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Alaska State Legislature

UTILITIES RESTRUCTURING COMMITTEE

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AGENDA

April 5, 2000
8 a.m. Capitol 120
The Status of Telecommunications in Alaska

Invited Speakers:

- ✓ Lt. Governor Fran Ulmer
Telecommunications Information Council
- ✓ Greg Berberich, Vice President
Matanuska Telephone Association
- ✓ Mark Vasconi - Director, Regulatory Affairs
AT&T Alascom
- ✓ Bill Behnke - Senior Vice President, Marketing
General Communications Inc. (GCI)
- ✓ Mary Ann Pease, V.P. External Relations,
Alaska Communications Systems
- ✓ Marc Farmer, Regional Business Manager
National Rural Telecommunications Cooperative
- ✓ Dave Lewis, Operations & Maintenance Manager
Alaska Fiber Star
- ✓ Jack Rhyner, President & General Manager
TelAlaska, Inc.

Karen Morgan, Acting Director,
Information Technology Group, Dept. of Administration

— Did not testify
ran out of time

AT&T Alascom Testimony Before The Utility Restructuring Committee

Mark Vasconi

AT&T Alascom Regulatory Affairs Director

April 5, 2000

Thank you Mr. Chairman and members of the committee. Good morning. My name is Mark Vasconi and I am AT&T Alascom's Director of Regulatory Affairs. First, I'd like to take the opportunity to thank the committee for holding this hearing on the status of Telecommunications in Alaska. Telecommunications is a vitally important piece of the State's infrastructure and AT&T Alascom is glad to participate in this forum.

I'd like to focus my brief comments this morning on a couple of main points. First, I'd like to share with you a brief overview of AT&T Alascom's operations in Alaska; Second, I'd like to inform you of the investments we are making in telecommunications infrastructure and third I'd like to discuss what I consider a major challenge shared by Long Distance carriers in providing service in Alaska.

As you probably know, AT&T Alascom is the largest long distance carrier operating in Alaska. Not only do we provide Long Distance service we also provide local service in Anchorage as well as internet service in many communities in the state. Revenues from our long distance operations were approximately \$278M in 1999 and we employ about 440 people in Alaska. Additionally, as Carrier of Last Resort, we are the only ubiquitous telecom provider in Alaska as our facilities provide long distance service to every community in Alaska with more than 25 full time inhabitants. Even though many of the locations are extremely remote we take the obligation of Carrier of Last

resort very seriously and have worked in the past years to continue to upgrade service to the bush as well as to Alaska communities located on the road system.

In order to provide long distance service to the State's communities AT&T Alascom owns, operates and maintains over 200 earth stations and related facilities as well as an extensive microwave network along Alaska's road system. The microwave network also provides service throughout SE Alaska along a route that roughly follows the Alaska Marine Highway. We also operate Aurora II, a satellite that provides service primarily to the Bush.

Turning now to investments that AT&T Alascom has made in the network. Since AT&T purchased Alascom in 1995, we have made investments in a new switch in Anchorage which "ties" our Alaska network to AT&T's global network and upgraded our microwave system to digital capabilities. To date, AT&T Alascom has invested roughly \$45M in replacing the Aurora II satellite which scheduled to "go dark" during the third quarter of 2001. Aurora III is scheduled to be launched during the first quarter of 2001, in advance of Aurora II's end of life. In 2000, we will spend another \$65 Million in preparing Aurora III for launch. Once the satellite is launched and in place, maintenance and operating costs for Aurora III will be roughly \$8 Million per year.

In addition to replacing Aurora II, AT&T Alascom has been upgrading its earth station facilities around the state. When AT&T purchased Alascom in 1995, earth station equipment and technology was nearly 20 years old. Replacement parts were hard to find, a call between satellite-served Bush communities involved a double-hop, which degraded FAX transmissions, and naturally, consumers wanted better service. Given the

shortcomings of analog satellite service, as well as GCI's impending entry into the Bush, in 1996 AT&T Alascom embarked on an upgrade of bush earth stations which is bringing digital service to communities served by satellite. By January 2001, AT&T Alascom will have completed a program to upgrade 105 Earth Stations with a relatively new technology called Demand Assigned Multiple Access, or DAMA. These upgrades will cost about \$31 million and will bring improved service to consumers in the Bush. Under the old technology, a call between two satellite- served villages had to go up to the satellite twice. Under DAMA Technology, the call has to "hit" the satellite only once. The elimination of this "double hop" reduces the delay and provides more reliable voice and FAX communications. Additionally, by January 2001, AT&T Alascom will spend another \$4M in upgrading the remaining earth stations to digital capability. In all, by January 2001, the earth station upgrades costing about \$35 million and the replacement of Aurora II at about \$108M will insure continued long distance service to rural Alaska at substantially improved levels.

As one can see, these projects take time and are very expensive. These investments also demonstrate that AT&T Alascom continues to honor its obligation as Carrier of Last Resort and is extending its commitment to provide service to all customers in Alaska at a competitive price.

In providing long distance to Alaska customers one of the greatest challenges we face is providing service at competitive rates while earning a positive return on our costs. When one examines the costs we incur in providing long distance service, the single

largest cost is in the payment AT&T Alascom makes to local exchange carriers to access their networks to originate and terminate long distance calls. In 1999, the cost to AT&T Alascom for these so-called access charges accounted for approximately \$26M. To put this cost in perspective, in-state access charges equate to about \$.133 per minute while our average revenue per minute is approximately \$.22 per minute. In other words, for every dollar of toll revenue AT&T Alascom receives for an in-state toll call, approximately 60% goes to the Local Exchange carriers in Alaska. At access charges of about \$.133 Alaska has some of the highest access costs in the nation.

While access charges have remained high in Alaska over the years, toll rates, driven by competition have steadily declined. In 1991 at the inception of in-state competition, the average revenue per minute for toll service was about \$.32 per minute. Today it is at about \$.22 per minute. That is a drop of about 32% and that is exactly what you would expect from the workings of competition. Access charges on the other hand have budged only slightly over that same time period. Aside from the conclusions that one can draw on the effectiveness of competition versus monopoly service in bringing prices down, access charges at existing levels have effectively created a floor on how low LD rates can go. Presently AT&T Alascom and its IXC competitors are offering service for as low as \$.15 per minute with no associated monthly recurring charge – at access rates of \$.133, it is difficult to offer rates much lower than present levels.

As we see it, there are two mechanisms that can bring access charges in line with the realities of today's telecom markets. First is regulatory review of how access charges

are determined and second, is the development of competitive facilities that provide carriers such as AT&T Alascom an alternative means by which to access customers. AT&T Alascom supports the RCA's continuing efforts to examine access charge development and also hopes the commission will continue to create an environment which fosters competition in local markets. These two efforts will ultimately drive prices to costs and provide customers with more competitive alternatives.

With that I conclude my presentation and am glad to entertain your questions.

Telecommunications Information Council Activities Update

Office of the Lt. Governor/Feb. 23, 2000

The Telecommunications Information Council (TIC), created by statute in 1988, is charged with developing policies related to telecommunications and information technology. Membership includes the Governor, commissioners of all departments, representatives of the Alaska Court System and the Legislative Affairs Agency, and one member of the public. Two legislators, one from the House and one from the Senate, serve as non-voting members. In 1995 Governor Knowles designated Lt. Governor Ulmer to chair the TIC, which meets quarterly.

