ALASKA STATE LEGISLATURE
SENATE EDUCATION STANDING COMMITTEE
January 27, 2017
8:00 a.m.

MEMBERS PRESENT

Senator Shelley Hughes, Chair
Senator Gary Stevens
Senator Cathy Giessel
Senator John Coghill
Senator Tom Begich

MEMBERS ABSENT

All members present

COMMITTEE CALENDAR

PRESENTATION: INCREASING BROADBAND ACCESS AND CAPACITY FOR RURAL AREAS

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

TINA PIDGEON, Senior Vice President/General Counsel
GCI
Anchorage, Alaska
POSITION STATEMENT: Presented information about network capabilities in Alaska.

MICHAEL BURKE, CEO
Matanuska Telephone Association (MTA)
Anchorage, Alaska
POSITION STATEMENT: Provided information about broadband in Alaska.

KRISTINA WOOLSTON, Vice President
External Relations
Quintillion

Anchorage, Alaska
POSITION STATEMENT: Presented information on the broadband capabilities Quintillion provides.

HEATHER CAVANAUGH, Director of Communications
Alaska Communications (AC)
Anchorage, Alaska
POSITION STATEMENT: Presented information regarding broadband in Alaska.

COLIN UNDERWOOD, Program Manager
Alaska Communications (AC)
Anchorage, Alaska
POSITION STATEMENT: Presented information regarding broadband in Alaska.

CHRISTINE O'CONNOR, Director
Alaska Telephone Association (ATA)
Anchorage, Alaska
POSITION STATEMENT: Presented ATA's Alaska Plan.

ACTION NARRATIVE

8:00:07 AM
CHAIR SHELLEY HUGHES called the Senate Education Standing Committee meeting to order at 8:00 a.m. Present at the call to order were Senators Begich, Giessel, Coghill, and Chair Hughes. Senator Stevens arrived shortly thereafter.

PRESENTATION: INCREASING BROADBAND ACCESS AND CAPACITY FOR RURAL AREAS

8:00:44 AM
CHAIR HUGHES announced that the only order of business would be a presentation on Increasing Broadband Access and Capacity for Rural Areas. She said a number of organizations will be addressing the current status and plans for future expansion and costs of broadband in Alaska. She listed the presenters.

8:02:04 AM
CHAIR HUGHES stated that the committee will be having a series of exploratory hearings on "What we can do to do a better job for students." The committee will be addressing the question whether the state can do a better job of improving the quality of education. She suggested by levering technology the state may be able to save money while improving education. She asked whether the state could do something differently that would be

better, such as increasing opportunities for students, improving the outcomes, and improving graduation rates. Today's hearing is the first step toward that goal. She stressed that she would like communities, parents, students, and schools to be involved and be a part of the conversation.

8:04:04 AM
TINA PIDGEON, Senior Vice President/General Counsel, GCI, presented information about network capabilities in Alaska. She began by stating that for GCI, providing broadband network statewide is a priority. She said GCI is continually looking for ways to advance and improve broadband capability and capacity across the state and deliver better services to all communities and customers through innovation and progress.

8:05:58 AM
MS. PIDGEON showed a map of Alaska that depicts statewide service capabilities of many providers, both existing and planned through 2017. The map shows different types of technology available. There are three technologies used to deliver broadband from an internet point of presence distribution; fiber, microwave, and satellite. In some cases, there are several ways of delivering broadband to communities and in other cases, only satellite is available. Everywhere there is a community, satellites have the ability to deliver broadband services. Video teleconferencing can be delivered successfully over satellite to all communities.

She noted that fiber locations have typically been available to communities on the road system. That is changing and in the northern part of Alaska the fiber is being deployed by Quintillion's subsea cable systems. Fiber has the greatest speed and capacity available and opportunity for growth and expansion. Microwave services can provide the same speed, but the capacity is somewhat more limited. There must be a full hardware change out in order to expand and it can be more expensive. The technology selection has as much to do with geology as with cost characteristics.

She related that satellite services are relevant for providing continued services and there have been many advancements in traffic management, however there are some limitations, such as latency. As broadband applications advance, fewer communities rely on satellite because some applications are not designed to overcome latency. She explained the ways latency can be resolved, such as by caching. She pointed out that there are a

number of satellite projects globally that are underway and have promise in the future.

