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New Broadband Connection Brings Medicine, Education to Alaska Natives

By Jennifer Dockery, Assignment Editor, Novogradac & Company LLP

Imagine boarding a plane every time you needed to visit the doctor. For many people living in the remote villages spread along Alaska's western coast this is the reality. The closest specialist may be more than 500 miles away in a place inaccessible by ground transportation. GCI is trying to alter that reality with technology. The Alaska-based voice, video and data communication services company has undertaken the TERRA project to provide broadband internet access to 68 communities in western Alaska. GCI announced in September that an earlier project that connected 65 communities in southwestern Alaska (TERRA-SW) was substantially complete and that the northwest segment, known as TERRA-NW, would be funded with new markets tax credits (NMTCs). The investment will improve the communities' access to medical and educational resources as well as increase their potential for economic growth.

"Bringing terrestrial services to remote communities is the vision of GCI," said Krag Johnsen, GCI's rural broadband development director.

Living in the 1990s

The TERRA project, which GCI Subsidiary Unicom is completing in several phases, began in 2010 with TERRA-SW, a terrestrial microwave and fiber optic network. TERRA-SW connects 65 rural communities between Bristol Bay and the Yukon-Kuskokwim Delta and will eventually provide broadband service to more than 9,000 households and 750 businesses, as well as a number of community institutions.

The TERRA-NW project builds off TERRA-SW to provide access to communities from Grayling to Nome.



Photo: Courtesy of GCI

GCI used divers during the southwestern portion of the TERRA project to lay cable along the bottom of frozen rivers.

Unicom will lay fiber optic cable and install remote repeaters and microwave towers across 500 miles of western Alaska to bring broadband internet services to the communities, most of which average about 200 to 500 people. More than 50 percent of village residents are Alaska Natives. The remote villages provide limited employment opportunities and suffer from high unemployment rates. Most residents are engaged

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in the area's traditional occupations, such as fishing. Most villages are accessible only by air or water. Communications in the area consist of local village land-based telephone lines, cellular phone service and limited internet connections. All communication in the area is provided by satellite. The new TERRA network will replace these satellite connections, which have limited bandwidth, high cost and high latency.



Photo: Courtesy of GCI
Many villages included in the TERRA project are inaccessible to cars.

Johnsen said there is no broadband available for these communities. "We have a vision of getting all of the communities off satellite-based networks," he said.

Satellite-based internet connections provide data at speeds that are five to 10 years behind those available in the continental United States, said Chris Kolerok, an investment officer with Alaska Growth Capital (AGC). Satellite's slow speeds limit the communities' access to data, including streaming videos, video conferencing and other activities requiring large amounts of bandwidth. "Natives and other rural residents essentially have had limited access to [information]," said Kolerok. "A big help is going to be the access to information."

Connecting Possibilities

When Unicom finishes the TERRA project, it will be able to provide high-speed internet service to medical and educational facilities, businesses and homes. Improved internet access is expected to improve public safety, health care and education, and facilitate the region's economic development. First responders will be better connected and have increased cell service outside of the villages. An expanded range of public safety radios will also help in search and rescue operations. Regional medical centers will be able to use telemedicine technology to collect and relay patient data and doctors will be able to diagnose and treat patients remotely via two-way video conferencing. Residents will be able to attend online courses and access a wealth of information. Teachers will be able

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to download educational videos and other classroom aids. TERRA will provide businesses increased services at competitive pricing and enable residents to run online businesses.

"People are going to do things with TERRA-NW that we don't even measure today," said Philip Glynn, Travois New Markets' director. Glynn said that the project partners anticipate that TERRA would facilitate job creation for at least the next 20 years, as villages expand their use of the Internet. During construction, the project will create at least 184 direct jobs.

\$78 Million in NMTCs

Funding for the TERRA project comes from a variety of sources. The \$88 million TERRA-SW project received a \$44 million grant and a \$44 million loan from the U.S. Department of Agriculture Rural Utilities Service Recovery Act Broadband Initiatives Program. The TERRA-NW project received \$78 million in allocation authority from three community development entities: AGC led the transaction, providing \$31.1 million in NMTC authority, with Waveland Ventures providing \$24 million and Travois providing \$23.65 million. U.S. Bancorp Community Development Corporation (USB CDC) provided the \$16.5 million equity investment. The state of Alaska and a sponsor loan covered the remaining \$18 million in project costs. The total project cost is estimated to be \$34.5 million.



Photo: Courtesy of GCI

GCI will use microwave towers like this one in Levelock, Alaska to relay signals.

"With the majority of residents and businesses in the 'lower 48' benefitting from high-speed broadband capabilities, many of us take global connectivity for granted," said Maria Bustria-Glickman, USB CDC's new markets and historic tax credit investments vice president. "The TERRA NW project will align remote rural communities across Alaska with 21st century advances, allowing

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them greater access to information and helping them to prosper for years to come.”

Infrastructure costs in Alaska can be five times those of construction costs in the continental United States and lead to higher project costs. Extreme environments and short construction seasons make the TERRA-NW project impossible without government assistance, said Rick Hayes, Waveland’s chief executive officer. “You just couldn’t do it.”

“It was a very different reality we had to work within,” agreed Paul Deslongchamps, Waveland’s chief investment officer. The partners had to be comfortable with a project that had very short construction window each year and acquired all supplies via boat and helicopter. Additionally, they had to accept some unconventional construction methods, such as building microwave communication towers on permafrost and using divers to lay cable along the bottom of frozen rivers.

Well Under Way

GCI announced in mid-October that it had substantially completed TERRA-SW and would begin moving health-care centers and schools onto the network the following month. Broadband internet access will be available for households between Homer and Bethel, Alaska next year. At press time, GCI had begun the permitting process for TERRA-NW and anticipated starting construction on the five new microwave sites that in April will connect Grayling to Unalakleet and Unalakleet to Shaktoolik. If the weather cooperates, the company anticipates completing the first phase in September 2012. TERRA-NW’s second phase from Shaktoolik to Nome, which includes building three additional remote microwave repeaters and laying 40 miles of fiber optic cable, is slated to begin in 2013. GCI is also working on plans for a third phase that would extend the line even farther north and connect more of the region’s communities. ❖

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