TIC Committees

TIC Policy Committee: This is an executive committee of the TIC that sets the agendas for the TIC and its advisory committees and serves as a driving force behind major policy initiatives. Members are Lt. Governor Ulmer, Annalee McConnell of OMB, Commissioner Shively, Commissioner Poe, Commissioner Cross, Deputy Commissioner Smith of DPS, Deputy Commissioner Chase of DMVA and Chancellor John Pugh of the University of Alaska Southeast. Staff advisers include the director of the Department of Administration's Information Technology Group and the Lt. Governor's chief of staff and special assistant for telecommunications. The Policy Committee meets approximately twice a month.

TIC Technical Advisory Committee: Each department has designed one of their top information technology specialists to serve on the TAC. The committee is asked to advise the TIC on a variety of technical issues, such as standards, security and evaluations of capital projects proposed by state agencies. The TAC, chaired by John Lindback, chief of staff to the Lt. Governor, meets monthly.

TIC Advisory Committee on Emergency Communications: This group, chaired by Deputy Commissioner Del Smith of Public Safety, meets as needed for departments with an interest in emergency communications (DPS, DMVA, DH&SS, DOA) to make recommendations on issues that cross department lines. The current focus of this group is the migration of land mobile radios to a new federally mandated standard.

TIC Advisory Committee on Geographic Information: This recently appointed group will concentrate on geographic information systems and how the state can work in partnership with federal agencies and the private sector. The full range of geographic information issues will be discussed, including the emergence of high-resolution satellite imagery and its potential uses by state agencies and the University of Alaska.

TIC Initiatives

Creation of a State Telecommunications and Information Technology Plan: In 1996 the TIC developed and adopted a state plan that provided a blueprint for agencies, the public and telecommunications providers. An update of that plan is scheduled for early 2001.

Boosting the State of Alaska's presence on the Internet: At the direction of TIC, the State of Alaska's offerings of information, services and transactions on the internet has dramatically increased. Alaskans can now go to the web to read public notices of all kinds, check the ferry and railroad schedules, view the latest election results, check on the status of their Permanent Fund dividend application, apply for state job, purchase a fishing license, renew a car registration, purchase a special license plate, review campaign contribution information, download an application for a business license, and much, much more.

Setting standards for state government: The TIC promotes efficiencies within state government by setting technology standards for state agencies. As a result of TIC actions, all state agencies are now using the same suite of desktop software products, which makes it easier for state employees to communicate with each other. State government now has a statewide email system, allowing technicians in most agencies to spend time on other priorities.

Online training of state employees: A partnership between the Gartner Group, a leading technology consulting firm, the state of Alaska and the University of Alaska, led to creation of a unique online technology training program for state employees and University of Alaska students. State employees can now access hundreds of online training courses from home or work, provides obvious benefits to the state and improves the long-term "employability" of workers.

Special projects and initiatives:

- The potential uses of satellite imagery by state agencies was the focus of a TIC-sponsored conference last December.
- A telecommunications partnership project that involves seeking proposals from telecommunications providers to take over portions of the state-owned telecommunications network is now underway.
- The TIC, in partnership with the University of Alaska, created a videoconferencing system to service state agencies.
- Cost efficiencies for public television and rural television (ARCS) were achieved when the TIC directed implementation of a digital system.

Other Telecommunications/IT Related Projects and Initiatives

FCC State and Local Advisory Committee on Universal Service: Lt. Governor Ulmer was appointed to serve on this committee, which provides advice to the Federal Communications Commission on state and local communications issues, such as continuation of the education rate for educational institutions, state and local authority over location of transmission towers, etc.

Denali Commission survey on rural telecommunications services: The Denali Commission, co-chaired by Lt. Governor Ulmer, recently approved up to \$50,000 for a survey of the telecommunications services available in rural Alaska communities and what residents they pay for them. When the survey is completed, policy makers will be able to determine the price and availability of services such as telephones, cable television, internet for each village in rural Alaska.

Digital signatures: Regulations to implement Alaska's new digital signature will take effect shortly. Certification authorities, the businesses that sell digital signature certificates to the public, will soon be able to register with the state of Alaska.

Jobs for Alaskans in the technology industry: The Alaska Science and Technology Foundation last week approved a pilot project to identify, recruit, and place 50 new information technology apprentices into a minimum of 20 Alaska companies. This will be done through formation of a consortium composed of businesses, educational institutions and other organizations with an interest in economic development and training.

Telemedicine: The State of Alaska is participating in partnership with federal agencies, telecommunications providers and health care providers to assess the best uses of telemedicine applications in Alaska, how to break the barriers to effective use of telemedicine in our state, and strategies to finance development costs.

National Recognition for Alaska

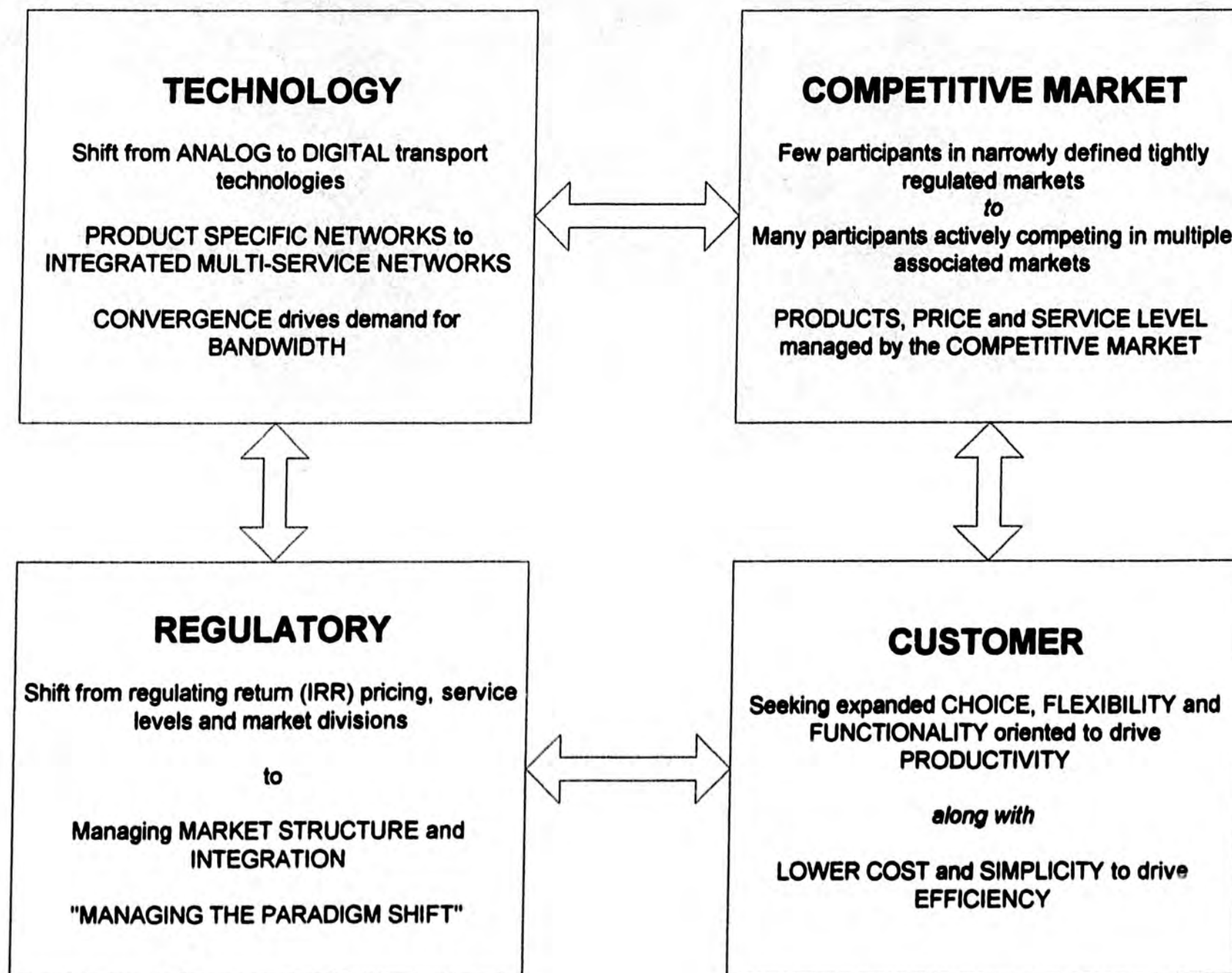
The State of Alaska has just been ranked second in the nation among all 50 states for facilitating electronic commerce. The Digital State Award is granted by the Center for Digital Government. Last year, the state placed 9th overall. The State also won a coveted "Best of the Web" award from Government Technology Magazine. The National Association of State Chief Administrators selected Workplace Alaska and the Alaska Division of Motor Vehicles Partnership Program for its 1999 Overall Award for Innovation. In addition, the DMV program earned an innovator in technology award from the Smithsonian and *Computerworld* Magazine.

