person. He did not indicate he represented Wild Blue directly but indicated he worked with several satellite carriers and indicated he could provide service to the above mention location. He also indicated they would install the system but service would come out of the lower 48. They indicated an engineer would contact me to discuss installation options. As of this writing, I have not had another follow-up call.

Again wanting to understand what Wild blue plans to offer, I looked further on their web site to see if I could get a more definitive answer. I found this FAQ page:

**Will Wild Blue be available in Alaska, Hawaii or Puerto Rico?**

Answer: Wild Blue is planning to start offering high-speed Internet services in Hawaii and southern Alaska (Anchorage and most of the Kenai peninsula) in early 2012.<sup>10</sup>

I also tried to find a support person from Hughes. I did find installation crews in Fairbanks and a new company just getting started in Anchorage to serve the Kenai and southern areas of the state. I called and they both indicated they only did installation work. Service would come from the Hughes service line in the lower 48. They would only respond to a problem if dispatched by Hughes.

<sup>9</sup> <http://www.satbeams.com/footprints?beam=6554>

<sup>10</sup> [http://www.wildblue.com/overview/faqs#3\\_3](http://www.wildblue.com/overview/faqs#3_3)



## Satellite Teleport Resource Considered in this Analysis:

We solicited three Satellite providers to find out if they could serve the communities outlined above.

- |   |  |
|---|--|
| 1. Globecom Systems<br>45 Oser Avenue<br>Hauppauge, NY 11788<br>Tel: (631) 231-9800       | Contact: Steve Spreizer (VP - Network Eng.)<br>Phone: (631)457-1127<br>Email: <a href="mailto:sspreizer@globecommsystems.com">sspreizer@globecommsystems.com</a> |
| 2. X2nSat<br>1333 N. McDowell Blvd. Suite A<br>Petaluma, CA. 94954<br>Tel: (707) 283-8000 | Contact: Suzanne Palmini (Sales Executive)<br>Phone: (707) 283-8012<br>Email: <a href="mailto:suzanne@x2nsat.com">suzanne@x2nsat.com</a>                         |
| 3. Satcom resources<br>PO Box 1639<br>101 Eagle Rd., Building 7<br>Avon, CO 81620-1639    | Contact: Chris Weathers<br>Phone: (970) 748-4255<br>Email: <a href="mailto:chris.weathers@satcomresources.com">chris.weathers@satcomresources.com</a>            |
| 4. SATELLITE ALASKA   | Contact: John MacPherson (only contact in Alaska for Wild Blue)<br>Phone: 907 243-7475   |

We asked each Satellite company:

1. If they could provide 1Mbps/256KBPS guaranteed sustained throughput from each data consumer in each community and terminate all users to a data access peering point in Anchorage Alaska?
2. If they could provide the service, what would it cost?

## Satellites Providers Responses

### Globecom Response

Spreizer, Steve [sspreizer@globecom.com](mailto:sspreizer@globecom.com)

Jan  
24

Hi,

Thanks for sending me the information. Unfortunately we are not in a good position to address it. As I mentioned on the phone we do not have a facility in Anchorage to terminate the traffic. I

checked and the only coverage we have for Alaska would actually terminate back here at our NY facility and then it would have to be routed back to Anchorage via terrestrial circuit/public Internet. This would not be a good technical solution or cost effective for you.

I think you also need to revisit your bandwidth calculations. Satellite bw is very expensive. 137 Mbps of dedicated capacity will easily cost >\$1M per year.

Best regards,  
Steve Spreizer  
Vice President - Network Engineering  
Phone: [631-457-1127](tel:631-457-1127)  
Fax: [631-231-1557](tel:631-231-1557)  
Email: [sspreizer@globecommsystems.com](mailto:sspreizer@globecommsystems.com)

On January 30

We pressed Steve to tell us if there was transponder space today to serve TelAlaska needs. This was his final response

"This type of capacity is not readily available today for Alaska. However if someone is really willing to pay this amount of money, a solution can be found."

