

In just a few months, satellite internet has reshaped web access in rural Alaska

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Across Alaska, on fishing boats and cabin roofs and conex containers, flat white antennas are popping up like high-tech mushrooms.

They're Starlink terminals, delivering new technology that in just a few months has started radically transforming [internet connectivity](#) in some of the most remote parts of the state.

The company, a subsidiary of SpaceX, started sending thousands of low-orbit satellites into space in 2019, shifting the paradigm on [internet infrastructure](#) around the globe.

Since late last year when Starlink [internet](#) became available in Alaska, thousands of residents have signed up at a pace that's exceeding expectations, observers say.

The Starlink signal isn't perfect, they say. Its strength diminishes as more users compete for bandwidth. But it's also gotten faster and steadier as SpaceX has added satellites to the system.

Experts also say satellite-delivered internet is inferior to faster, more stable internet delivered over fiber-optic lines. Alaska telecommunications companies will extend hundreds of miles of that cable in the coming years across much of rural Alaska, thanks in part to federal investments from the 2021 bipartisan infrastructure act and other bills.

But fiber, too, has limitations. In June, more Alaskans began turning to Starlink after sea ice shredded a subsea fiber cable off the state's northern coast, an event that halted the high-speed connection many people had been using in the region.

In Southwest Alaska, Andrea Gusty leads an Alaska Native corporation representing shareholders with roots in 10 villages along the Kuskokwim River, an area where residents say they've long lacked reliable, affordable internet.

The Kuskokwim Corp. in recent months began purchasing Starlink systems for 450 shareholder households, many in the region, in a program meant to close the digital divide there, Gusty said.

The corporation covers the \$600 cost of the terminal and other hook-up gear required to mount the flat-panel antennas high enough to gain a clear view of the sky. Families pay the \$90 monthly bill.

"The speeds are nearly Anchorage speeds," Gusty said. "It's crazy. To go from nothing to having this type of speed in our communities is life-changing."

The corporation and partners have applied for \$50 million in federal grants to extend fiber to the region, but that might not be built for five years, Gusty said.

She said the cut to the fiber cable in northern Alaska shows that it's important to have multiple internet sources.

"By having access to both, we won't lose connectivity for the community," she said. "And this also provides the opportunity for rural Alaskans to make a choice that urban Alaskans take for granted."

A 'tech disruptor'

Starlink has grown in Alaska and elsewhere thanks to SpaceX's ability to quickly deploy chains of satellites in low orbits around the earth, where they beam internet signals between each other and ground terminals.

In 2019, SpaceX—owned by billionaire Elon Musk—successfully tested a rocket that launches satellites, then returns to Earth for repeated use. That development drastically decreased the cost for adding small, low-orbit satellites to its system, and SpaceX began sending hundreds, then

thousands into the sky.

"This effectively gave (Musk) control of an express train to constantly deliver satellites to space, sometimes dozens at a time," The New York Times reported in July.

SpaceX now has more than 4,500 satellites in operation, accounting for 53% of the active units in orbit, the article said.

Starlink has also grown because it's available directly to consumers through internet orders. The accessibility is why people are seeing more Starlink terminals in rural Alaska, said Lesil McGuire, a consultant for OneWeb.

OneWeb's signal was available before Starlink's, she said. But the OneWeb signal is distributed through Alaska-based internet service providers, such as Alaska Communications, before it reaches individual households or businesses. It's a business-to-business model that supports Alaska companies, she said.

Elsewhere, other satellite-based companies like Hughesnet had previously been the only internet option in some small, remote communities, residents say.

Starlink users say the Starlink system is fairly easy to install themselves, though some have hired Anchorage-based company Microcom, a distributor of Starlink gear, for that task.

It's also relatively low cost, compared to services from other telecom companies in Alaska, they say. For years, Alaskans off the road system say they paid hundreds of dollars a month for data packages with caps and costly overage charges. Now, they're paying less than \$100 monthly, plus the upfront expense, for Starlink's faster more dependable signal,

they say.

Outside of households, whole industries and institutions are also adopting Starlink, either to improve on substandard connectivity or as backup measures.

"Starlink itself is a tech disruptor, in that we're using it in all these places where we didn't have connectivity before," said Dom Pannone, director of administrative services for the Alaska Department of Transportation and Public Facilities.

In the last six months, the state has deployed "dozens of units" across Alaska, Pannone said. Some are used on ferries to run back-office functions like credit card processing. Construction crews use them at remote sites.

State emergency responders employ Starlink to feed real-time drone footage of disasters to coordinators in city offices, such as in the recent Mendenhall River flooding in Juneau and a wash-out along the Dalton Highway, he said.

"We're using it all over, anywhere where we're trying to modernize our operations," Pannone said.

An enthusiastic welcome in Bethel

When Starlink systems first began arriving in the Bethel region late last year, cargo planes delivered hundreds at a time, residents said.

John Wallace, a tech consultant in the region, said he stood in line at the airport for his system.

"It was craziness," he said. "People were going out of it like it was a

doughnut shop."

Bill McAllister, the meat department manager at the Alaska Commercial store in Bethel, said he got his system in December. Initially, outages could last up to 45 minutes. But the signal is now steady as Starlink added more satellites, he said.

McAllister said he's saving at least \$300 a month after switching to Starlink from GCI for his home internet. He's using the savings to make extra trips to visit family in the Lower 48, including a newborn granddaughter.