GENERAL COMMUNICATION, INC.
LEGISLATIVE BRIEFING
APRIL 5, 2000

- Industry Forces and Future Trends
- Alaska, Leading and Lagging the Industry
- GCI Technology Initiatives, Current and Future
- The Internet in both Urban and Rural Alaska
- Internet Economics
- Subsidies and Incentives

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FORCES WITHIN THE TELECOMMUNICATIONS INDUSTRY



GCI Technology Initiatives

BACKBONE TRANSPORT RELATED

- **DAMA Bush Earth Station Network**
 - Improved quality (single hop calling between stations)
 - Improved data capability (high speed dial-up data)
 - Reduced capital and operating cost (sites manufactured vs individually constructed, more efficient use of transponder resources)
 - Investment: \$25M+
- **Alaska United – OC192 Fiber Optic System with point of presence in Fairbanks, Valdez, Anchorage, Juneau and Seattle, Washington**
 - System initially equipped for OC-48 (25% of design capacity), GCI will begin upgrading the system this summer to its full OC-192 capacity
 - Upgrade required 18 months following “ready for commercial service” date, roughly 18 months ahead of forecasted schedule.
 - Investment: \$125M+
- **Galaxy XR – Launched on 1/24/00, GCI accepted as “ready for commercial service”, March 2000**
 - Satellite located at 123 degrees west longitude,
 - Custom designed spot beam provides exceptionally strong coverage throughout Alaska
 - Investment: \$50M

LOCAL NETWORK RELATED

- **Hybrid Fiber/Coax Networks – Fairbanks, Juneau, Anchorage**
 - Used for voice, data and cable entertainment
 - Allows expanded cable programming services (more channels)
 - Reverse amplified for cable modem applications
 - Used to provide fiber directly to large businesses and multi-tenant complexes.
- **Digital Cable Services**
 - Expanded cable programming and Home Move Theater (pay-per-view) options
 - 7,500+ subscribers

- **Cable Modems**

- "Hypernet" Cable Modem (high speed cable modem) service available in Anchorage, Fairbanks and Juneau
- Internet Access and LAN Extension (Work at Home)

- **Local Services**

- GCI is currently providing commercial and residential local service in Anchorage, serving approximately 28% of the Anchorage market.
 - 45,000+ residential and commercial in Anchorage market
- Involved in negotiation process (as defined by the 1996 Telecom Act) to provide local service in Fairbanks and Juneau. *GCI anticipates offering local service in Fairbanks and Juneau sometime during the next 12 to 18 months.*

- **Wireless Services**

- PCS license acquired
-

Total Local Network Investment: \$70M+

OTHER SIGNIFICANT INVESTMENTS

- **Convergent Billing Systems**

- Driving towards single bill for local, long distance, Internet, Cable and wireless
- Investment: \$15M

FUTURE GCI TECHNOLOGY INITIATIVES

- **Urban Markets:**

- Fully protected fiber service through mutual restoration agreements or construction of additional facilities (6 months -2 years)
- Lower cost building penetrations resulting in expanded availability of cable modem service in commercial facilities not traditionally served by cable. (6 months – 1 year)
- Wireless data (current orientation to low speed, some beta high speed wireless products) – (6 months –2 years)
- Reduced cable modem installation cost through the deployment of DOCSIS and MCNS technology (cable modems likely to be integrated into “off the shelf” PC systems) allowing users “plug and play” installation (1-3 years)
- Cable telephony – allows for the delivery of local telephone service over the cable plant (requires resolution of certain network power issues)

- **Rural/Satellite Serviced Markets:**

- Switched data over DAMA earth stations (1-2 years)
- Asymmetric delivery of satellite IP data (2-3 years)
- Refinement of shared “outroute” technology (2-3 years)
- Wireless data for high speed Internet access (3-4 years)
- Deployment of DOCSIS or MCNS technology in cable service areas (1-3 years)

URBAN MARKETS TYPICALLY FIBER OR MICROWAVE SERVED	RURAL MARKETS SATELLITE SERVED
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Dial-up Access	Providers	Several Providers, Local and National	Typically 1-2 providers in regional centers, Few communities outside of the regional centers have local dial-up Internet access
	Pricing	Pricing FREE to \$25.00/account	Pricing \$19.99 to \$50.00/account
	Service Levels	Service levels comparable to the national standards	Where available, the service is typically lower than the national average due to the high underlying cost of providing service (transport and bandwidth) and the relatively small population base
	Issues Future Opportunities	Expanded availability of 56kbs dial-up service	Local dialtone and transport cost/subscriber Reduced transport cost as a result of asymmetric delivery, shared outroute
High Speed Access, Consumer	Providers	Several Local Providers (typically telcos and cable companies)	None available today
	Technology	1st generation cable modem, xDSL, limited wireless	
	Pricing	Pricing FREE to \$25.00/account	
	Service Levels	Service levels equal or better than the national average	
High Speed Access, Commercial	Issues	Complex installation, proprietary technology for cable modem subscribers, limited xDSL service area, limited wireless service area	Several providers, typically carriers (delivery over public and private network facilities)
	Future Opportunities	2nd generation cable modems (DOCSIS, MCNS), integrated cable modems, wireless access, expanded xDSL coverage, increased competition	
	Providers	Several Local Providers	
	Technology	Direct Access, xDSL and cable modem	
High Speed Access, Commercial	Pricing	Varies widely depending on service and capacity	Varies widely depending on service and capacity
	Service Levels	Service levels vary	Rural customers typically subsidized schools, libraries and health corporations
	Issues		Reduced costs associated with lower cost transport, potential use of wireless technology for local distribution
	Future Opportunities		

GENERAL ECONOMICS OF INTERNET ACCESS IN SATELLITE SERVED MARKETS

Regional Center

Dialtone

Cost of Business Dialtone	\$	35.00	
Subscribers/Line		4.5	
Cost/Subscriber	\$		7.78
Satellite Access (\$4 to \$6/subscriber)	\$		4.00
Technical Support	\$		2.75
Invoice, Billing and Collections	\$		1.00
Bad Debt	\$		1.00
Customer Service and Account Administration	\$		1.50
Total Cost/Subscriber	\$		18.03

Capital Investment Required	\$	100,000.00
Available Subscribers		200

Payback	<u>Payback in Months</u>
At \$25.00/Subscriber	72
At \$30.00/Subscriber	42
At \$35.00/Subscriber	29
At \$40.00/Subscriber	23

