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1. Native News Online Article – February 4, 2021

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Rural Alaska Natives Hope Elon Musk's Starlink Internet Service Can Level Playing Field

Official SpaceX Photos, via Wikimedia Commons

By Jenna Kunze
February 04, 2021

SpaceX Starlink, an upcoming satellite-beaming internet service, has begun its testing to offer high-speed internet to remote tribal areas in the U.S. where broadband is notoriously spotty, throttled and expensive.

Since 2019, business magnate and Tesla CEO Elon Musk has sought approval from the Federal Communications Commission to launch more than 1,000 satellites into orbit in an effort to achieve global internet connectivity. The satellites, currently in "beta" testing mode, beam high-speed broadband connectivity to remote areas through a users' one-time purchase of Starlink's self-installing equipment, including a dish receiver to fit on a user's roof.

In early January, the FCC approved the launch of an additional 10 satellites to travel into polar orbit, covering Alaskan communities along the Arctic Circle for the first time ever. Those satellites took off on Jan. 24.

Internet access in rural Alaska is notoriously expensive, making the prospect of Starlink in remote Alaskan villages and cities all the more intriguing for the people who live there. Residents say it would improve online education and services like telehealth, while imploring the

federal government to level the playing field for communities that lack reliable broadband throughout the state.

A school teacher in Utqiaġvik — the northernmost city in the United States on the North Slope of Alaska with about 5,000 people — believes he might have had a hand in the satellites' approval.

Jake Calderwood submitted a letter to the FCC in December, requesting it approve SpaceX's beta launch. Calderwood teaches music at a public elementary school in Utqiaġvik, and told the federal agency that pandemic-caused school shutdowns and exorbitant internet costs in rural Alaska have meant a lack of participation from the vast majority of his students.

"I have 680 students, the majority of whom are Iñupiaq – Alaska Native," Calderwood wrote to the FCC Secretary in December. "Since the pandemic shut our school down in March, approximately 3% of my students have been able to participate in online learning in some format. We have found that the primary reason for such low participation is internet access equity. In our town Utqiaġvik, Alaska internet is a luxury that many are barred from using."

Calderwood added that, in a town where a gallon of milk costs $10 and his own monthly internet bill amounts to around $300 for 10 megabits, many residents — especially people in outlying villages with even less infrastructure — go without.

"I am thrilled that I may have helped in this process," Calderwood told *Native News Online* of the FCC's subsequent approval of the polar satellite launches. "I think that this will ultimately go a long way toward helping out so many Alaskans, as well as rural residents around the world."

SpaceX promises a flat rate of $100 a month for its unlimited broadband services, plus a one-time equipment fee of $500 for the SpaceX dish. The company's satellite service offers at least a 10-fold speed increase compared to the Arctic hub city's current internet service. Currently in Utqiaġvik, internet speed is about 10 megabits per second (Mbps) to upload and download, Calderwood said. Starlink beta sites are experiencing about 150 Mbps, and in some places as fast as 250 Mbps.

Additionally, SpaceX's low orbit satellites sit about 340 miles from earth. That's about half the distance as other satellites, which allows SpaceX to deliver latency, or the time it takes for a computer to communicate with its server and back, at around 30 milliseconds, less than half of the current speed throughout the Arctic region.

In effect, SpaceX engineer Kate Tice told CNBC, the new speed is fast enough to allow users to play the fastest online video games, and download speeds are fast enough to stream multiple HD movies at once.

COSTLY ACCESS

Currently in rural Alaska, internet is available, but very expensive. The federal government funds service connections to "middle mile" companies that supply internet to underserved areas.

Qualifying entities — such as schools, libraries, and health providers — can apply to receive subsidies for internet that is priced at what is called the urban rate, which allows for the entity to pay the same for internet as their counterparts in an urban setting. The Universal Service Administrative Company, or USAC, is a federally funded company that pays the difference between the urban rate and whatever the contracted private company charges.

But John Wallace, a technology support provider in Western Alaska, says that program effectively blocks out competition, causing massive broadband inequalities, and leaving tribal governments to fend for themselves. Wallace manages Alaska Technologies, a majority Alaska Native-owned business that provides technology services and assistance to tribal organizations and businesses in remote areas of the state.