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## **X2nSat Response**

Suzanne Palmini [suzanne@x2nsat.com](mailto:suzanne@x2nsat.com)

Jan  
25

Terry - Please find, attached, our findings. The conclusion is it is NOT feasible to dedicate 1M x 512 per subscriber. But, it is doable if you oversubscribe the network and gamble not everyone is "always on" thus freeing up bandwidth. Feel free to correspond directly with Phil should you have any questions. Thank you.

**Suzanne Palmini**  
**Sales Executive**  
**X2nSat, Inc.**

X2nSat - The global leader in VSat Networks This e-mail and its contents are covered by any Non-Disclosure Agreements that may exist between our two companies.

### **This was the suggested design with Overbooking from X2nSat (Still Costly)**

10:1 Overbooking scheme for 607 Users with 5 Mb/s max Down & 1 Mb/s max Up  
25 Gbyte/month Down max & 5 Gbyte/month Up, then charge extra  
Need one 36 MHz transponder for our DVB-S2 at 90 MB/s and 12 MHz for the Upload Returns  
Each Remote sites combines the Upload of it's users into a constant carrier back to hub  
example 50 users x 30 kb/s avg = 1.5 Mb/s return carrier shared, minimum would have to be 1 Mb/s to meet spec if BW is \$150,000/month over 600 = \$250/month per user, if too much go 20:1 overbook for \$125/month/user

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### **Satcom Response**

Chris Weathers [chris.weathers@satcomresources.com](mailto:chris.weathers@satcomresources.com)

Jan  
26

Hi,

The most spectral efficient satellite link we've seen runs about 6 Mbits/ MHz. So for 137Mbps, that would require over 23 MHz of space segment just for the [downstream bandwidth](#). Satellite Space Segment is selling for \$4,500 to \$5,000 per MHz, that's a monthly bill of over \$103,000. This is the best case scenario. Of course, there are startup fees and Teleport fees and backbone termination feeds on top of the monthly cost but I wanted to hear if this is worth looking into further or not.

Chris Weathers  
Satcom Resources  
[970-748-3094](tel:970-748-3094) (Office)  
[970-748-4255](tel:970-748-4255) (Direct)  
[970-748-3096](tel:970-748-3096) (Fax)  
[chris.weathers@satcomresources.com](mailto:chris.weathers@satcomresources.com)  
<http://www.satcomresources.com>

#### **Wild blue contact:**

Terry:

Thanks for your time today, expect a call from the HUB, the gentleman is Mr. Keith Lewis, if you do not hear from him in the next couple of days let me know.

SATELLITE ALASKA  
John Macpherson  
o907 243-7475  
c907 227-7844  
f907 248-2999

Conclusion of the Discovery:

**The three main hub providers, after reviewing their established resources, came to the same conclusion. Today none could guarantee they could provide the transponder spectrum required to serve Mukluk and Interior data users based on the sustain rates required by their interpretation of the new FCC ruling.**

**The three main hub providers also indicated the costs for the service would be extremely expensive. The cost per subscriber would be upward of \$4000 per sub per month-- just for the cost of the service. This doesn't include the costs of over head support and management, as well as ongoing customer care, billing and Internet access. These additional costs would increase the month rate by at least \$500 per month per subscriber**

**The hub respondents indicated an overbook ratio as an alternative. They indicated this could be designed to give the end user the perception that they will have the full bandwidth available to them on a *demand* basis because it is assumed all users will not consume all of their bandwidth at the same time.**