Bush Village

Dialtone

Cost of Business Dialtone	\$	35.00	
Subscribers/Line		2	
Cost/Subscriber	\$		17.50
Satellite Access (\$4 to \$6/subscriber)	\$		9.00
Technical Support	\$		2.75
Invoice, Billing and Collections	\$		1.00
Bad Debt	\$		1.00
Customer Service and Account Administration	\$		1.50
Total Cost/Subscriber	\$		32.75

Capital Investment Required	\$	50,000.00
Available Subscribers		30

Payback	<u>Payback in Months</u>
At \$25.00/Subscriber	(215)
At \$30.00/Subscriber	(606)
At \$35.00/Subscriber	741
At \$40.00/Subscriber	230
At \$50.00/Subscriber	97

SUBSIDIES AND INCENTIVES

- **SUBSIDIES OF ONE FORM OR ANOTHER MAY BE NEEDED TO INITIATE THE DEPLOYMENT OF CERTAIN ADVANCED SERVICES IN RURAL ALASKA.**
- **INCENTIVES NEED TO BE CAREFULLY STRUCTURED TO ENCOURAGE:**
 - **RETAIL COMPETITION**
 - **REDUCES UNIT COST**
 - **PROVIDES INCENTIVE FOR INNOVATION**
 - **PROVIDES INCENTIVE TO FOCUS ON SERVING THE CUSTOMER**
 - **TECHNOLOGY DEVELOPMENT**
 - **REDUCES COST**
 - **INCREASES FUNCTIONALITY**
 - **PROMOTES PRODUCTS THAT BETTER MEET CUSTOMER NEEDS**

Alaska State Legislature

Utilities Restructuring Committee

April 5, 2000

My name is Marc Farmer and I am the Northwest Regional Business Manager for NRTC, National Rural Telecommunications Cooperative Association. I am responsible for the Northwest Territory including Alaska, Washington, Oregon, Idaho, Utah, and Nevada and have worked in the utility industry for 14 years.

NRTC has a membership of over 1,000 rural electric and telephone utilities throughout the United States, including 15 in Alaska. We have been actively involved in bringing telecommunications products and services to rural America since 1986 through its member utilities. We started by delivering programming for C-Band satellite owners and provided \$125 million to partner with GM Hughes to launch DirecTV. We now have 1.5 million subscribers to satellite programming in rural areas that we serve. We have also added 10 additional programs and services including Internet, Computer Solutions, and wireless communications such as 220 MHz. The Alaska Rural Electric Cooperative Association is heavily involved in bringing 220 MHz wireless communications through NRTC to Alaska. They purchased the license in 1998 and are in the process of building out the infrastructure to deliver voice, data, and GPS capabilities this year.

The future lies in the digital arena, which NRTC is uniquely positioned to deliver to rural America. With over 1.5 million subscribers in the satellite world, we have the knowledge, experience, and the proven ability to bring products and services to the rural marketplace. This kind of success has not gone unnoticed as many of the emerging technologies are approaching us to deliver their products and services. Some of these include cellular radio, cellular phone, and we are currently in negotiations to deliver two way interactive broadband via satellite, which will bring internet, voice, audio, and data services at speeds 10 times faster than land lines.

Bringing bandwidth to villages and rural areas has two issues. How to get the bandwidth there, and how to distribute it once it is brought in. Satellite will be able to deliver the bandwidth regardless of terrain or distance. While DSL (Digital Subscriber Line) is a very good solution for urban and some suburban areas, it is very costly for rural areas. In an effort to make sure rural area receive the same level of services at competitively priced rates, we will be involved in the delivery of digital bandwidth via satellite.

We are intimately involved in the Federal Legislative efforts to provide a loan guarantee of \$1.25 billion to deliver local television programming to the rural areas of America. We have the financial backing already in place to put NRTC in the drivers seat to be the ones selected to build, launch, and operate the satellites to deliver local in to local programming. We are working now to include in the final consolidated bill the two pieces missing to make it work, the additional spectrum and orbital slots.

NRTC will need to know, that if we are successful in our efforts, what if any financial assistance would the states of Hawaii and Alaska be willing to contribute to launch these services to cover their prospective constituencies? NRTC contributed \$125 million of the \$600 million it took to launch DirecTV, and it will take another sizable contribution to acquire and back the loan guarantees to successfully launch local programming and additional programming and services. We stand ready to move forward. It is our intention to have Alaska and Hawaii included in all of our efforts. NRTC is ready, willing, and able to participate in your efforts as well. Together we can make sure that ALL of rural America receives the best the digital world has to offer.

For your information, I wanted to let you know we have two additional projects that are in the beta-testing mode. We are in the process of testing the ability to read gas, water, and electricity meters simultaneously, and to monitor home security systems all in wireless mode.

NRTC is bringing the future of telecommunications to both the electric and telephone worlds in rural America at competitive rates by aggregating the abilities, buying power, marketing power, and experience of its 1,000 members.

Telecommunications Partnering Project

The State currently spends over \$26 million annually to provide communication services for state agencies. Over \$20.5 million of that is spent in direct payments to vendors for contractual services and equipment. This includes everything from phones and local dial tone connectivity to data and radio services. State government has seen an explosion of demand for internet, intranet, video, LAN/WAN, and other enhanced telecommunications services and expects the demand to grow as the state continues to deploy automated systems that improve services to state residents. In the past, due largely to state and federal telecommunications regulations, the state has acquired telecom systems piecemeal, awarding individual contracts for frame relay, long distance and other services. At least six large multi-year contracts have recently expired or will expire within the next year. Through a new initiative called the Telecommunications Partnering project, the state plans to tap one contractor to take responsibility for end-to-end connectivity and take advantage of the emerging competitive environment in Alaska.

In developing its Telecommunications Partnering project, the Department of Administration aims to provide state agencies with access to advanced communications technology and at costs equal to or less than those being charged now. That includes emerging "convergence" technology, for sending voice communications over Internet Protocol-based networks and for merging voice and data on high-speed Asynchronous Transfer Mode networks.

A secondary goal is to encourage the availability of high-speed, advanced communications services to non-state entities and residents, particularly in rural areas where service is not commercially available today. This will be particularly necessary as state agencies make more services available on the internet and continue to privatize or partner with non-profit and other governmental organizations for services that were previously provided by state agencies.

The Information Technology Group (ITG) is the state entity charged with the responsibility to provide statewide telecommunications to serve and support the needs of state agencies. In addition to the services that ITG provides through contracts solicited and managed by ITG, ITG owns and operates an extensive microwave system (State of Alaska Telecommunications System (SATS)). SATS was developed primarily to provide two-way radio communications for life/health/safety response along the state's major highway routes. It is also used for a variety of communication needs, such as voice and data communications. The system is currently underutilized, yet there are an increasing number of requests received from both private and other governmental entities to gain access to SATS. A third goal of this project is to open access to SATS so that public telecommunications providers can deploy services in rural areas that have not been cost effective in a stand alone environment.

The Administration held meetings with members of the public and state agencies in the fall regarding the objectives of the Telecommunications Partnering project and to obtain feedback.

As a result of that feedback, bids were solicited in October in order to find a contractor to assist the state in the preparation and completion of a Request for Proposals (RFP) document to obtain comprehensive telecommunications services. Eleven proposals were received from a variety of national firms. Gartner Group was selected and will be on site during the second week of January to kick off the project. Gartner Group will assist the state with developing a request for proposals for release in spring 2000.