"It's this big scam," Wallace told *Native News Online*. "Middle mile contracts are extremely lucrative for companies providing the service and in many cases are monopolies with no alternative providers due to USAC regulations that are specific to a middle mile company."

A 2018 rate review conducted by USAC and the Rural Healthcare Program found that the year prior, the non-subsidized cost of internet for rural Alaska was $61,692 a month for 12Mbps.

"The federal government will pay for middle mile and pat themselves on the back and say, 'We helped everybody in rural Alaska and underserved communities' … which they do in terms of schools and medical providers … but what they don't do is that they don't regulate what happens downstream," Wallace said. "They make no provision that the company must provide data to other users. And why would they, when they're making 60 grand a month for a 12 (Mbps) connection?"

CALLS FOR EQUALITY

Wallace wrote a letter to the FCC dated Jan. 25 imploring the commission to expedite SpaceX's request to add additional satellites into polar orbit. Starlink is direct-to-consumer, and would equalize internet access for many, he said.

"People in rural Alaska and tribal Alaska are hamstrung by the fact that they don't have broadband equality," Wallace said.

He added it has been especially troublesome during the pandemic, when tribes in rural villages responsible for managing COVID-19 have had their internet cut off by providers for going over their allocated monthly data. Wallace said pandemic-caused travel restrictions have barred him from flying to remote villages to assist.

"We deserve broadband equality, and companies such as Starlink are willing to give it to us if the FCC will allow it," Wallace said. "It will be a game changer and will finally level the playing field for our people."

Since the satellites are closer to the earth in polar orbit, more are needed to cover a wider range of connectivity. SpaceX has since filed for approval for an additional 58 polar satellites to increase beta testing over a larger area in the Arctic.

CATAPULTING AHEAD

One tribe in Western Washington has already vouched for the satellite's immediate and positive effects.

The Hoh Tribe is located in a remote area of the state with limited internet and in October started participating in the SpaceX beta testing program.

"The last eight years I feel like we have been paddling upriver with a spoon, and almost getting nowhere with getting internet to the reservation," Vice Chairman Melvinjohn Ashue of the Hoh Tribe said in a video produced by the Washington State Department of Commerce. He added that the high-speed internet has allowed youth to participate in online learning, and tribal residents to access telehealth services. "It seemed like out of nowhere SpaceX just came up and catapulted us into the 21st century."

SpaceX did not immediately return requests for comment.

One Utqiaġvik resident, Jeremiah Leavitt (Iñupiaq), told *Native News Online* that the Starlink project would introduce welcome competition to Arctic, and allow families like his more manageable internet bills.

Leavitt, who works at the hub city's hospital and takes online classes through Alaska's only Tribal college, Iḷisaġvik, said his family internet bill topped $800 last month.

"I think Starlink will help pave the way for North Slope residents to live a much healthier life by providing much needed affordable, fast, and reliable internet," Leavitt said. He said with the current availability, residents pay "so much" and don't get the speeds companies promise them.

"Having Starlink will improve the lives of Alaskans statewide and will hopefully lead the way for more affordability in the rural communities."

Tribal Broadband as a Cyber Superhighway to Sovereignty

At the end of 2018, just 60 percent of residents who lived on tribal lands in the lower 48 states had access to broadband internet. (Photo: Tony Webster/Creative Commons)

By Valerie Vande Panne
March 28, 2021

The digital divide is great in the United States, often separating the rural from the urban, the rich from the poor. Indian Country is no different, with just 60 percent of residents living on tribal lands in the lower 48 states having access to broadband internet at the end of 2018. That was tough enough pre-pandemic. Today, not having in-home access to the internet can mean long drives to places like McDonald's for internet service, just so children can do homework assignments.

The Institute for Local Self-Reliance (ILSR) decided to examine the issue of tribal internet access, and made their findings accessible in their new case studies report "Building Indigenous Future Zones." The report points to some solutions Native nations might want to look for, including accessing unrestricted capital and viewing the creation of their own internet service provider as a job creator.

"Small planning grants and proof of concept models were able to work and show [tribal networks are] a viable solution that could bring in more money later," says Hannah Trostle, the author of the ILSR report. "It's feasible, and it's possible." ILSR has counted nearly four dozen tribes in what's considered the United States with their own internet networks.

"It allows for greater control of cultural content online," adds Trostle. She says it's also crucial for economic development to keep dollars local to the community and the tribe.