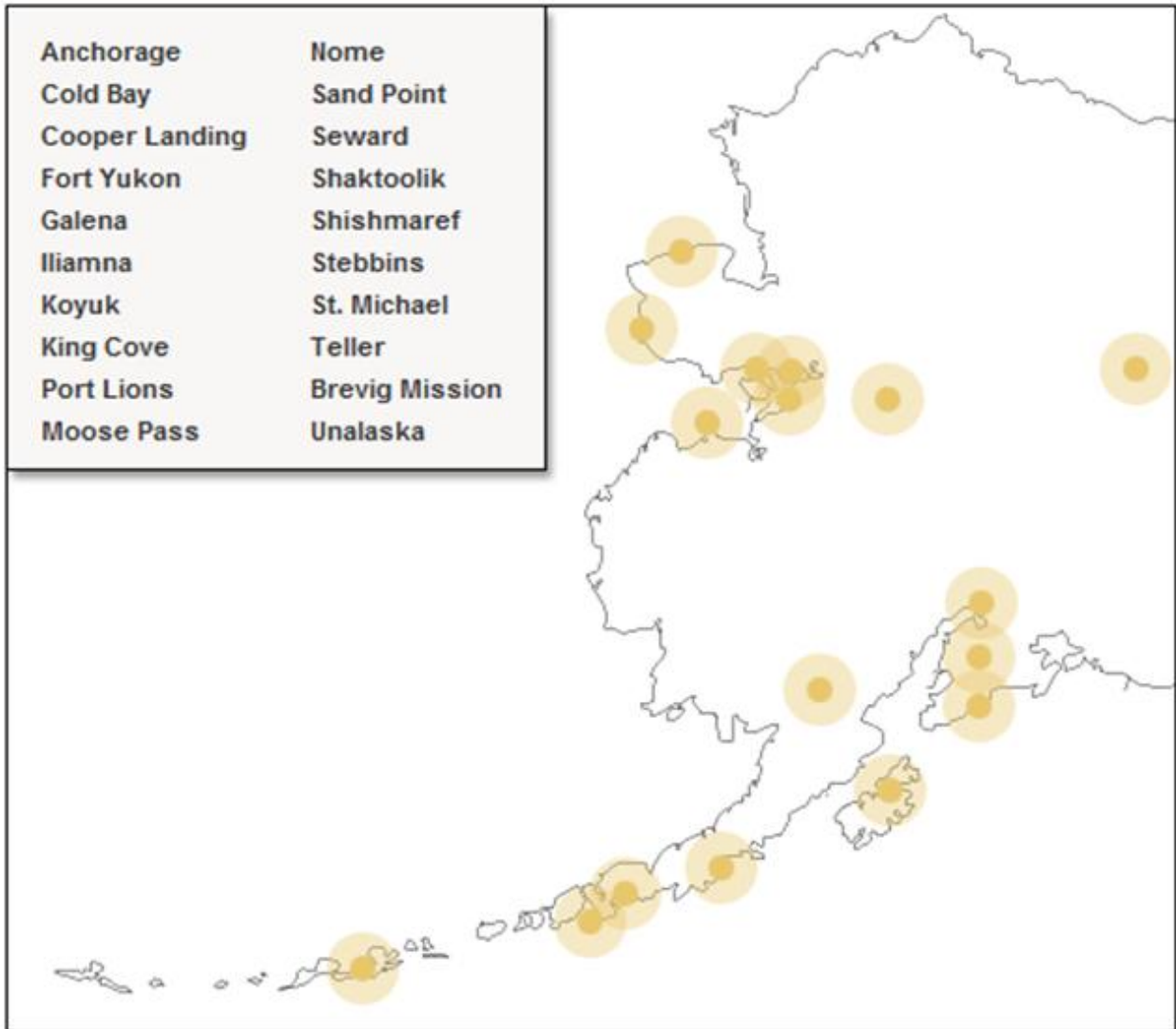
**The primary advantage of overbooking is to lower transport service cost. It is estimated overbooking will lower the cost of the service by as much as 50%. Studies on internet access using overbooking can yield a 300–500% improvement in costs of access, while still providing useful resource guarantees to applications<sup>11</sup>. Another study completed by Rutgers University in 1999 focused on how the airline industry uses overbooking strategies to manage seat occupancy control while improving revenue streams.<sup>12</sup>**

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<sup>11</sup> <http://people.inf.ethz.ch/troscoe/pubs/TOITS09.pdf>; another is on revenue management: [http://en.wikipedia.org/wiki/Revenue\\_management](http://en.wikipedia.org/wiki/Revenue_management); another report presented to Globecom in 1998: [www.cs.ucla.edu/~nrl/hpi/papers/1998-globecom-2.ps](http://www.cs.ucla.edu/~nrl/hpi/papers/1998-globecom-2.ps)