A key task will be interviewing state agencies and working with a Steering Committee of key stakeholders to gain an understanding of their present and, most importantly, future telecom requirements. In addition, meetings will be held with telecommunications providers throughout the process to ensure the RFP is structured to result in solutions that can be implemented in Alaska's environment and within available budgets.

It is anticipated that a comprehensive telecommunications contract can be signed in July.

* This testimony was to be presented at the 4/5/00 URC meeting but was cancelled due to lack of time.

U.S. Senate passes rural TV bill

THE ASSOCIATED PRESS

ANCHORAGE - The U.S. Senate has approved a bill that would help pay for satellite delivery of local television and Internet service to rural areas.

Alaska Sen. Ted Stevens predicted Friday that Alaska companies would organize to develop a system for giving rural Alaskans access to satellite TV and high-speed Internet service.

The Senate legislation, which was approved Thursday on a 97-0

vote, would provide loan guarantees for satellite deliveries of local television programming in areas outside the largest 40 markets.

An amendment sponsored by Stevens ensures that Alaska and Hawaii would receive "fair consideration" in the approval of loans. The loan program is capped at \$1.25 billion.

Similar legislation has cleared two House committees and is expected to be voted on soon by the full House.

4-2-00

Juneau Empire

S. 2097 - Passed U.S. Senate

H.R. 3615 - In House Hearings

RURAL TELEVISION & INTERNET SERVICE LEGISLATION BRIEF SUMMARY

Federal Legislation:

S.2097 Passed the full Senate

H.R. 3615 Still in hearings in the House.

IMPACT ON ALASKA

The intention of both bills is to provide loan guarantees for rural television providers who meet the criteria of final legislation. The emphasis has to be placed on loan guarantee. The effect is to lower the effective interest rate on commercial loans to rural television providers for capital equipment purchases by having a government guarantee on the loans. The rural television provider still must come up with a business plan that lender will loan money against.

When looking at rural television, the monthly cost of capital is less than 10% of the monthly operating costs for such a service. Of the monthly operating expenses, the largest single item is the cost of satellite capacity at \$90,000. per month. From this standpoint, **the legislation in front of Congress has little effect on the success or failure of a rural television service unless the loan guarantee is used to reduce the cost of satellite capacity.**

NRTC POSITION

The National Rural Telecommunications Cooperative (NRTC) supports the loan guarantee program and is instrumental in lobbying for its quick passage. The NRTC hopes to use the loan guarantee program to purchase a satellite or satellites for providing rural television. This should have the effect of reducing the \$90,000 per month bill for an Alaska service, IF the satellite provides coverage to rural Alaska.

DIFFERENCES IN THE TWO BILLS

***S2097 includes preferences for those rural television services which provide broadband Internet delivery (such as to a Digital Service Line provider - DSL) and to Emergency Alert System (EAS) support. These are logical things to provide as the technologies of video delivery and broadband delivery complement each other.**

***HR 3615 includes provisions mandating free carriage of broadcast signals with local content. S2097 is silent on the issue. The impact of the House language may be to make a viable rural television service difficult to set up in Alaska.**

*S2307 is currently under consideration by the Senate and deals with broadband deployment in rural America. It is a loan program set up under the Rural Utilities Service of the Department of Agriculture.

ENHANCING INTERNET ACCESS

Two things to consider:

- a. How to put bandwidth in the village?
- b. How to move it around once it is there?

To put bandwidth in a rural Alaskan village, there must first be a satellite. The most common way of moving a lot of Internet content over satellite is part of a digital video broadcast (DVB) carrier, so there is a relationship between television and the Internet in the digital world.

There are several ways to move bandwidth around in a village, once it is there. Digital Subscriber Line (DSL) is one way. Cable modems are another. Another is wireless. We are not aware of any DSL services in rural Alaska, other than MTA's service area. There is one cable modem system in Whittier and one being installed at St. Paul. It is our understanding that wireless is deployed in Toksook Bay and McGrath.

The current environment in most villages provides bandwidth to two entities, but does not allow them to distribute it to other users. The first is Universal Service Fund support of Internet service to schools, and the second is subsidized bandwidth to rural healthcare providers (E-Rate).

The net result of both these subsidized approaches is that there will be some bandwidth on the ground in a village, but not everyone will have access to it. Carried to its logical conclusion, the structure of both of these subsidy programs could result in ATT-Alascom and GCI running out of satellite bandwidth before they run out of villages that want service, and only clinics and schools will have internet access.

We are not talking small amounts of money; a T-1 (1.54 Mbps) over a satellite costs between \$18,000 and \$20,000 per month. A rural clinic subsidized by the USF only pays about \$930 per month for this.

"We are kind of in a situation of trying to grow corn in the desert. Until someone puts in the dam to store the water, we really don't need an irrigation system to water the field."

Tom Brady, Microcom

Bill Summary & Status for the 106th Congress

Item 2096 of 2337

PREVIOUS | NEXT**PREVIOUS:SUMMARY | NEXT:SUMMARY****NEW SEARCH | HOME | HELP | ABOUT SUMMARIES**

S.2097Sponsor: Sen Burns, Conrad R. (introduced 2/24/2000)Related Bills: H.R.3615

Latest Major Action: 3/30/2000 Passed Senate

Title: A bill to authorize loan guarantees in order to facilitate access to local television broadcast signals in unserved and underserved areas, and for other purposes.

MOST RECENT SUMMARY:

2/24/2000--Introduced.

Launching Our Communities' Access to Local Television Act of 2000 - Establishes the Local Television Loan Guarantee Board to approve or disapprove loan guarantees under this Act. Allows loan guarantees to be approved only to the extent provided for in advance in appropriations Acts.

Requires such loans to be used to finance the means by which local television broadcast signals will be delivered to an unserved or underserved area, with a loan priority for unserved areas. Prohibits the Board from approving a loan which will serve one of the 40 most populated designated market areas.

Limits: (1) each loan guarantee to 70 percent of the total cost of a project; and (2) the aggregate value of all loan guarantees to \$1.25 billion.

Requires the Administrator of the Rural Utilities Service to administer all loan guarantees approved under this Act. Requires loan applicants to enter into stipulated performance schedules with respect to the local television signals to be provided through the project.

Outlines procedures governing loan application and credit requirements, default procedures, and recovery of payments for breach of conditions.

Authorizes the Board to charge and collect a loan guarantee fee and use such fee to cover administrative costs.

Requires an annual audit and report concerning the loan guarantee program.

Prohibits any loan guarantee from being approved after December 31, 2006.

Subjects all loan applicants to Federal copyright provisions relating to the required retransmission of local television stations.

Authorizes appropriations for FY 2001 through 2006.

Bill Summary & Status for the 106th Congress

Item 1 of 1

PREVIOUS:SUMMARY | NEXT:SUMMARY
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H.R.3615Sponsor: Rep Goodlatte, Bob (introduced 2/10/2000)Related Bills: S.2097

Latest Major Action: 3/31/2000 House preparation for floor

Title: To amend the Rural Electrification Act of 1936 to ensure improved access to the signals of local television stations by multichannel video providers to all households which desire such service in unserved and underserved rural areas by December 31, 2006.

MOST RECENT SUMMARY:

2/10/2000--Introduced.

Rural Local Broadcast Signal Act - Amends the Rural Electrification Act of 1936 to authorize the Administrator of the Rural Utilities Service to make loan guarantees (through a specified date) to providers of multichannel video services, including direct broadcast satellite licensees, to improve access to local television broadcasting to all households desiring such service in unserved and underserved rural areas.

Requires loan guarantee approval by the National Telecommunications and Information Administration.