"They can also protect against tech surveillance," says Trostle. "This is information that may be routinely captured by an ISP" — an internet service provider — "and it's important that control of that stays local to the community."

Native News Online spoke with tribes across the lower 48, Canada, and Alaska, and learned the benefits of Indian Country's access to high-quality internet service can change not only the economic position and power of a tribe, but also bolster a tribe's sovereignty.

And with a billion dollars in potential tribal broadband funding to be released in the foreseeable future, now is a good time for tribes to start planning their own sovereign networks.

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Mohawk Network field techs working on company towers. (Courtesy Mohawk Networks)As the ILSR report notes: owning and operating internet infrastructure "supports Native Nations' sovereignty by keeping power and data within the communities rather than relying on an external provider. Imagine a community with 20,000 families each with a $50/month Internet connection — that is more than $1 million each year that could be leaving the community or staying local to build wealth."

A tribe that develops their own internet infrastructure is fostering their own economic policy and bolstering their sovereignty by cultivating their own resources — their own tribe and members' e-commerce, micro and small businesses, and even bolstering sovereignty in gaming.

Advocates say spectrum sovereignty is the key — an increase in the authority of tribal nations to manage their own electromagnetic spectrum over their lands, and treat the spectrum as a natural resource, like water or mineral rights.

According to the ILSR report, under federal policy, "Native Nations have not received funding from the auctioning and licensing of spectrum over their land that is managed by the FCC." Yet the spectrum, it notes, is all over tribal lands, and includes radio frequencies and TV signals. Native Nations are often left out of the spectrum auction system that is optimized for large

corporations and "the geographic units do not often align with the boundaries of Native Nations."

Tribal networks

At the Nez Perce Tribe in Idaho, Danae Wilson lives and works on the reservation. After leaving for a time, she came back in 2000 with the purpose of bringing back better connectivity to the tribe.

Today, there are four telecommunications companies on the reservation, and none overlap. That manifests in various issues of disconnection among the people. For example, calling from one end of the rez to the other is considered a long distance call. T-Mobile doesn't work at all, unless it roams on AT&T's network — which will work on one part of the reservation, and not on another. There is no continuous cell service across the rez.

In an effort to fix the community's longstanding problem, Nez Perce obtained federal grants to build broadband infrastructure.

The tribe's network was originally built as a utility for the tribal government. With more bandwidth came the opportunity to sell it to those in their connectivity zones. What started with easier-to-deploy fixed wireless options has turned into expanding and upgrading the community with fiber, and working to ensure all members have access.

"What we're doing now is fixed wireless and fiber services in more populous communities. We want everyone to have the option to connect to fiber, or out in the country, fixed wireless," Wilson, who works with the tribe's Department of Technology Services, tells Native News Online, noting they try to be competitive in options they provide to tribal members and customers outside the reservation.

Nez Perce Networks now serves tribal and non-tribal residents, on and off-Rez in the rural area, and they offer as many choices as possible. They also lease fiber to other private entities.

"We make a major effort to make sure we are self-sustaining," Wilson says. "Any funds that are generated go back into the infrastructure, and we constantly look for ways to expand."

Allyson Mitchell (Courtesy Mohawk Networks)Allyson Mitchell, General Manager at Mohawk Networks of St. Regis Mohawk Tribe, which sits along the U.S.-Canada border, says the utility has 1,600 customers on its network. They run more than 70 miles of fiber that supports their community, anchor institutions, tribal administration, health services, and their casino, and keeps them all connected, in addition to homes and small businesses. From an economy and diversification perspective, Mitchell notes the network allows community members to deliver effective distance learning, and brings opportunities for small business that wouldn't otherwise be there.

"Having broadband on territory has changed how we do business, how we were able to pivot during the pandemic," Mitchell notes. The pandemic, she says, "put a strain on our network, but out of that comes the positive: we as a network have grown stronger, handle our own troubleshooting, our own technical support to function at a higher capacity in ways that directly impact our community." She says they've had to replace hardware, servers, and routing to handle the increase in use. In March 2020, during the early days of the pandemic, internet use nationwide rose 70 percent.

Mitchell credits past leadership for the network's creation, and champions the current leadership for driving it forward. "It takes years to be able to do," she tells *Native News Online*. "To get us through the build, to get our entire community connected and functioning with high speed internet. I cannot imagine us not having internet now."