8:12:39 AM
MS. PIDGEON addressed how schools are able to use broadband as a tool in the classroom, such as to report and amplify instruction and to provide access to new information. Distant learning and video teleconferencing are widely used. She gave an example of the Lower Kuskokwim School District making good use of video teleconferencing. She noted schools have invested in devices to meet on-line testing mandates, duel enrollment for high school and college courses, learning management systems, and video conferencing. All of these broadband applications are available using all technologies. Schools in a satellite area might have to take extra steps in terms of prioritizing the traffic or how they utilize the applications.

8:14:30 AM
MS. PIDGEON pointed out that broadband is facilitating school business outside the classroom, such as for social media, for training, sharing report card information, and holding districtwide meetings. Districts are also investing in Wi-Fi capabilities to replace hard wiring, which is more costly and easier to upgrade.

8:15:53 AM
CHAIR HUGHES noted the arrival of Senator Stevens.

8:16:04 AM
MS. PIDGEON continued with how the "cloud" provides services by storing and managing data off site. It provides greater security options and additional IT support. It is another way of getting out of having multiple hardware services in house. The Cloud could affect and improve energy usage, also.

MS. PIDGEON concluded that there are many opportunities that exist today and more on the horizon. She said GCI does have the network capability to access and provision those opportunities. She offered to answer questions.

8:18:05 AM
CHAIR HUGHES thanked Ms. Pidgeon.

8:18:17 AM
MICHAEL BURKE, CEO, Matanuska Telephone Association (MTA), provided information about broadband in Alaska. He stated that MTA has a high priority to provide service to schools in its

region. MTA is a consumer-owned co-op of about 29,000 members. He listed the three school systems in their service area: Mat-Su School District, Eagle-River/Chugiak School District, and Tyonek School, a part of the Kenai Peninsula School District. He said MTA is committed to providing fast broadband to all schools in the area. They have constructed fiber optic cable to all but Tyonek School, which is served by microwave. He added that MTA is actively working on school curriculum assistance. He noted the former Mat-Su superintendent emphasized the importance of technology in schools. He gave examples of how MTA worked on a middle school computer coding class.

He stressed the importance of the connectivity MTA provides, not just in the classroom, but after school for internet access. There are still some areas that have yet to get broadband connectivity.

He spoke of federal regulations that hamper MTA, as well as regulatory changes by the Federal Communications Commission (FCC) that interfered with infrastructure investment and delivery. He mentioned a future fiber optic cable project.

MR. BURKE related that schools need faster and better broadband to function as modern schools. He concluded that MTA has a role of assuring that schools move into the modern century with technology access. He offered to answer questions.

8:25:35 AM
CHAIR HUGHES thanked Mr. Burke.

8:26:19 AM
At ease

8:26:43 AM
KRISTINA WOOLSTON, Vice President, External Relations, Quintillion, presented information on the broadband capabilities Quintillion provides. She said Quintillion is based in Anchorage and is building a multi-phase fiber optic cable network along the northern coast of Alaska and around the Prudhoe Bay area. She pointed out that Quintillion is a private operator selling wholesale capacity to telecom service providers and whose capacity is available to all service providers. They are privately funded and deploying fiber that deliver 50 percent to 90 percent reductions for wholesale, dedicated capacity compared to current backhaul operations, such as satellite and microwave.

MS. WOOLSTON focused on Alaska projects in their planned network. She said they are deploying a terrestrial fiber from Fairbanks to Prudhoe Bay and communities along the way. At Prudhoe Bay the fiber goes subsea along the coast of Alaska delivering services to communities along the way. Those communities will come online in 2017. She noted they have worked with construction contractors to provide cable to the Arctic, which will be online later this year. She noted the design of the system is logical and feasible. She described how the Arctic-resilient system was built and described its capacity.

8:32:06 AM
She spoke of the challenges of being the first Arctic provider. The permitting process has been substantial. It is the second year of marine installation. She concluded that the company keeps in mind what will benefit communities and schools and is helping to prepare students for positions locally and in other places.

She spoke of the cost benefits of operating and maintaining fiber optic cable, which are lower over time than microwave or satellite. She listed the benefits of having unlimited capacity with 10 million Mbps per fiber pair.

MS. WOOLSTON concluded with the benefits of fiber to rural communities: education, health care, government, economic development, emergency response, public safety, and for national strategy areas identified in the President's National Strategy for the Arctic Region.