Sets forth satellite carrier loan guarantee qualifications.

Authorizes appropriations.

Sets forth conditions under which a borrower shall be obliged to carry local broadcast signals without charge.

Telecommunications 2000 in Alaska



Clark James Mishler

BY TOM BRADY

Most of us think of telecommunications in terms of the end product and the most common product we think of is the telephone. Normally we don't even consider television or the Internet in the same sentence. Even so, telecommunications is not just about telephones, television or the Internet. It's about bandwidth (bits of data) and how to get more of it. Whether you log onto your computer or watch TV, the core business of telecommunications is delivering bandwidth to consumers.

In Alaska, any discussion of telecommunications must look at urban and rural parts of the state as being distinctly separate markets and technological areas. More importantly, when you get to rural Alaska you encounter a regulatory structure for distribution and sale of telecommunications services.

50 ALASKA BUSINESS MONTHLY February 2000

Types of Bandwidth

Broadcast Bandwidth: Most people associate this with television but as television has moved into the digital world, lead by satellite television providers, this also has come to mean broadcast data. This type of bandwidth provides one-way service only, so it is not suitable for telephone. Coaxial cable or some type of wireless system is normally the source of broadcast bandwidth.

Two-way symmetrical: The best example of this is the plain old telephone. Most telecommunications are developed in the two-way symmetrical model, that is the bandwidth in both directions is equal.

Two-way asymmetrical: The Internet is driving this form of bandwidth because at the consumer end a 10-kilobit request for a Web page can result in a megabit of multimedia content. It's

called asymmetrical because the bandwidth from the consumer to the network (Internet) is typically much less than the bandwidth from the network to the consumer. For example, some forms of digital subscriber line services offer 768 kilobits-per-second to the network (upstream) and up to 6 megabits from the network (downstream). Cable modem service is asymmetrical also.

Providing Bandwidth to the Consumer

Telephone Cable: This is where it all started and it hasn't fundamentally changed since Alexander Graham Bell. Most consumers are getting their two-way bandwidth this way. In capacity terms, the telephone line in your home today can download at 56 kilobits per second. Digital Subscriber Line service is the newest technology using copper telephone cable. A DSL line can download up to 6 megabits per second—or in other words, can pack a little over 100 pounds of sugar in today's one pound bag.

Coaxial Cable: This is how cable television is typically delivered to the home. Normally associated with broadcast bandwidth, cable systems can be upgraded to support two-way bandwidth. Today's cable modem service is the most common example of two-way bandwidth over cable.

Fiber Optic: Fiber is the workhorse of wide-band telecommunications. It is fiber that normally feeds the telephone cable, coaxial cable and wireless networks. Many large business consumers have direct access to fiber, but even then the final delivery to the individual is normally over a telephone-type or coaxial cable.

Wireless: Most people think of this as cell phones but it is really a lot more. There are two distinct forms of wireless bandwidth. The first is terrestrial radio systems that provide telephone, Internet and television services from transmitters in the local area. The second is satellite systems that cover large areas. Satellite systems are the workhorses of the television industry and have a special niche in providing communication networks for large national retailers such as Wal-Mart, Chevron and Safeway.

Urban Bandwidth 2000 and Beyond

Broadcast Bandwidth: Look for a significant increase in broadcast bandwidth and more programming or channels as companies become more efficient in using the bandwidth. Today most broadcast bandwidth is used to bring analog television signals to the home.

As GCI Cable and Alaska Choice Television convert from analog to digital service, there will be a several-fold increase in the number of available channels, and the introduction of television enhanced by broadcast Internet content. With two-way Internet services available over these same networks, entertainment should be a rapidly evolving experience.

With local broadcasters putting in digital television transmitters, plan on an increase in the number of off-the-air channels (channels you can pick up free with cable or rabbit ears), but also plan on some type of pay broadcast television service to offer more than the basic fare. The largest increase in raw bandwidth and content will probably come from satellite providers.

Direct Broadcast Satellite Services have always been digital, and as newer generation satellites come into service allowing smaller receive antennas, even urban users will have an expanded choice of television providers. As more providers are capable of serving the market the price will probably not decline, but future price increases by cable operators will be held in check by competition from other providers.

Two-Way Bandwidth: Most consumers don't really care whether they get service over asymmetrical or symmetrical bandwidth. The main issue is price. Consequently, most of the new bandwidth coming into service over the next five years is likely to be asymmetrical.

The prime driver in this is the basic asymmetry of the Internet from the user's perspective. Unless you are hosting a large Web site and have a large telecommuting work force, the economy of digital subscriber line services and possibly cable modems in providing both voice and Internet service will drive both business and residential sectors to look at a DSL or cable modem alternatives.



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Since DSL can use the same wire for both telephone and Internet service, a logical price point for entry-level DSL service would be two home telephone lines plus Internet service (about \$49 per month). GCI's first DSL-like offering is considerably more than that, but when ATU (ACS) enters the DSL market, this price should change substantially.

DSL does have a significant limitation. If your home or business is located more than 18,000 cable feet (not as the crow flies) from a telephone central office, then DSL may not be an option. Technology may push this limit outward, but not in the near future.

Terrestrial wireless services operating in frequencies ranging from 2 to 32 gigahertz frequency bands could also have a significant effect on the prices for bandwidth. Currently the only publicly available wireless Internet service is provided by Spectrum Wireless in the unlicensed ISM (Industrial, Scientific and Medical) frequency band. This is not likely to be the only wireless, high-speed data alternative over the next five years.

We should anticipate the frequencies employed by Choice Television and WantTV will eventually be used for services other than television. In addition, there are other licensed wireless services just now emerging. These wireless services will be especially valuable for consumers too far away from telephone central offices to use DSL, and those not on an existing cable system. Traditional cellular services will roll out new data services to complement their existing voice offerings, but the speed will be limited compared to other services. Maybe we will even get integrated messaging where e-mail and voice mail go to the same point (hopefully with better junk mail filters).

Intrastate and interstate two-way bandwidth for private networks should see a significant price decline over the next five years as competition between Alaska FiberStar, KANAS and GCI heats up. However, this bandwidth will still cost between three to four times as much as its Lower 48 counterpart for interstate service. While intrastate bandwidth will on the surface be less expensive due to competition, the price of a telephone call in state may not decline much due mainly to the regulatory structure.

While I can call Queen of England for 10 cents a minute, it still costs me at least 14 cents a minute to call the governor. Until the regulatory structure changes its ways, this disparity will remain. The major future issue is the pricing model for bandwidth. Today, the regulatory structure not withstanding, the cost of telecommunications is distance sensitive. Generally speaking, the further the distance the higher the price. The Internet is chipping away at this model and replacing it with another. The new model is speed of access and quality of service.

Rural Bandwidth 2000 and Beyond

While fiber optic bandwidth is the main source for two-way bandwidth distributed in urban areas, most of rural Alaska has only one source and that is satellite. Unfortunately, satellite bandwidth is the most expensive two-way bandwidth you can buy and good satellite bandwidth in rural Alaska is hard to find.

Cable systems will probably be the first to distribute high bandwidth two-way services since they are the most capable systems in place. After that, DSL and wireless alternatives will probably be the next to develop.

None of these can progress unless there is a source of broadband services to feed the local distribution system. At today's prices of \$1,500 for 64 kilobits provided to schools and libraries, broadband service may mean 128 kilobits for many smaller villages. The \$1,500 price is extremely low given the price structure of the satellite industry in general and the probability of this price changing significantly is not very great.

The most likely development in rural bandwidth is augmenting the basic 64-kilobit service with some form of asymmetrical Internet service. This could substantially improve the quality of rural Internet service while keeping it affordable.