Like Nez Perce, Mohawk Network's tech support are people in the community. The tribe takes care of their network, and the community keeps it connected.

"We have a fiber network on-territory and wireless network off-territory," says Mitchell, adding that tribal members and non-Native people are served off their territory, and wirelessly they serve members on the Canadian side of the border, successfully navigating state, provincial, federal, and international space.

Mohawk Networks is an LLC, and part of the tribe's holding company — similar to how a tribe's holding company might also own a casino. Mohawk Networks have their own office, their own infrastructure and operational side, run their own operations, and they function independently.

Yet many resources are shared under that tribe's umbrella, including their IT, accountants and human resources departments. "We find efficiencies between our organizations," says Mitchell.

The Nez Perce Tribe invested significantly, and made significant efforts to do and manage as much of the network's work locally as possibly, with both tribal members and non-Native locals as their workforce. "The intent," says Wilson, "was to be as self-sufficient as possible." Everything from the network's administration, such as billing services, account management and home installation crews, is done locally, and they even own their own equipment, right down to the boring and fusion splicers needed to run fiber. What little is contracted out is contracted to local tribal contractors or other local contractors who follow tribal requirements.

Mohawk Networks, meanwhile, has 14 full-time employees and all of them are "home grown talent," says Mitchell, "All of those very highly skilled" positions she notes are filled by "local resources and talent." She proudly adds: "When you come to the front desk, you have a community member helping you."

Patuk Glenn (Courtesy Patuk Glenn)Patuk Glenn (Iñupiat), Executive Director of Arctic Slope Community Foundation, says creating a network is "easier said than done. It's so costly. Imagine the Arctic. We just got a fiber optic cable undersea to connect three villages. It's not a network we own and operate." But once tribes are connected, she says, they have the ability to overcome the challenges that come with being isolated. It brings opportunity, Glenn adds, along with economic development, and the ability to share information and receive it. "That's what moves our culture and our society forward," she says.

There was the idea, she said, of putting all their language and culture online, as that is how young people are learning. The issue of intellectual property came up — people exploiting Native ideas and designs for their own profit. Glenn says an elder told her that "if we keep worrying about who steals this or that, we'll fail our children because we are so worried about people stealing" and to "share what we can. What is there to steal if we don't have anything?"

"What information do you have if you are losing it?" asks Glenn, thinking about the cultural crisis that arises when tribe's lose their elders. "It's being lost at such a fast rate. Languages and cultures are dying before our eyes." Wrestling with how much information on language and culture to make available to all or to just keep on a private, tribal intranet — an internal, closed network only members or those approved by the tribe would technically have access to — came up for discussion with multiple people we spoke with for this article. By keeping an intranet for tribal member access only, the idea is to preserve the information for tribal members only.

However, it's important to remember that there are issues of preserving data online, wherever it might live: for example, newspapers are an important part of U.S. city history, but unfortunately many of the "alt-weeklies" of the 70s, 80s, 90s, and 00s, which chronicled everything from political scandals to underground music and art, have largely disappeared from the digital realm as the papers themselves have folded — even if the stories were placed online. Huge chunks of a city's history have disappeared not only from print, but from the digital realm as well. It takes money and resources to preserve digital information, just as it does to create a network in the first place. And it's not a one-and-done in the digital realm; information whether on an intranet or the internet needs to be maintained, and that costs money.

Another advantage to a tribal ISP for all is the ability for tribes to employ "what fits their people and the needs of their people." Often, Wilson notes, the standard models of internet service providers do not take into consideration the way people actually live.

Wilson also works to help other tribes navigate creating their own networks.

Learning what other tribes do, how they do it, and how to prioritize and deploy networks is crucial. "In terms of infrastructure, it doesn't need to be an either-or. It can be a community based network. It can be a utility," says Wilson, who, like everyone interviewed for this story, stresses that nothing is free. The network's hardware, installation, maintenance, and the electricity to run the network and support the needs of all those connected costs money. It's easy

to want a service that is so unseen to be free — but once access to high-speed is given, it's rare any household wants less. Usually, tribal members, notes Wilson, want more — for example, more broadband for security cameras and streaming services.

As tribes look to build their own tribal networks, "operational expenses are something to be considered," says Mitchell. "It's a large up front operational cost. There are grants that will help, but they don't cover operational expenses, so having a business plan to have the ability to get to the point of sustainability is key."

