

# Fort Collins Lights Up Community-Owned Broadband Utility

The Colorado city is blazing a new fiber-based broadband path to improve the quality and reach of broadband for residents and businesses.

By Sean Buckley / *Broadband Communities*

**I**n Fort Collins, Colorado, Connexion broadband service broke ground in early 2019, but the desire to equip the city with service dates back more than a decade. In 2010, the city partnered with Colorado State University to apply for the Google Fiber challenge, which would have provided access to the service provider's then-disruptive \$70-a-month, 1 Gbps, fiber-to-the-home (FTTH) service.

Though Google Fiber did not select Fort Collins, broadband discussions continued and were incorporated into the 2014 Fort Collins Strategic Plan, which was updated in 2016. It now includes broadband as a specific strategic objective: "Encourage the development of reliable, high-speed internet services throughout the community."

After years of thoughtful planning and community feedback, Fort Collins began building a fiber-to-the-premises (FTTP) network in February 2019. The network is set to be complete in 2022. The new service will bring gigabit-speed internet, phone and video to all Fort Collins residents and businesses.

Connexion expects to complete the installation of its fiber optic network by the end of this year and is turning on new services in neighborhoods weekly.

A \$120 million bond Fort Collins residents approved in 2017 provides the funding to build and improve the municipality's infrastructure to support broadband service for all qualifying residents.

In September, Fort Collins named Chad Crager as the city's new broadband executive director. Crager leads the Fort Collins Connexion team and oversees the building and implementation of the fiber network to all residents, businesses and organizations within the city's boundaries. He says that Connexion's collaboration with Fort Collins Light & Power was vital in making the broadband initiative a reality.

"There are four main utilities in Fort Collins, and Connexion is what we consider the fifth," Crager says, adding that Connexion is tied to Light & Power because the utility is the source of bond funding. "Because Connexion is an electric utility, we could create and construct this build."

One advantage of the fiber network: It is all underground. Though building a network entirely underground comes with challenges and costs, it has long-term reliability and enhanced network capabilities.

"It is not a cheap or easy thing, but the beauty is that our operation and maintenance will be so much lower because we're 100 percent underground," Crager says. "Not only that, but the aesthetics are better because people don't even see our utility, which is a big thing for Fort Collins and other communities."

## **A COMPETITIVE CHOICE**

The Connexion network is funded by bonds, which will be paid back from subscriber fees. Today, Connexion offers three main symmetrical



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internet tiers: 1 Gbps Home Connexion for \$59.99 a month, Home Connexion (10 gig) for \$299.95, and Wi-Fi for the home for \$9.95.

The provider also offers a triple-play bundle of internet, voice and video services: internet and phone for \$74.90; internet and TV for \$129.90; and internet, TV and phone for \$144.85.

In addition to residential services, Connexion offers a suite of business services, citing a desire to better serve the city. The Connexion website states, “The city recognizes that a fiber-connected city created advantages over a disconnected city.”

The service provider also is committed to enhancing broadband opportunities for economically challenged families through its digital equity program. Low-income families that participate in a more prominent provider’s low-cost program will have their bandwidth throttled if they consume too much bandwidth during a given month. Not so with Connexion,

which dedicates 6 percent of its revenue to a fund supporting low-income subscribers. Those who qualify for the reduced-rate \$20 a month program will get the same 1 Gbps symmetrical speeds as full-paying customers.

“That fund makes up the difference of \$40 a month,” Crager says. “The reason why this is exciting is that we believe regardless of people’s income, they should receive the same service because of the importance of broadband in today’s world.”