8:35:29 AM
CHAIR HUGHES thanked Ms. Woolston. She noted the timeline was faster than most expected.

8:36:05 AM
HEATHER CAVANAUGH, Director of Communications, Alaska Communications (AC), presented information regarding broadband in Alaska. She shared her background as an Alaskan and listed the areas AC serves. She spoke of the need to connect broadband to schools and noted the role it plays in the economy. She spoke of the company's work on improving the broadband structure in Alaska. She said AC's purpose is to be a partner for Alaska organizations and AC needs to earn the trust of all its customers. She related AC's responsibilities and investments it has made.

She provided examples of partnerships AC has been involved in to deliver broadband. She reported that last year AC became the first Microsoft partner to offer Cloud services in Alaska and the only Microsoft-certified Gold Education Partner in the state.

8:40:20 AM
MS. CAVANAUGH discussed AC's core network and listed its service areas and partnerships. She noted AC offers internet solutions and gave examples. She said they are partners with Quintillion and she described their relationship.

8:42:28 AM
COLIN UNDERWOOD, Program Manager, Alaska Communications (AC), presented information regarding broadband in Alaska. He described his personal information and then addressed AC's Education Rate (E-rate) Program, which makes telecommunications and information services more affordable for schools and libraries in America. He said the E-rate program began in 1996 and provides discounts from 20 percent to 90 percent, depending on an area's poverty level and location. As of June 30, 2016, Alaska has received over $500 million in E-rate support since 1998.

He described AC's projects in the Kenai Peninsula School District. The E-rate Program now supports one-time payment of broadband infrastructure construction for rural communities.

8:44:52 AM
CHAIR HUGHES thanked the presenters.

8:45:04 AM
CHRISTINE O'CONNOR, Director, Alaska Telephone Association (ATA), presented ATA's Alaska Plan, the foundational funding mechanism for rural networks in Alaska. The Alaska Plan operates, upgrades, and extends broadband development in remote Alaska. It supports improved and new, both fixed or landline and mobile or wireless broadband, as well as voice service. It increases broadband access, but also sustains existing broadband networks.

8:46:36 AM
She described the Universal Service Fund (USF), a federal program to fund broadband networks in high cost areas of the country. She noted the USF has been crucial to Alaska's networks. In many rural communities there is not an economic business case for broadband, but with USF funding, providers

have been able to build and operate broadband networks and will be expanding and upgrading them over the ten-year period of the Alaska plan.

8:47:10 AM
MS. O'CONNOR explained that federal Universal Service Fund (USF) reform orders in 2011 were bad for Alaska. Reform had a disproportionate impact on Alaska. By the end of 2015, wireline support was reduced by 21 percent, whereas nationally the average reduction was 2 percent. She described how the Alaska Plan was developed. The FCC finally adopted it in August of 2016.

8:48:18 AM
MS. O'CONNOR related that the Alaska Plan freezes $150 million in existing USF annual funds for broadband service to areas outside of major urban centers. She stressed how essential the funding is to Alaska. She said many of the rural networks depend on this funding. The predictability of the Alaska Plan is essential.

8:49:49 AM
She turned to public interest obligations. She described how the Alaska Plan funds services in remote Alaska, requires both voice and broadband service, supports both landline and wireless service, and requires mandatory speeds.

She said the Alaska Plan introduces a new level of accountability to USF in Alaska, with new monitoring, reporting, and potential penalties. The FCC is particularly focused on mapping locations with broadband service and monitoring the availability of "middle mile" - [the network infrastructure that connects local networks to other network service providers, major telecommunications carriers, and the greater internet.] Each company must report progress annually and there are penalties for non-performance.

8:51:18 AM
MS. O'CONNOR concluded that the Alaska Plan is an essential funding mechanism which will both operate and deploy broadband service to Alaska's communities in rural areas over the next ten years. It brings stability that is essential when investing in broadband structure.

CHAIR HUGHES thanked Ms. O'Connor and opened the meeting to questions.

8:51:59 AM
SENATOR GIESSEL requested clarification from Ms. O'Connor about the cost to schools by various service providers.

MS. O'CONNOR explained that the cost would be set by the providers. The Alaska Plan is the underlying funding that companies use to operate and deploy the networks. The companies would use the E-rate Program requirements to determine the cost for schools.

SENATOR GIESSEL asked about FCC overseeing penalties for goals not met. She asked if there is a state agency that also has oversight.