<sup>12</sup> <http://ben-israel.rutgers.edu/711/McGill-VanRyzin.pdf>

**A General Map Layout of all Mukluk and Interior Locations**

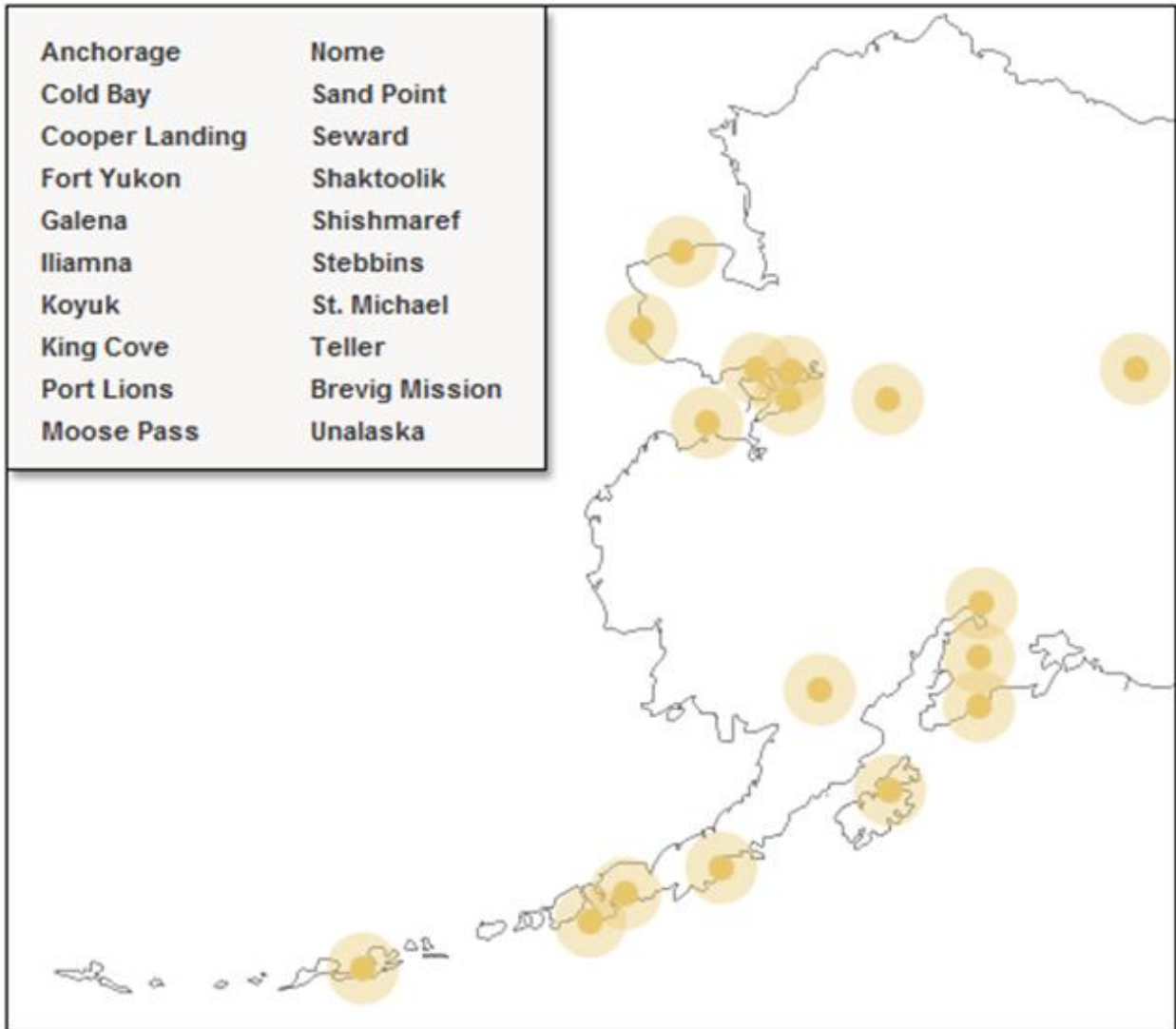


## Exhibit A

### TelAlaska Locations served by Satellite and the Number of DSL Customers Per Location

Cold Bay	47
Galena	142
Fort Yukon	83
Nome	137
Brvig/Teller	47
Shishmaref	34
St. Michael	19
Stebbins	29
Shaktoolik	22
Koyuk	23
Unalaska	695
King Cove	180
Wales	12
Little Diomedede	8
Golovin	20
Port Lions	34
White Mt	20
Elim	20
Total number for users	1552

**A General Map Layout of all Mukluk and Interior Locations**



## Appendix B



1.544 Mbps RATES

Description

GCI Private Line service provides data service between specific points suitable for use in any manner compatible with the channel's technical characteristics.

