

# Lincoln Steps Into the Future

Even if a community can't build its own network, it can take steps to get great broadband for its citizens.

By Masha Zager / *Broadband Communities*

**T**he broadband project in Lincoln, Nebraska, started the way so many broadband projects start: with complaints by the business community. Companies were leaving the city or declining to move there, citing a lack of broadband choices. The local chamber of commerce, responding to the alarms its members raised, implored the mayor, Chris Beutler, to take action.

A Nebraska statute prevented the city of Lincoln from building and operating its own network, so the mayor's options were limited. (Though the prohibition isn't absolute for all Nebraska cities, there are no municipal networks anywhere in Nebraska.) However, he continued to meet with the chamber of commerce and brainstorm about possible solutions.

## THE CONDUIT GRID

In 2011, when the city was planning a large downtown redevelopment project, a city engineer named Virendra Singh proposed placing 5 miles of conduit under the new streets. Installing the conduit would be fairly inexpensive because the streets were under construction; once the conduit was in place, ISPs could install fiber at relatively low cost to serve the downtown business community. The city decided to go ahead with the plan, investing \$700,000 from a fund Beutler established for infrastructure improvements to drive economic development and job creation.

When David Young was hired in 2012 as the fiber infrastructure and right-of-way manager, he took responsibility for making the conduit

an engine of economic growth. Over the next three years, Young signed up five ISPs to lease conduit space and serve businesses. The first was NebraskaLink, a middle-mile carrier owned by a consortium of Nebraska telephone companies, which had won a stimulus grant to connect a number of community anchor institutions, including the University of Nebraska–Lincoln. CenturyLink, Unite Private Networks, Windstream and Level 3 soon followed. For the first time, the business community – at least the larger businesses in the downtown core – had a competitive market for connectivity.

At the same time, Young worked on expanding the conduit. Singh, who died in 2013, had been quietly installing conduit to connect traffic cabinets throughout the city since 1978. Over time, aware that the conduit would eventually be needed for other purposes, he had specified larger and larger pipes. Much of this turned out to be usable for running fiber to businesses, though it wasn't well mapped and wasn't connected. With the help of the private partners and city staffers who had worked with Singh, Young's office created a conduit map of the downtown area and began to connect the disparate conduits into a grid.

In addition to reclaiming and connecting Singh's conduit, Young looked for other city infrastructure to which conduit could be attached, such as bridges and abandoned water lines. And as arterial roads were repaired, the city added new conduit. Within a few years, the 5 miles of conduit had grown to 300. Today, there are about 450 miles of conduit.



Allo is installing 6.5 million feet of conduit in Lincoln.

## UBIQUITOUS FIBER

The success of the downtown conduit project inspired city leaders to consider a citywide fiber build. Residents, like businesses, were complaining about the lack of broadband competition, and the mayor believed a gigabit option would benefit the city.

In 2015, Allo Communications approached Lincoln with a proposal to lease the remaining space in the city's conduit, place additional conduit throughout the city and build out fiber to every home and business by 2019. Allo is a competitive service provider that operates in communities throughout Nebraska. (In its first out-of-state venture, it recently agreed to deliver services in Fort Morgan, Colorado.) Its philosophy is not to cherry-pick neighborhoods but to deploy quickly and serve entire communities with ubiquitous fiber. In return, it expects cities to help make deployment as "hassle-free" as possible.

The city had a similar interest in getting fiber to all premises quickly, with a minimum of hassle. Young says, "Stop wasting time talking – just make the agreement and go forward. Cities waste an inordinate amount of time on studies, figuring out best deal. Getting the infrastructure deployed is the best deal!"

Not surprisingly, the two parties quickly reached an agreement. Brad Moline, CEO of Allo, says, "We met with the Lincoln mayor; six months later, we had a deal, and 10 months later, we had customers. In some other communities, we've talked for five years and still have nothing."

## THE ART OF THE DEAL

The 25-year agreement between Allo and Lincoln was designed to yield benefits for both sides. Allo leased about 1.7 million linear feet in the city's conduit – mostly in the downtown area and arterial roads, which would have been prohibitively expensive for Allo to dig – and is building another 6.5 million linear feet of conduit on its own. The lease amount was negotiated based on the city's capital and operating costs, on the one side, and the provider's cost avoidance, on the other, but unlike most leases, it is based on the number of customers served rather than on the number of feet leased. "Our incentives are aligned," Young explains. "The city wants Allo to supply service to as many people as possible ... so it's a long-term win for both parties. If Allo is successful, so is the city."

Because Allo's lease payments would be low during the buildout period, the

city committed to investing \$500,000 per year over four years to maintain the existing conduit – an investment it could finance within its existing operating budget. After the first four years, Allo's lease payments will begin to replace the city's maintenance contributions.

Allo agreed to provide free gigabit service to 100 government buildings, free 10 Gbps service to 50 government buildings and gigabit service to 500 traffic lights for only an installation charge. Fifteen public virtual local area networks will be available at every connection and termination point on Allo's network.

To foster digital inclusion, Allo agreed to provide a low-cost service tier with 20 Mbps broadband for \$45 per month with discounted service for low-income residents. In addition, it pledged to provide free gigabit service to 75 nonprofits and to deploy three outdoor Wi-Fi hotspots.

The city charges Allo its normal rates for using its facilities, permitting, inspecting and so forth, and it holds Allo to the same standards it would impose on any other construction company. However, it changed its business processes to effectively reduce Allo's costs and speed up construction without compromising safety. For example, it



Allo's fiber will reach every premises in Lincoln.

combined the permitting, inspecting and locating functions in a single office. That office can respond to any question from Allo or its subcontractors.