MS. O'CONNOR replied that there is dual oversight; the FCC has an Educational Tax Credit (ETC) designation which involves oversite also by the Regulator Commission of Alaska (RCA). Each company submits reports to the FCC, as well as to the RCA who reviews the reports and certifies them, sending them back to the FCC. RCA and FCC have a partnership review.

8:54:05 AM
SENATOR GIESSEL asked about installing undersea cable and whether an Environmental Impact Statement (EIS) is needed first.

8:54:30 AM
KRISTINA WOOLSTON explained the permit process which does not include an EIS. She listed the FCC and DOT permits Quintillion had to go through.

8:55:17 AM
SENATOR STEVENS inquired how funding predictability from the federal government for 30 to 40 years can be assured.

MR. UNDERWOOD said there are no guaranteed funding sources. He opined the state should make use of what is available now.

SENATOR STEVENS thought the more important question is what Alaska's needs are. The majority of expenses are picked up by the federal government and he looked to a future time when Alaska would not need federal funds.

MR. UNDERWOOD had no comment.

8:57:09 AM
CHAIR HUGHES asked what would be a realistic window for completing an E-rate project.

MR. UNDERWOOD said two to five years.

8:57:40 AM
MS. PIDGEON added that there is a multi-dimensional answer to the question. It is difficult to expect the same level of funding, and combinations of funding sources will always be available. Also, the demand continues to grow, and the pace of growth is underestimated. The state must find ways to meet the demand for broadband the best it can. The providers use a combination of the funding streams that are available, but also look at improved technology to improve the efficiencies in service for cost savings. As the demand grows it makes sense to invest in terrestrial capacity, both fiber and microwave.

9:00:00 AM
CHAIR HUGHES asked off-net presenters to respond.

9:00:15 AM
MS. O'CONNOR said ATA is looking forward to working with the larger world industry to see what happens after ten years in order to make changes to the universal service fund. They are also exploring technology changes, such as improved satellite technology. She noted there is incremental progress being made in state on on-going projects to connect more rural communities. She predicted that would continue over the next few years to advance broadband.

CHAIR HUGHES asked if the new federal administration is interested in improved telecommunication infrastructure.

9:02:16 AM
MR. BURKE said he has heard there may be funding proposed by Congress for broadband expansion, but it is in the early stages. He suggested that the state should advocate for funding and investment in the "Last File" - the distribution of broadband services to consumers. There is still a big need to fund the "middle mile" which has extremely high costs ranging from $1.5 billion to $2 billion. Additional federal funding would greatly help.

He stressed the need for continuous education, partnerships, and dialogue with the FCC on Alaska's policy issues, so the state can make good decisions.

9:05:05 AM

CHAIR HUGHES focused on rural areas with only satellite. She asked if there are any villages that do not have fiber, microwave, or satellite.

9:05:45 AM
MS. PIDGEON stated that every community has the ability to access satellite, which has become more economical.

CHAIR HUGHES asked if there are still some villages that do not have satellite.

MS. CAVANAUGH offered to provide a list of those that do not have broadband capability.

9:07:24 AM
CHAIR HUGHES wished to understand about data caching and whether only one classroom at a time can be served.

9:08:12 AM
MS. PIDGEON explained that to have a non-HDVTC (High Definition Video Conferencing) quality connection requires about 1.2 Mbit/s. To enable an HD-quality connection is about 2 Mbit/s. It is not a function of whether the service is capable of being provided, but rather the cost and how much capacity is being purchased and provided in a particular location. The question is whether the capacity is available in a particular community size to accommodate both VTC capability and any other additional broadband applications running alongside. If it is one session, it is 1.2 to 2 Mbit/s; multiple education sessions running side-by-side are additive on a point-to-point basis.

CHAIR HUGHES asked how many communities have enough capacity to enable multiple sessions and how it effects their cost.

MS. PIDGEON stated it is costly. The legislature has provided funding over the last couple of years to ensure that every school district is able to purchase at least 10 Mbit/s of capacity which would enable a match from FCC's E-rate program. She did not know what each school district is doing. Each district determines how they allocate bandwidth.

9:11:02 AM
MR. BURKE understood that the carrier of last resort - AT&T - is obligated to provide a Microgravity Experiment Recoverable Satellite (MERS) station to every community of 25 or more residents. Broadband capacity can be ordered through that connection.

CHAIR HUGHES asked about new technology regarding improved satellite and whether the state can expect it within a year or two.