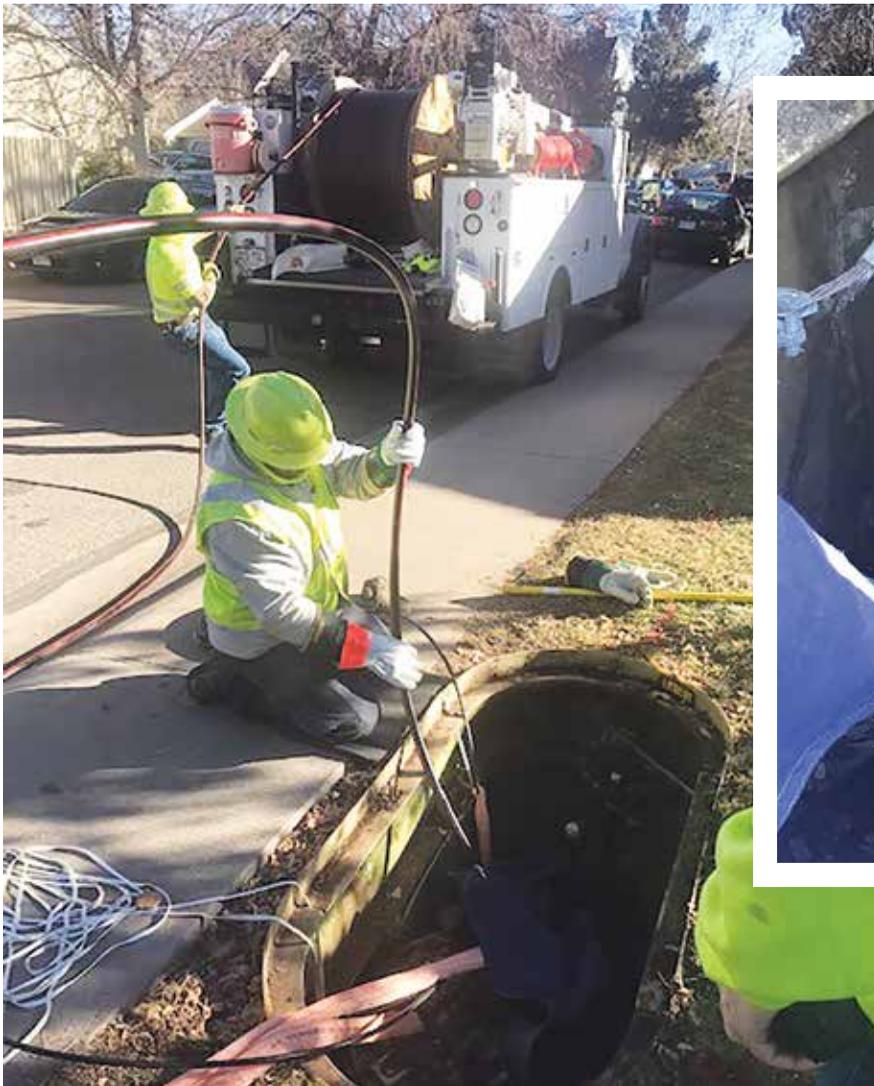
#### **INCUMBENTS WERE APATHETIC**

Before pursuing municipal broadband, “we reached out to local incumbents about potentially partnering on ways to improve not only the quality but also broadband coverage in Fort Collins,” said Erin Shanley, broadband marketing manager at Connexion. “We were told that things were fine the way they were, and they would make improvements as needed, but the city decided that was not good enough.”

Fort Collins soon launched an exploration into municipal broadband. City leaders visited communities that had successfully built their own networks to better understand what was necessary to make municipal broadband possible. The city also conducted feasibility studies as part of its due diligence. Initially, it worked with a third party to manage and operate the network, but the funding fell through.

Shanley says the city felt building a network was necessary and it put the issue to a vote in 2017. The community voted in favor of building a network that will bring broadband to parts of the community where options are limited.

“There’s a disparity in certain neighborhoods, and some only have one provider versus two,” Shanley says. “There are also people on the fringes who can’t get a wired service and rely on a wireless provider or satellite, so being able to bring fiber to the entire community of Fort Collins was important to us.”



The main buildout of the network is scheduled to be complete this summer.

## BUILDOUT PROGRESSES

Upon completion, Connexion will be a community-owned fiber network offering high-speed internet, advanced video and telephone services to the residents and businesses of Fort Collins. The buildout of the fiber network is ongoing.

Connexion is not releasing maps or timelines regarding construction or service availability to prevent competitors from misusing its buildout information in potential disinformation campaigns. Instead, the provider proactively notifies residents before work begins in their neighborhoods. Connexion plans to complete the

service buildout to the Fort Collins city limits by the fourth quarter of 2022. This will include a mix of 60 percent of single-family and 40 percent of multiple-dwelling units.

“We are scheduled to complete the main buildout this summer with our contractor, Atlantic Engineering Group [AEG],” Crager says. “What that means is if someone signs up for service, we’ll have a separate contractor come and run fiber to the house.”

To date, Connexion is 60 percent done building out the fiber areas. “We’re going to do a methodical rollout,” Crager says. “The goal is that by the end of the year, everybody

in Fort Collins will have the ability to sign up.”