All is not bleak or expensive in rural Alaska. Broadcast bandwidth from multiple satellites has dramatically changed the world of television in rural homes. While initial adopters spent \$1,000 or more for their systems, the next generation of Direct Broadcast Satellites, coupled with the satellite providers' incentive programs, should bring the

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initial investment price to under \$500 for 200 or more channels of video. The downside of this DBS product is the pressure it will place on rural cable systems to add channels or lose subscribers and it doesn't have Alaska content. However, rural cable systems have the opportunity for new revenue from Internet services.

The final unknown in rural Alaska is the regulatory structure at both the state and federal level. In the near-term, this structure will probably limit the entry of new players trying to provide conventional voice services through new technology such as the Internet because it is geared to subsidize switched telephone networks. In the largely unregulated world, this type of switched network design is being replaced by packet-based (Internet type) networks. In addition, the same regulatory structure will limit Internet deployment in the small villages to schools because service to schools is subsidized and service to the village is not.

Unless the regulatory structure and the businesses it supports evolve, in five to seven years they could be rendered largely obsolete by deployment of Ka

band satellite systems such as Teledesic and Spaceway. This will give individual users a competitive alternative the regulators are unable to control. In addition, these systems offer the greatest promise of putting urban and rural Alaska on somewhat equal footing for access to bandwidth.

Conclusion

Bandwidth in Alaska for the next five years is going to be a function of where you live. In Anchorage I can listen to Internet radio stations from around the world but I can't tune in Ketchikan because the speed and quality of their connection to the Internet isn't good enough. Providing affordable, high-speed access to the Internet in rural Alaska will be one of the dominant issues in Alaska telecommunications over the next few years and will become a major topic in the rural versus urban debate. The impact on the state can be substantial both in terms of the cost of providing state services in rural Alaska and in developing rural economies in an age where what you have access to is more important than where you live. □



For the last six years, Tom Brady has worked in small business as general manager of AmRussCom and manager of Data Services for Microcom. Brady has assisted in developing a successful telecommunications business in Russia and in developing new satellite television and data alternatives for rural Alaska. In addition, he is the project manager for Microcom's technical support contract with the State of Alaska for the Satellite Interconnection Project. Having been an Alaska resident since 1975, Brady has seen the development of technology over time throughout Alaska and was a pioneer for cable television in state when he laid the groundwork for the first cable system at Eielson Air Force Base in 1976.

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About AFS

Alaska Fiber Star is a privately owned Alaskan Limited Liability Corporation (LLC), which builds and operates fiber optic cable systems and infrastructure within Alaska.

AFS is a subsidiary of WCI and is a member of the WCI Group of companies, which includes AFS, WCI Cable and WCI LightPoint. WCI is a privately owned communications company developing fiber optic systems internationally. WCI's shareholders are a subsidiary of AMP Life Limited, an international financial services company with assets exceeding US \$120 billion and a privately owned Australian investment company.

**The AFS Network**

The Alaska Fiber Star next-generation network is a fiber optic infrastructure developed to provide interconnection between the major telecommunication networks and markets in Alaska and the Lower 48. Our network, which follows the Alaska Railroad right-of-way between Anchorage and Fairbanks and is buried to an average of four feet, crosses 200 roads and straddles some 200 bridges. From Anchorage, the AFS Network extends to Whittier and Valdez, and connects to Juneau and the Lower 48 through a submarine cable system, owned and operated by our sister company, WCI Cable.

The AFS cable interfaces with the WCI Cable Network at the cable landing facility in Whittier. The WCI Cable Network is monitored and controlled by the Anchorage Network Operations Control Center (NOCC).

Corporate

For corporate matters, including accounts, vendors, sales and marketing, please contact our Alaska headquarters.

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Products & Services

Intrastate Channel Capacity

Alaska Fiber Star provides wholesale DS1, DS3, OC3 and OC12 levels of intrastate channel capacity on our all-digital OC48 fiber optic cable backbone. Our fault tolerant SONET BLSR architecture rings include fully redundant opto electronics. One OC48 wavelength can carry up to 32,256 DS0's.

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Anchorage-Lower48 Capacity

Together with our affiliate, WCI Cable, we provide DS1, DS3, OC3 and OC12 levels of connectivity between Anchorage and the Lower 48. The WCI Cable Network also includes service to Juneau. More information about WCI Cable is available at www.wcicable.com.

IP Product

Our IP Product is currently in test mode - we expect delivery of this product by the end of first quarter 2000.

Colocation

For colocation information, please contact our affiliate, WCI LightPoint at info@wcilightpoint.com or go to www.wcilightpoint.com. WCI LightPoint is a member of the WCI Group of Companies and provides reliable, flexible carrier neutral and secure colocation facilities throughout the U.S. and around the world.

For more information about AFS products and services, please contact the AFS Marketing Department at (907) 365-7250 or email us at info@alaskafiberstar.com.



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News Releases

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November 17, 1999

WCI LightPoint Provides Premier Colocation Services to Worldwide Fiber

October 12, 1999

Alaska Fiber Star Affiliated Company, WCI Cable, Inc. Supplies Fiber Optic Capacity

September 29, 1999

University of Alaska to Light Up New Optical Fiber Link

September 23, 1999

WCI Cable Turns Up NorthStar Network, Linking Alaska with the Lower 48

July 10, 1999

WCI Cable's 15GBPS Fiber Optic NorthStar Network Transmits First Light from the Oregon Coast to Alaska

March 25, 1999

WCI Cable, Inc. and Alcatel, Ship Fiber Optic Cable for the NorthStar System

March 1999

WCI Cable, Inc. and Alaska Fiber Star Confirm September Service for WCIC's NorthStar Cable System Including an Internet Protocol Capability

November 30, 1998

Alaska Telecommunication Companies to Launch Affordable, Dedicated, High Speed Internet Access Over Existing Telephone Lines

November 29, 1998

Fiber Optics Bringing Telecom Revolution



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Applications

The advent of high-speed, high-capacity, low interference fiber optic cable brings a host of new technical advancements, as well as business and educational possibilities, to Alaskans and the global community.

Through the latest innovations in fiber optic technology, Alaska Fiber Star's next-generation network provides a highly reliable and secure foundation for cutting-edge developments such as telemedicine and e-commerce.

Distance Education

The University of Alaska operates a number of facilities throughout Alaska. In addition to taking classes at UA's various regional campuses, many students take advantage of the University's distance education courses. For example, students living in Palmer or Nome can enroll in the correspondence version of a course offered by the University of Alaska Anchorage or the University of Alaska Fairbanks. More bandwidth means more options for Alaska's students including an increased availability of resources such as electronic libraries, films, discussion groups and teleconferencing.

Internet2

In the fall of 1999, WCI Cable provided the University of Alaska with an OC12 connection to the University of Washington in Seattle. This gift enabled UA to connect to the next generation Internet2 high-speed research and education network, placing UA among the top ten universities in the US for high-speed next-generation Internet connectivity. ([AFS press release, 10/99](#))

Internet2 is a group of over 150 member universities working with corporate and affiliate partners to "develop advanced Internet technology and applications vital to the research and education missions of higher education."

Telemedicine

Telemedicine will allow a doctor in Fairbanks or Anchorage to look at images, make a diagnosis and relay real time treatment instructions to a public health nurse in rural Alaska. Fast, high-bandwidth fiber optic networks are key in the successful development of this technology. With so many Alaskans living far from the state's population centers, advancements such as telemedicine bring the latest medical technologies to the vast regions of Alaska.