Local Exchange Facilities

Local Exchange Facilities for terminating GC1 Digital Private Line Service will be obtained from the appropriate exchange carrier at its tariffed rate.

Rates and Charges

Rates quoted below are monthly recurring charges (7 days/Week, 24 hrs/day), do not include local channel access charges, and apply to each section of an Interexchange channel, i.e.; between each pair of points, on all types of channels.

Installation Charge :

\$  
200.00

Monthly Rates :

The pricing chart refers to "DAMA Villages". Please see, below the chart, the listing of cities considered 'DAMA Villages'.

1.544 Mbps

	BETWEEN	Month to Month	Monthly Recurring Charge
Barrow	Bethel	Satellite	\$14,447
Barrow	Cordova	Satellite	\$14,447
Barrow	Dillingham	Satellite	\$14,447
Barrow	Dutch Harbor	Satellite	\$14,447
Barrow	Eagle River	Satellite	\$14,447
Barrow	Fairbanks	Satellite	\$14,447
Barrow	Juneau	Satellite	\$14,447
Barrow	King Salmon	Satellite	\$14,447
Barrow	Kotzebue	Satellite	\$14,447
Barrow	Nome	Satellite	\$14,447
Barrow	Prudhoe Bay	Satellite	\$14,447
Barrow	Seattle	Satellite	\$14,447
Barrow	DAMA Villages	Satellite	\$14,447
Prudhoe Bay	Barrow	Satellite	\$14,447
Prudhoe Bay	Bethel	Satellite	\$14,447
Prudhoe Bay	DAMA Villages	Satellite	\$14,447
Prudhoe Bay	Dillingham	Satellite	\$14,447
Prudhoe Bay	Dutch Harbor	Satellite	\$14,447
Prudhoe Bay	Ketchikan	Satellite	\$14,447
Prudhoe Bay	King Salmon	Satellite	\$14,447
Prudhoe Bay	Kodiak	Satellite	\$14,447
Prudhoe Bay	Kotzebue	Satellite	\$14,447
DAMA Villages	Barrow	Satellite	\$14,447
DAMA Villages	Bethel	Satellite	\$14,447

DAMA Villages	Cordova	Satellite	\$14,447
DAMA Villages	Dillingham	Satellite	\$14,447
DAMA Villages	Dutch Harbor	Satellite	\$14,447
DAMA Villages	Eagle River	Satellite	\$14,447
DAMA Villages	Fairbanks	Satellite	\$14,447
DAMA Villages	Juneau	Satellite	\$14,447
DAMA Villages	Kenai	Satellite	\$14,447
DAMA Villages	Ketchikan	Satellite	\$14,447
DAMA Villages	King Salmon	Satellite	\$14,447
DAMA Villages	Kodiak	Satellite	\$14,447
DAMA Villages	Kotzebue	Satellite	\$14,447
DAMA Villages	Nome	Satellite	\$14,447
DAMA Villages	North Pole	Satellite	\$14,447
DAMA Villages	Prudhoe Bay	Satellite	\$14,447
DAMA Villages	Seattle	Satellite	\$14,447
DAMA Villages	Seward	Satellite	\$14,447
DAMA Villages	Sitka	Satellite	\$14,447
DAMA Villages	Valdez	Satellite	\$14,447

<u>Term Discounts</u>	:	
Term Commitment	Discount	
1 year		3%
2 year		4%
3 year		5%
5year		10.00%

**DAMA Villages:**

**Barrow Region**

Anaktuvuk Pass\*

Atqasuk\*

Kaktovik\*

Nuiqsut\*

Point Hope\*

Point Lay\*

Wainwright\*

**EFFECTIVE: December 13, 2005**