Connexion is outsourcing the home installation process to On Trac. That means Connexion can focus its attention on making sure the build progresses. “On Trac has done a great job for us, and we’ll continue to evaluate whether it will continue or we’ll do it in-house,” Crager says. “We as a city and as Connexion can do quality control of the build with our contractor, AEG.”

Interest in Connexion’s FTTH service is rising. It has had a 31 percent take rate for the service in the last 90 days.

“We look forward to the take rate increasing as we’re able to complete the buildout and focus some marketing efforts,” Crager says. “The 31 percent reflects the little marketing we have done and people’s desire to get out of [contracts with] incumbent internet providers and get on board with a city project.”

## CO-LOCATING FIBER, ELECTRIC CABLES

Connexion's first challenge was to lay the fiber underground to leverage existing rights of way. In addition to offering broadband, the city also supplies water, sewer, electricity and stormwater services.

Cody Snowdon, the senior project manager at Fort Collins Light & Power, says the city is unique in owning and operating so many utilities: most city jurisdictions own just two or three.

Today, more than 99 percent of Fort Collins Utilities facilities are underground, and the utility is working with Connexion to place fiber cables alongside existing power cabling. Using MaxCell, AEG can co-locate fiber and power cables while building on and improving the municipality's infrastructure to support broadband services.

"We are collaborating with the broadband group in sharing our underground infrastructure," Snowdon says. "That's where MaxCell comes in, to try to figure out a good innerduct system where [MaxCell] can take our last spare, but we'll still have access to it in the future."

Fort Collins made the transition to bury its utility infrastructure in the 1980s. Since then, placing electric and communications network infrastructure requires careful navigating. In contrast, in aerial infrastructure, second lines can more easily be added on existing poles.

"In our old town historic area, like most cities, there are utilities over utilities," Snowdon says. "We require all new communications to be underground, so it makes it a pretty busy ground to work within."

However, Snowdon adds that because the city has an open-trench approach, it makes it easier to accommodate other incumbent and competitive providers that also provide service in the city, such as Comcast and Lumen.

"Luckily, we offer a joint trench for all communications," Snowdon says. "If we're going somewhere new, we can offer Comcast and CenturyLink on

the dry side to get into the trench with us. This is where we coexist with our broadband communications and also any outside providers."

Bill Reed, sales director for MaxCell, says that the Fort Collins method, though atypical, has been done before. Traditionally, power companies buried power conduits 4 feet and communications fiber cable planted 3 feet.

In 2006, MaxCell submitted an initial application to have electric utility cables and fiber coexist in Provo, Utah, for the open-access FTTH provider UTOPIA Fiber.

"It is pretty unusual for communications cable, i.e., fiber, to be in the same conduit as low, medium or high-voltage power cable," Reed says. "Typically, we see it where the power conduit is at the bottom of the trench, and the communications cable is up higher."

He adds that although using conduit to support communications and electric needs is still in an early phase, it has great potential to minimize disruption in building out new facilities.

"The communications industry is finding that if it uses dielectric fiber, it can mix fiber in the same conduit as power," Reed says. "It's still in the guinea pig stage, but if the power people are willing to let the communications people in – and dielectric cable does not have heat dissipation issues – electric companies find out their existing conduit is a valuable, right-of-way resource [negating] having to dig and trench new conduit."

## LEVERAGE AND EXTEND

The network installation was part of a decades-long project for Fort Collins Light & Power to bury its cable underground. In a previous city utility project from the 1970s, an empty 2-inch conduit was installed for future use. It needed to hold a 1/0 power cable and two 144-fiber cables for the current fiber network installation.

Pulling cable over cable is not a suggested method for any installation, so the MaxCell 2-inch three-cell was the ideal solution for the fiber network

because of its ability to maintain separation between the three cables within the single conduit.

MaxCell's fabric mesh technology allowed for a higher fill ratio and provided physical separation and reduced tension during installation. A rigid innerduct solution would not have accommodated the three cables in such a limited space.

About half of Connexion's build was done leveraging existing conduit from Fort Collins Light & Power. "When Light & Power began burying its facilities underground in the '70s, it took decades due to the nature of that project," Crager says, adding that the utility "put in some extra conduit that [Connexion] can use, so half of the build was with conduit that was already in place."

