

# THE GREAT ECONOMIC LEVELER: Municipal Broadband Provides Digital Equality to Rural America

Municipalities are taking a do-it-yourself approach to bring access to communities that remain underserved by large incumbent telcos and cable operators.

By Steve Alexander / *Ciena*

There's a good chance you're reading this at your work desk, which may happen to be in your home. McKinsey reports that 35 percent of Americans now have the option to work from home (WFH) five days a week: 58 percent say they have an opportunity to WFH at least once a week.

People are working, learning and playing from home more regularly than ever before, creating unprecedented residential broadband demand. Research estimates that household broadband usage in 2022 jumped to more than half a terabyte per user, a rate nearly double what it was in 2018.

This is the new normal, and with more organizations digitally transforming their businesses and increasing their reliance on cloud applications, this consumption is only expected to increase. Economic prosperity has never been more critically dependent on reliable, affordable, fast internet connectivity. Of course, not all homes have as easy a path to access residential broadband as others.

## THE RURAL CHALLENGE

In the metropolitan hubs of the world, access to ubiquitous high-speed fiber within city limits is almost taken for granted these days. But for many people in rural areas, such access is limited. Service providers understandably often can't provide fiber access to the last mile in rural areas because of the sheer expense of laying and maintaining fiber to each home in sparsely populated areas. This has left many people underserved for decades, relying on legacy copper networks to attempt to bridge the digital divide.

The town of Dryden, New York, is one example of a community that historically has been on the wrong side of the digital divide. Dryden was underserved when it came to high-speed broadband. Its citizens made do with slow and spotty internet access – or sometimes no internet – and were forced to go to libraries or coffee shops for more consistent connections. The pandemic exacerbated the lack of reliable connectivity

when many people worked, learned and even received telemedicine at home. Dependability and availability weren't the only concerns; cost was also an issue for some residents.

But with service providers unable to go to the last mile because of the expense, what can communities such as Dryden feasibly do to maintain pace with their metro counterparts? After all, reliable residential broadband is no longer a nice-to-have but a must-have – just like electricity.

## DIY BROADBAND

Rural regions may need to take it upon themselves to bring access to their communities – and many are doing so, looking to residential broadband as a regional, government-led initiative.

For example, in Dryden, town officials put in motion a municipal broadband project to provide faster, affordable internet access to everyone in town. This type of locally owned municipal broadband system is one of the first in New York state, with fiber running past every residence and business in the township.

Dryden's story is becoming increasingly common across the nation. Clackamas County in Oregon and Cullman Electric Cooperative in Alabama are two more examples of municipalities working to extend broadband to rural residents.

More municipalities are expected to take the lead on behalf of their residents in the coming months and years, particularly as cloud reliance is expected to increase. They now see broadband access as both an essential utility and a force for economic equity, with the option to work from home often making moving to the big city to follow career dreams unnecessary. Broadband access is also proven to improve property values; pre-pandemic, a property's value increased by more than \$5,000 if it had access to fast, reliable internet.

But how easy is it for a municipality to take fast broadband to the last mile?



More municipalities are expected to take the lead on building broadband networks in the coming months and years, as broadband access becomes both an essential utility and a force for economic equity.

The best practice is to implement an open network, which is free to pick best-of-breed solutions to leverage across the web rather than rely on an off-the-shelf, one-size-fits-all design. Available architectures can also leverage the principles of universal access, allowing the network to adapt rapidly and offer various services, along with software-defined networking (SDN) and virtualization to reduce the need for ever-growing collections of disparate hardware across a network. The goal is to quickly and cost effectively turn up and manage services while minimizing manual provisioning steps.

Municipalities need to start small, expand networks rapidly and cost-effectively only where and when their communities need it. Again, this is where SDN and virtualization come into play, allowing networks to expand as needed. This enables municipalities to build high-capacity, automated residential broadband networks that scale dynamically to deliver on customer expectations, protect existing revenue streams, and capture new revenue opportunities.

Finally, leveraging a passive optical network (PON) infrastructure enables provisioning last-mile fiber to support many households. PON is increasing in popularity because it uses

fiber splitters to share the significant capacity of an optical fiber among multiple households, with no apparent compromise on speed. In short, it can be done.

Governments of all sizes now recognize the need to see broadband as a utility and are looking to make access as readily available as electricity and water.

The global pandemic spotlighted the growing digital divide, but that spotlight is leading many to recognize that affordable, ubiquitous broadband access is critical to everyday life. It's why municipality-driven initiatives such as those in Dryden and Clackamas, along with stimulus programs, will become increasingly common. As they do, the hope is that the vast digital divide will shrink, and regional hubs will enjoy the same access big cities do. 🌱



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