High speed internet gives rural California the tools to thrive

By partnering with the FCC and the Microsoft Airband Initiative, Cal.net makes faster progress toward covering the Central Valley

"High-speed broadband is essential for economic development, workforce training, telemedicine, efficient farming, and educational opportunity. We need this if we are to compete for jobs and assume leadership roles in the 21st century." **Dr. Stuart Van Horn, chancellor of the West Hills Community College District in Coalinga, California**

835,000: the estimated number of unserved, rural Californians to be covered by Cal.net in the next 10 years

> "We're working to build out and activate connections to get service to homes and businesses—as quickly as we can."
>
> **Mark Herr, vice president of corporate development at Cal.net**

If you ate a salad or bit into a juicy peach today, you likely have California's Central Valley to thank: This region produces more than half of all vegetables, fruits, and nuts grown in the United States. Yet for as plentiful as produce is, it is difficult to find an affordable, reliable, high-speed internet connection throughout much of the valley.

That means residents aren't able to take advantage of precision agriculture applications, run a business from home, do their homework, email a doctor, or track the developments of a nearby wildfire. The connectivity gap has become even more problematic during the COVID-19 pandemic, when efforts to stem the spread of the coronavirus prompted many people to work and attend school from home.

"It used to be that internet was an option," says Mark Herr, vice president of corporate development at Cal.net, an internet service provider (ISP) in California. "Now it's a necessity."

But for rural customers, fiber isn't a fix: the solution that works so well in urban areas isn't cost effective when a single household is surrounded by acres of ranchland. "That's why we have to use multiple technologies: licensed and unlicensed frequencies, TV white space (TVWS), fiber, all the different things that are available," Herr says.

The Microsoft Airband Initiative is supporting Cal.net's problem-solving approach to expand access to affordable, reliable high-speed internet in California.

Innovative approaches expand access across Central California

Cal.net specializes in providing internet to rural communities, especially in the foothills of the central and northern Sierra Nevada Mountains. The small ISP has secured diverse funding to pursue its goal to broaden coverage to hundreds of thousands more people who are currently unserved or underserved.

For example, Cal.net is leveraging funding from federal entities (the Federal Communications Commission (FCC)), state programs (e.g. California Advanced Services Fund), and private partnerships and investment, including the Microsoft Airband Initiative.

Just as Cal.net has developed an all-hands-on-deck approach to tackling the connectivity gap, the ISP uses every technology at its disposal to build out networks that reach unserved areas.

Herr describes Cal.net's approach to expanding coverage as a hub-and-spoke model. The ISP first runs fiber to a central location, or hub, which Herr calls "a pipeline to feed the other sites." From there, they deploy point-to-multipoint solutions to stretch connectivity to the surrounding area.

The customer density and geography of a particular area determine which solution, or combination of solutions, they use as each "spoke." For example, from a tower "hub," Cal.net might point a TVWS antenna toward a nearby town and use another technology to serve homes in a different direction.

Finally, those solutions often broadcast broadband to multipoint devices, which further spread coverage. That means that a device that receives broadband from a central location might broadcast connectivity to additional sites, extending coverage much farther than would be possible through other wired solutions.

Relationships speed expansion

Cal.net is speeding the expansion of its coverage by focusing on projects that have broad impact, like the partnership with the West Hills Community College District in Coalinga, California, which offered a third of its classes online even before the pandemic began. Dr. Stuart Van Horn, the chancellor at the district, has been eager to cover the communities surrounding the town. "Access to broadband is not a luxury but a necessity to implement long-term strategies to increase upward mobility and economic opportunity for our students and citizenry as a whole," Van Horn says.

Fortunately, Cal.net had already built a relationship with West Hills before stay-at-home orders, allowing them to rapidly enable remote learning and connect the area's homes.

The chancellor has offered rooftop access on one of its three-story buildings, where Cal.net will install a TVWS antenna. That hub will then expand the broadband ecosystem, benefiting not only college students but all the potential customers within the coverage area, too.

What's more, the chancellor has leveraged his own personal connections to expand the communications network. Through introductions, Cal.net met owners of towers that would work well for TVWS antennas and leaders who want to bring high speed internet to their communities. For example, as a result of one of these introductions, the ISP is about to begin laying fiber in a housing development outside of Fresno, which will double as a hub to connect the surrounding rural areas as well.

Airband gives voice to small ISPs

The Microsoft Airband Initiative, which has committed to extending broadband access to 3 million people living in unserved rural communities by July 2022, supports ISPs across the country to help solve the broadband gap.

While small ISPs bring their experience in serving rural communities, Microsoft lends its own expertise. For instance, Microsoft provides access to important components for broadband deployment, discounts on equipment through partnerships with manufacturers, political advocacy, as well as financial investment in certain cases.

"All of us little WISPs don't have the money to lobby the federal government," he explains. "But companies like Microsoft understand we can't do our job on our own; we need support from the FCC. Those advocates make a huge difference for us: we now have a voice."

What's more, Microsoft negotiated new pricing contracts with leading tower companies so small ISPs like Cal.net can afford to extend high-speed internet access into sparsely populated areas. Deals like this enable small ISPs to keep broadband rates affordable.

Customers in rural California have been promised before that one project or another would connect their communities, and they've often been disappointed. Cal.net is dedicated to disrupting that pattern by following through and enabling access to precision agriculture and telemedicine, especially as COVID-19 has made internet access more important than ever. "This greater demand isn't going away. And the biggest challenge is still getting access to unserved areas," Herr says. "It's going to be us small, independent internet service providers that go out and get it done."