MS. PIDGEON said she could only guess at the answer. She estimated it would be a five-year period of time. There are no fewer than five global projects under discussion now. The volume of discussion in this area and the ability of those projects to meet the demands and economics for services globally makes it much more possible for this type of improved satellite delivery. She noted an on-going proceeding at the FCC regarding licensing of a number of the projects. She referred to a map that shows the connectivity statewide in 2010 and noted the phenomenal change in available infrastructure since then.

9:14:19 AM
SENATOR BEGICH referred to the broadband grants. He pointed out that having access does not necessarily mean the school districts access the services. He inquired if there is data about how many school districts take advantage of broadband services.

9:15:07 AM
MS. PIDGEON said that information is publically available through the Universal Service Administrative Company which administers the E-rate program, but it does not show how much bandwidth is used, only the amount of requested capacity and what is awarded and funded.

9:15:53 AM
SENATOR BEGICH asked about the universal service charge on utility bills and whether there is an effort to retain some of that money for upgrades in the future.

9:16:51 AM
MS. O'CONNOR explained that money from the charge does not have a banking mechanism, but companies structure their businesses to assume responsibility for future upgrades beyond ten years.

SENATOR BEGICH asked if there is less opportunity for interaction between a student and a teacher at satellite cache sites.

MS. PIDGEON said cache sites are not good for interactive education, such as video-teleconferencing. They are useful for running multiple applications at the same time.

9:19:16 AM
SENATOR BEGICH asked if every provider participates in the Alaska Plan.

MS. CAVANAUGH said AC does not participate in the Alaska Plan because it falls under a different regulatory structure. She said AC will receive $19.2 million from Connect America over the next ten years to build broadband structure, primarily along the road and out to communities from there.

SENATOR BEGICH suggested that the Lower Kuskokwim School District present on how they use broadband and Yukon Flats or Aleutians East present satellite use.

He also suggested considering a $.50 universal service fee to protect long-term broadband investment.

9:21:03 AM
CHAIR HUGHES responded that they are working on having presentations from school districts. She summarized that the committee wants to know what the barriers to improving technology access are. She wants to see schools have live interaction and multiple sessions. She requested that each presenter respond.

9:22:34 AM
MR. BURKE related that he would direct the committee to the Alaska Broadband Task Force for an analysis of how to provide high speed broadband access to all Alaskan communities. That would include replacing satellite with microwave and/or fiber. He said the cost would be substantial, around $1.2 billion or more, and it would take years to get there. There are design and planning issues, permitting issues, and a short construction season.

9:24:00 AM
MS. WOOLSTON said the FCC defined broadband as having a speed of 25 Mbit/s or higher. Having 100 Mbit/s per second is a terrific goal. She shared Quintillion's excitement as a company bringing fiber into communities for the first time. She opined that encouraging and enabling competition in communities will bring the cost of services down.

9:25:08 AM
MS. O'CONNOR concurred with Mr. Burke's comments regarding the Task Force. She added that providers are working on new projects

that push the edges. She agreed that it will take years and is incremental, but they are working hard on it.

9:25:42 AM
MS. CAVANAUGH said it is a great challenge to connect all of Alaska's rural and remote communities with high speed broadband. She concurred with Mr. Burke and Ms. Woolston regarding the Task Force. A big piece is to build fiber infrastructure to the "middle mile" network and is a serious challenge.

9:26:30 AM
MR. UNDERWOOD noted in 2010 the FCC released a broadband report which recommended about one megabit per student, so some communities are looking at more than 100 Mbit/s. Affordability is a barrier for some schools and some are not able to afford that amount of broadband.

9:27:22 AM
MS. PIDGEON noted a common thread across the testimony - a deep desire to meet the needs and demands in education. The challenge is that it is very costly. There is a lot of competition nationally for limited resources. She suggested that looking ahead at the best way to position the state is to have a unified, pragmatic, and realistic approach. Advancing experiences of success and sharing stories about how today's funding is being put to good use is important.

9:29:32 AM
CHAIR HUGHES thanked all the presenters. She maintained that there is much the state can do with the present structure, such as using virtual classrooms. Kids in classrooms now need greater opportunities. She noted several school districts already have pockets of exciting activities.

9:30:57 AM
There being no further business to come before the committee, Chair Hughes adjourned the Senate Education Standing Committee at 9:30 a.m.