"I'm very happy," he said.

Bethel resident Aaron Aciukweicz, an avid video game player, said his monthly internet bill used to get as high as \$700 before he switched to Starlink.

"There are times when the speed slows down, or it will drop for a few seconds here or there, but overall it is the most consistent way to play online video games in (rural) Alaska," he said.

Bo Foley, who runs the city of Bethel IT department, said he uses Starlink at home and no longer worries about limiting his data use.

"I've never been more grateful to have the freedom without the fear of running up a bill or hitting some kind of data cap," he said. "It's what everyone wants. They want to use the internet without worry, and Starlink is the first thing that's come out here to offer that kind of freedom."

Establishing connectivity in new places

On an Alaska Starlink Facebook group with 11,000 users, enthusiastic posters swap stories about their internet performance. Addressing a common concern, they say cold has little to no effect on connection speeds, thanks to a built-in heater.

They say Starlink has brought the internet to new places.

For example, fishing boats.

"It brings a whole new safety net of being able to look up and get information you need while at sea that you normally wouldn't have," said Blake Hill, a Juneau-based commercial longliner.

That includes updated weather reports, repair manuals and possibly life-saving medical information, he said.

It makes the fishing life easier, Hill said. "One of the hardest parts of fishing is the lack of communication and the disconnect from the outside world," he said. "Starlink makes it so you can keep your family updated, knowing you're safe and doing good and vice versa."

Starlink enthusiasts also used it this summer at fish camps and remote cabins.

Shannon Ward, who runs a small commercial salmon operation out of Bristol Bay, had internet access there for the first time this summer after mounting a Starlink terminal to an old freezer, drawing power from a generator.

It was "fantastic for my daily reports to Fish and Game, business calls and texts, and personal staying in touch with family," she said. Starlink allowed her to better market her catch online too, she said.

Starlink panels are going up at seven remote schools in the Southeast Island School District, which covers communities like Whale Pass, Kassan and Coffman Cove, said Everett Cook, the district's technology director.

"This school year will be the first year that we use it as our primary connection with our old connection as a failover so we can see how it holds up under load," said Cook from Thorne Bay. He said prior to Starlink, the only internet option was Hughesnet.

"There is no comparison to the speeds that Hughesnet offers," Cook said. "Starlink has changed the game for our district and small communities here in Southeast Alaska."

Valuable, but testy, after northern subsea fiber cut

GCI, the state's largest telecommunications company, has been the main internet provider in rural Alaska for years, primarily using dozens of microwave towers atop mountains and tundra to deliver the signal.

Some Starlink customers say they've dropped their GCI internet service.

GCI has noticed the growing number of Starlink systems in rural Alaska, but that's not having a significant impact on GCI's bottom line, said Heather Handyside, the company's spokeswoman, in an email. GCI has seen internet cancelations in rural communities, she said, but some people have found Starlink unreliable and are sticking with GCI.

Officials with SpaceX did not return calls and emails seeking comment about Starlink's growth in Alaska.

Handyside said GCI has also added customers, including in Nome and Kotzebue, hub communities in Northwest Alaska where GCI began

providing fiber service in 2021 using Quintillion's fiber cable. GCI has projects underway to connect 24 rural Alaska communities to fiber, she said.

"Fiber is really the gold standard in terms of connectivity, but Starlink is certain to continue to improve its service in the coming months and years," she said. "It may be a strong solution for a number of remote customers."

Still, in communities like Nome, Kotzebue and Utqiagvik, the fiber system failed after the June ice-scouring cut the signal. That sent existing internet providers racing to offer alternatives. GCI is providing "100% free internet" to its customers in affected communities until fiber is restored, using its microwave system and satellites from multinational company Intelsat, Handyside said.

That severed cable has yet to be fully repaired.

After the cable was cut, many local organizations turned to satellite-based internet providers as an alternative.

Starlink has been the most popular option, said Alexander Schumann, communications director at Microcom, a retailer of satellite products.

About 2,500 Alaskans have purchased Starlink equipment through Microcom, which also provides installation services and customer support for those units, Schumann said.

The North Slope Borough ordered at least 25 Starlink units, and the regional school district is working on bringing them to villages, said Nagruk Harcharek, president of the Voice of the Arctic Inupiat, who has coordinated response to outages between internet providers and local authorities.

"I think most everybody, if they have the ability, have switched over to utilizing Starlink," Harcharek said.

But the system can have drawbacks.

The Samuel Simmonds Memorial Hospital in Utqiagvik was running at about 20% communication capacity after the switch, Harcharek said.

And with Starlink only, Ilisagvik College students were unable to access online classes and student information platforms if they weren't on campus, said Kendra Mack, the college's communication coordinator.

The college instead is now using OneWeb—Mack said that signal is more stable—but it uses Starlink for backup.

After the fiber cut, the Northwest Arctic Borough purchased Starlink to handle its core operations, such as email and invoicing, said Ingemar Mathiasson, the borough's energy manager.

Even after the fiber-optic line is repaired, the Northwest Arctic Borough wants to keep using Starlink to ensure there is internet redundancy and reliability, Mathiasson said. The borough is working to purchase units for local and tribal governments within the borough, he said.

Mathiasson said he thinks people will keep using Starlink as a backup.

"It's not clear if the Arctic fiber will be reliable enough to keep functioning," he said. "It's one thing to go up and fix it, but what if it happens again?"

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