Unlike Fort Collins Light & Power's lengthy endeavor to bury its cable, it took Connexion only three years to complete its fiber build. "One reason is the vacant conduit, and the other reason is we had a big contract with AEG and decided to do as much as we could," Crager says.

## MINIMIZING RESIDENT, CITY IMPACT

Before beginning the build, the municipality had to consider that its neighborhoods were mature and its current infrastructure was already underground. New construction would require network pathways to be placed under features such as sidewalks, foliage and railroad crossings without disrupting the community and its aesthetic.

AEG, needed a solution to allow the new fiber cables for the broadband service to coexist in the current conduit space with power cables throughout the municipality. The contractor enabled Connexion to avoid the need to dig and install additional infrastructure to support the new network.

The installation wasn't without challenges. "The hard thing about this project was that we went in every resident's front yard," Crager says. "We hit sprinkling systems because we did not know where they were, which we quickly fixed."

Connexion is working to help many communities surrounding Fort Collins navigate how to apply for federal grants created by President Biden's infrastructure bill. It hopes that if it can help secure these grants, it will be able to reach residents outside of city limits with its FTTH service.

He adds that any community that plans on building an entire underground FTTH network should be prepared to deal with unexpected issues. "Putting an entire city underground with a new utility, such as broadband, is not for the faint of heart," Crager says. "The advice I would give other communities is do as much due diligence as you can, and respond to any impacts on residents as quickly as you can because as much as they hate the construction project, they are also your future customers."

By leveraging MaxCell products, Fort Collins gets a dedicated pathway for the fiber cables. "One worry whenever a provider pulls fiber or any cable into an occupied duct is that the duct can build up a significant amount of pull tension, particularly over longer distances," Reed says. "The intent of using the MaxCell product is to minimize friction that's experienced when fiber is pulled in an occupied conduit."

"The intent [of installing MaxCell's three-cell product] is to protect the existing cable and to offer a way to later deploy another fiber cable at a low cost without having to do additional construction," Reed says. "Some municipalities deploy aerially, which is a lower-cost method of construction, but some municipalities require underground installation because of aesthetics, and there are a lot of conversion projects going on for that reason."

## MUNICIPAL MOVEMENT MOMENTUM

Several states still have restrictions on municipal broadband, but

the rise of Connexion signals the municipal broadband trend is gaining momentum. In Colorado, 140 municipalities have opted out of SB-152, a state law intended to restrict communities from building and managing broadband networks.

Recall that Fort Collins residents approved the ballot initiative in 2017 to build the communitywide network, despite nearly \$1 million spent by the region's big, private incumbent telcos and cable operators, including Comcast and CenturyLink, lobbying against it. Earlier, Comcast spent about \$200,000 to oppose a similar referendum in Longmont, Colorado, in 2009 and \$300,000 again in 2011.

Shanley says she sees a lot of interest from other municipalities to launch a broadband network service. "Although not everyone owns an electric cooperative, the desire is there, and northern Colorado is seeing a positive movement in this direction," she says. "It is only going to continue."

Connexion's focus is on serving Fort Collins, but the provider is keen to help other neighboring cities and towns within Larimer County proceed with similar broadband initiatives. In addition to Fort Collins, two other communities in the county are building fiber networks: Loveland and Adestas Park.

Connexion is working to help these communities navigate applying for federal grants created by President Biden's infrastructure bill. It hopes that if it can help secure these grants, it will

be able to reach residents outside of city limits with its FTTH service.

"There are a lot of operational and maintenance issues [for providers] in moving outside of the city limits, but some cities outside of Fort Collins eventually would like to have more internet providers than what they currently have."

Today, many surrounding communities can access federal grants that support lower speed 25/3 Mbps standards set by the FCC. However, Crager sees the potential to broaden Connexion's and Larimer County's influence by working together on a larger scale. "The more communities can collaborate as a region, the more opportunity to improve residents' quality of life," he says.

Today, MaxCell participates in about 300 municipal fiber network projects. Reed says that although MaxCell has served a wide range of market segments over the years, the company is seeing growing interest in its products from local municipalities, such as Fort Collins.

"We have found in the last few years that the municipal and city town segment has grown quite a bit," he says. "Some munis have adopted broadband internally and deployed fiber optic cable to provide communications for their use."

One of those internal uses is for innovative city applications. "Many times, the fiber we used in the market segment was for cameras and traffic applications," Reed says. "Instead of using a copper interface, these applications use fiber, which need high bandwidth to operate properly." ❖

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