E-commerce

The latest trend in business, e-commerce is revolutionizing the way people shop and many Alaskans are taking their business and businesses online. Reliable, high-speed Internet connections are critical to businesses that want to compete and succeed in the fast-changing world of e-commerce.



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E mail

Index of Terms

ADM (Add Drop Multiplexer) - A multiplexing function that allows lower speed digital channels to be added or dropped from a high speed optical carrier channel in a wire center or other location.

ADM Station (Add Drop Multiplexer Station) - Facilities located along the Alaska Fiber Star Network which house ADM equipment.

Analog - A form of transmission which sends the signal in a form analagous to the original signal (as opposed to digital transmission which uses binary code to represent information).

ATM (Asynchronous Transfer Mode) - A means of high-speed switching, able to support high bandwidth multimedia applications.

Bandwidth - 1) The range of transmission frequencies that a communication channel is capable of carrying without excessive attenuation, 2) the range of transmission speeds that a communication channel is capable of carrying without excessive errors. In digital communications, bandwidth is typically measured in bits per second (bps).

Bit - The smallest unit of data recognized by computers. With digital technology, a bit is represented as a "1" or a "0."

BLSR (Bi-Directional Line Switched Ring) - A method of SONET transport in which half of the working network is sent counter-clockwise over one fiber and the other half is sent clock-wise over another fiber. BLSR offers bandwidth advantages (125% to 200% greater than UPSR) for distributed traffic in single-ring architectures.

Bps (Bits per second) - The number of bits sent each second.

Byte - Eight bits.

Channel Capacity - The measure of the digital bandwidth being sold, stated in Gigabits per second (Gbps), Megabits per second (Mbps) or bits per second (bps).

Digital - The use of binary code to represent and transmit information (as opposed to analog transmissions which send the signal in a form analagous to the original signal).

DS0 (Digital Signal Level 0) - A 64,000 bits per second digital signal.

DS1 (Digital Signal Level 1) - A 1.544 million bits per second digital signal. Equal to 24 DS0s or one T1. 24 voice channels.

DS3 (Digital Signal Level 3) - A 51.84 million bits per second digital signal. Equals 28 DS1s, 28 T1s, one T3, one STS1 or one OC1. 672 voice channels.

OC1 (Optical Carrier Level 1) - Equal to one DS1, 51.840 million bits per second.

OC3 (Optical Carrier Level 3) - Equal to three DS3's, 155.52 million bits per second.

OC12 (Optical Carrier Level 12) - 622.08 million bits per second.

OC48 (Optical Carrier Level 48) - 2.488 thousand million bits per second.

OC192 (Optical Carrier Level 192) - Equal to 192 x 51.840 million bits per second (9.953 thousand million bits per second).

Fiber Optic - A thin filament of glass with a protective outer coating through which a light beam carrying communications signals may be transmitted by means of multiple internal reflections to a receiver which translates the message. Alaska Fiber Star's network consists of fiber optic cable.



Gbps (Gigabits per second) - One Gbps means one thousand million (one billion) data bits per second.

IP (Internet Protocol) - A set of protocols used on the Internet to perform addressing functions for networks.

ISP (Internet Service Provider) - Vendors who provide access to the World Wide Web and Internet via telephone lines.

Mbps - In telecommunications, Mbps means one million bits per second.

MBps - One million bytes per second.

Multiplexing - The technique of combining multiple single channels onto a single aggregate channel for sharing facilities and bandwidth.

POP (Point of Presence) - The point at which local traffic (voice, video, data) is handed off to long distance companies.

Real Time - No perceived delay in voice transmissions.

SONET - A high bit rate transport method, specifying a synchronous transport (level 1) of 51.84 Mbps.

UPSR (Unidirectional Path Switched Ring) - A method of SONET transport in which all working traffic is transmitted in one direction. UPSR is preferred for interconnected rings with numerous signals crossing the rings.

VoIP (Voice Over Internet Protocol) - Voice communications over the Internet

For more information go to:

- [Fundamentals of Telecommunications](#)
- [Nortel Networks](#)
- [Alcatel](#)

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Linking Alaska with Light

ABOUT AFS**PRODUCTS/SVCS.****AFS NETWORK****NEWS****APPLICATIONS****TERMS****FAQS****PERSONNEL****EMPLOYMENT****CONTACT US****HOME**

E-mail

Frequently Asked Questions**What does Alaska Fiber Star sell?**

- We provide wholesale DS1, DS3, OC3 and OC12 levels of intrastate channel capacity on our fiber optic cable backbone.

Who are your customers?

- Our customers are primarily interexchange telecommunications carriers and other large non-carrier users.

To where does your network connect?

- Our network links Fairbanks and Anchorage and connects to Whittier and Valdez. Through our sister company, WCI Cable, we connect to Juneau and the Lower 48. AFS serves customers in Anchorage, Elmendorf AFB, Eagle River, Wasilla, Talkeetna, Cantwell, Healy, Clear, Clear AS, Nenana, Eielson AFB, Ft. Wainwright, Fairbanks, Whittier and Valdez.

Do you have any plans to extend your network?

- WCI is reviewing options for extending the AFS and WCIC service areas.

Do you connect to my house?

- As a carrier's carrier, we do not operate in the retail marketplace. We sell wholesale channel capacity to providers who connect to your home.

How does your product benefit me?

- Our state of the art fiber optic cable enables your providers to offer you more broadband services, such as those offered in the Lower 48. We also provide competition in the marketplace, which lowers prices for the consumer.

Is Alaska Fiber Star publicly owned?

- AFS is a privately owned Alaskan Limited Liability Corporation (LLC).

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E mail

Personnel**Corporate
Michael Burke
General Manager**mburke@akfiberstar.com

As General Manager, Michael Burke oversees the day-to-day operations, strategic business and financial planning at AFS. He has over 15 years of telecommunications experience and has held various positions with several Alaska telecommunications companies, including Executive Vice President and Manager of Financial Planning.

**Sales and Marketing
James E. Miner
Vice President, Sales and Marketing**jminer@akfiberstar.com

James Miner is responsible for all aspects of AFS's sales, revenue generation and marketing programs. He has extensive experience with data-related telecommunications products and computer systems as well as a 20-year background in new technology marketing.

**Operations
David Lewis
Operations and Maintenance Manager**dlewis@akfiberstar.com

Dave Lewis manages the terrestrial and submarine Alaska Fiber Star / NorthStar network providing service to customers in the Alaska Service Region. He brings to the AFS management team an extensive and diverse 25-year background in the research, development, test, evaluation, operations and maintenance of telecommunications, power and logistical systems.

**Human Resources
Michelle Jacquez, SPHR
Manager, Human Resources**mjacquez@wcicable.com

Michelle Jacquez is responsible for all aspects of human resources for the WCI Group of companies, including employee recruitment, legal compliance, compensation and employee development. A certified Senior Professional Human Resources (SPHR), she has over 15 years of experience in human resources, including more than 10 years in high technology.

**Accounting & Finance
John Monfils
Controller**jmonfils@akfiberstar.com

John Monfils is responsible for the financial and accounting systems at Alaska Fiber Star. He has over 15 years of telecommunications experience in both regulated and competitive companies.

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ABOUT AFS

PRODUCTS/SVCS.

AFS NETWORK

NEWS

APPLICATIONS

TERMS

PAGE

PERSONNEL

EMPLOYMENT

CONTACT US

HOME

E-mail

Employment

Job openings for AFS, WCI Cable and WCI LightPoint are posted by the Human Resources Department at the following web sites:

- headhunter.net
- careermosaic.com



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