State and federal grants, says Mitchell, require co-investment from the tribe, and operational funds will be needed to keep the ISP up and running.

Wilson encourages tribes to look for funders they wouldn't necessarily think to turn to, including state and other types of grant funding. "In all organizations you see siloes," Wilson says. The challenge, she notes, is understanding they're all already connected. Tribes, especially, are connected, and the government intertwines. "Then, you think how do you break down those services to serve everyone equally, [and find] funding opportunities that cross-disciplines, and build infrastructure to serve the tribe, as a whole."

Funding such programs can be a challenge, and Trostle often looks to broadband project funding from the USDA and FCC. The National Telecommunications and Information Administration (NTIA), she says, is a good route, especially when it comes to transparency.

Data collection and surveillance

"The interesting thing in tribal sovereignty versus Native security is if you own and control your own network, you can do what you want to control and own your own data," Matthew R. Rantanen, Director of Technology at Southern California's Tribal Chairman's Network.

"For us to even start to talk about owning your own fiber network, having our own ability to control and protect our own data is powerful," says Mitchell. "It's something we are very fortunate to be able to have our own network and protect our community and our data sovereignty."

"We're not collecting any specific data on customers, but what the [tribal][government does, we insure the data is secure and that protocols are put into place so the data can't be taken," says Wilson. Collecting tribal air and water quality data, she notes, is a component of the type of data that is secure and managed by the company. "We're not doing data mining, selling or looking at the data." If you're on their network and using Google, you're probably sharing more data with them than with their tribal network, she notes.

Protection over their own data, cyber security and data sovereignty, Mitchell notes, is important. "We can't take our eye off that," she says.

If you don't take care of your data, or "your data is leaving your local space, encrypted or not, to a storage location, at a data center, the data is subjected to whatever could plague that center,"

such as a cyberattack, or a physical or natural disaster, says Rantanen. “If you’re not controlling those things physically, then you are subject to the standards adopted by who you’re choosing to work with. If you choose to manage it yourself, maintenance, storage, and control, you're stepping into a realm few tribes have experience in or are versed in.”

Few tribes have the physical space to store their data in the three recommended separate, secure facilities, says Rantanen. And if a tribe stores everything on a single local server — for example a server for enrollment or accounting information — issues come up when they haven’t backed up in a week, a month, or even a year — or worse, if someone physically removes the server from a tribal office. “The biggest risk is the human factor. Anyone at any time can leave a door open or unlocked or push the button that corrupts everything.”

“If a tribe wants to manage their own data, you would hope the tribe is in a position that is stable and technologically advanced and they can handle it,” Rantanen notes. “If you have your own network. There’s a lot of standardized security. A network itself is not so risky. But when you start storing things that are sovereign to your community, like articles of bylaws, managing internal tribal government and relationships and business, that’s when you start stepping into understanding better how to protect yourself… It has to be thought of from the ground up, at least a person if not a team managing the tech and the upgrades and the latest standards.”

Rantanen advises tribes not to go there until they are ready, noting that even banks get hacked. “So if you’re not better than a bank, the risk is there. If you want to store that data, you need to store on the scale of that. They’re all capable of being hacked. What do you have in place to encrypt that data?”

One Billion Dollar Infusion

Last year, Congress authorized the Emergency Broadband Benefit Program, part of the Consolidated Appropriations Act of 2021, passed in December 2020, which provides $1 billion in COVID-relief aid funding for tribal broadband. NTIA was given the authority to deploy that money, and tribal consultation on parameters for distribution happened earlier this year.

Trostle is optimistic about what’s to come. “I’m really excited about NTIA,” says Trostle. “It includes Natvie Hawaiians, Native corps, tribal schools, tribal colleges and universities, tribal orgs, and includes Alaska and Hawai’i, so a lot of entities can apply for it. It’s a great opportunity. We haven’t seen anything quite like it before.”

While the parameters for distribution of these funds have yet to be released, there is much hope that the distribution will be equitable across Indian Country, and will go on to help tribes who need it — and are prepared to receive it.

In the interim, planning for tribal broadband, and thinking in terms of long-term sustainability, can change the future for many tribes and their citizens. But it can also redirect financial resources that might otherwise go to big corporations — and instead invest in the place that matters most: your own tribal community.