Finally, the city awarded Allo both a video franchise and a broadband franchise. The broadband franchise – the first of its kind in Nebraska – specifies that Allo guarantee net neutrality with no blocking, throttling, paid prioritization or data caps, and it requires Allo to provide service to every residence under nondiscriminatory terms with no residential service contracts, installation fees or modem fees. “We wanted to create a model other cities could look to,” Young says.

## A RAPID DEPLOYMENT

Allo started its fiber deployment in the second quarter of 2016, but Moline says the company spent most of 2016 “learning how to do business in Lincoln.” The deployment picked up speed in 2017, and by March 2018, Allo had built three-quarters of the conduit it needed and passed about half the premises in Lincoln – a city of almost 290,000 people. Moline expects to substantially finish the buildout ahead of schedule, in the second quarter of 2019.

The buildout is so rapid that Allo has not bothered with fiberhood-type demand aggregation. Rather,

engineering considerations, competing utility projects and the potential for neighborhood disruption drive the construction schedule. Says Moline, “Our focus is to build communities as fast as we can in a safe manner and operate as a competitive alternative for 30, 40 or 50 years. I think you end up spending more money in a neighborhood competition than you would just building the whole thing. ... A lot of the goal of our build path is to disrupt the community as little as possible. We wouldn't want to put all the drill rigs in the same neighborhood at once and knock out traffic.”

Allo has encountered all the fiber construction challenges – running into gas lines, chewing up residents' lawns – that are to be expected when digging in 80-year-old neighborhoods. However, intensive communication with the city and utilities, incident tracking and process adjustments enabled it to overcome these challenges. “I'm quite pleased with our safety record and the number of disruptions per mile,” Moline says. “There's been learning and growth for the city and for Allo. Everyone's better today than they were in May 2016.”

And certainly, most residents wish the deployment would move even faster. As in many cities, residents whose neighborhoods aren't first on the fiber list demand to know why. There have been attempts at friendly persuasion – Moline says people have spotted him in restaurants and sent him free drinks with notes that include their addresses – but those attempts have failed.

The city, too, hears many complaints from residents who want fiber yesterday. Young says, “When someone asks us a question, we explain that it's going to every premises, and it takes time.”

In the neighborhoods where Allo's triple-play fiber service is available, residents are signing up at a pace that makes the company very happy. “We're exceeding our original estimates for take rates,” Moline says.

## THE NEXT 50 YEARS

However, Moline and Young agree that the deployment process and early results are less important than the

network's long-term benefits. “A lot of communities are focused on the build process,” Moline comments. “But in the 50-year life of a network, the construction phase represents 4 to 6 percent. Communities should be spending a lot more time thinking about what they're going to do with fiber than being focused on construction. They need to think about readying the community for the next 50 years. In Lincoln, because of David Young and Mayor Beutler, they truly understood that the construction phase is just a phase.”

The city is taking steps to ensure that the network pays off in the long term. In November 2017, Lincoln joined US Ignite's Smart Gigabit Communities program, which creates “living lab” environments for the next generation of gigabit applications. This project, based on an advanced wireless “Digital Town Square” infrastructure, involves multiple local partners. The University of Nebraska–Lincoln is providing technical leadership and high-performance computing infrastructure, Allo is donating operational expenses and staff time, and the city is investing \$15,000 annually for the next three years. FUSE Coworking, which offers workspace to entrepreneurs in the business district, is donating office space. Other project partners include the Lincoln Partnership for Economic Development and NMotion Accelerator, which will provide seed financial support for commercialization of new technologies, and Beehive Industries and TEDxLincoln to provide private enterprise guidance.

In February, Bloomberg Philanthropies named Lincoln one of the 35 champion cities in the 2018 U.S. Mayors Challenge, a nationwide competition that encourages city leaders to uncover bold, inventive ideas to solve tough problems. The award funds a six-month test of Lincoln's proposal to establish an on-demand autonomous vehicle service, the first of its kind in the United States. The city will deploy its first 12-passenger shuttle in June and plans to add three more the following year. If the prototype is a success, the fleet may number 40 or

50 in five years. Young says the shuttles will communicate with traffic signals and help reduce traffic congestion in the city core.

Other projects on the drawing board include using the fiber network for public safety purposes, such as transmitting video from police cars and body cameras; for medical purposes, such as transmitting patients' vital signs from ambulances to emergency rooms; and for energy saving projects, such as communicating with smart streetlights.

Of course, the city also expects the local economy to benefit from ubiquitous fiber. As mentioned earlier, the Lincoln Chamber of Commerce was a prime mover in the drive for better broadband, and when the Allo project was announced, Wendy Birdsall, the chamber president, said, "The impact of this announcement from Allo and Nelnet [Allo's parent company] will ripple through every business looking

"Cities just need to get past the limited thinking of 'We don't need this.'"

to expand or build in our city." City government is already beginning to track metrics such as property values, and at some point, it may commission a full-scale economic impact study of the sort that Chattanooga and some other cities have undertaken.

#### IS LINCOLN REPLICABLE?

Moline calls Lincoln "a universe of one" because of the amount of conduit it could make available to fiber deployers, and Young says officials in other cities are skeptical that they can replicate Lincoln's success. But both of them argue that the city's success is, in fact, replicable.

Young says the determination to

build a network and compete on the world stage is more important than any particular asset, adding, "Cities just need to get past the limited thinking of 'We don't need this.'"

And Moline points out, "Virtually no other communities have all that conduit, but they have other assets, so we can make it work. ... We're looking to talk to other communities and together figure out how to build networks that will improve the way of life in those communities." ♦

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