Pharr, Texas, Takes DIY Approach to Build Gigabit Fiber

A South Texas border town is building a citywide fiber network to enhance educational opportunities and attract business customers.

By Sean Buckley / *Broadband Communities*

For Pharr, Texas, the move to get fast, affordable broadband came down to a do-it-yourself spirit. When the town's mayor, Dr. Ambrosio Hernandez, talked with superintendents about how the city's broadband situation was affecting their children's ability to complete homework assignments online, they cited three main issues: availability, reliability and affordability.

Ambrosio Hernandez

"The city had a big digital divide," he said in a video interview. "Our city leaders said we're now in charge of making this better for our residents, so we decided to look at the best way to get people connected." He added that "the city decided to take on the internet as a utility to ensure reliability and affordability for broadband services."

The Texas-Mexico border in the Rio Grande Valley (RGV) is one of the least-connected regions in the U.S. Sixty percent of border counties in the RGV can't access residential internet. Pharr has had the unfortunate designation as one of the nation's top five "worst connected" cities according to the Digital Inclusion Alliance. It ranked No. 1 worst; other Texas communities, including Brownsville and Harlingen, also made the list.

Although Pharr's schools had good connectivity via the FCC E-Rate program, which helps public schools and libraries obtain affordable broadband, there was a disconnect in the community's homes.

"What do you do with underserved cities [such as] Pharr, which take 95 percent of their E-Rate funding to connect its public buildings?" asked Cynthia Garza-Reyes, director of external relations in the Office of the Mayor, during the "Economic Development: How Pharr Can You Go" panel at the Fiber Connect show in June. "We wanted to go beyond the middle mile because every household should have the opportunity to connect to a 1 Gbps service."

Despite its designation as the worst-connected U.S. city, Pharr frustratingly could not access or apply for existing federal funding. It wasn't eligible for a spate of broadband funding programs via the USDA because of the government's definition of "rural."

"We weren't rural enough, but we weren't urban enough, so we fell into the black hole of no funding," Garza-Reyes said.

ACP: KEY TO AFFORDABILITY

A big piece of how Pharr is making service available to its residents is

Cynthia Garza-Reyes

The Pharr-Reynosa International Bridge measures more than 3 miles long and has the fastest commercial crossing time in the Lower Rio Grande Valley. It's a key to the community's business vitality.

the advent of the FCC's Affordable Connectivity Program (ACP).

ACP is a government-sponsored program that provides internet services for low-income households. The Infrastructure Investment and Jobs Act (IIJA) provides $14.2 billion in funding for $30 subsidies for people with low incomes and $75 grants to individuals on tribal lands.

In addition, eligible households can receive a one-time discount of up to $100 to purchase a laptop, desktop computer or tablet from participating providers.

"We are an approved Affordable Connectivity Program service provider," says Jose J. Peña, IT director for the City of Pharr. "We're starting to do marketing in our area to offer free broadband service to residential customers."

Jose J. Peña

The ACP program will provide an immediate benefit for students. Pharr can now offer free broadband service because five school districts in Pharr's city boundaries qualify for the free

lunch program. Every household with a student using the free lunch program can access free broadband services. For households that can afford to pay, TeamPharr.Net offers a $20 a month gigabit plan with ACP.

Although Pharr officials advertise at local community events, the community still has more work to do to educate residents about the ACP. "We have to continue to talk to residents to make them aware that we're offering services," Peña says.

THE PLANNING BENEFIT

As far back as 2017, Pharr recognized that student connectivity was subpar. During a conversation the city had with the superintendent who oversaw one of the largest school districts in the region and state, the prevailing sentiment was that students needed to be connected.

"This was five years ago, when broadband was not a discussion at the state or local level," said Garza-Reyes. "It was not even a discussion at the state or national level."

At that time, the superintendent said that although it's great that the state equips students with laptops, it is not great for students to have to sit at the campus doorstep to get a connection to do homework.

"The situation was unacceptable," Garza-Reyes said. "We know there

are other metro areas in Texas where students are connected, yet this border town where students are just as bright and capable as everyone else doesn't have those resources."

Pharr recognized it had a problem and assembled a team to tackle it and create a plan. "We knew we needed to have a financial feasibility study attached to our plan," Garza-Reyes said. Through the Federal Reserve Bank of Dallas, which requires local banks to fund financial literacy programs, BBVA bank agreed to fund the $100,000 feasibility study.

But even after partnering with CTC Technology & Energy, a communications and IT engineering consulting firm, to get the middle-mile concept on paper, the city realized it had to make other stakeholders understand its broadband predicament. "We knew the costs, but we had to tell our story about the type of population Pharr has," Garza-Reyes said. "We also tapped into local incumbent providers, such as AT&T and Charter/Spectrum, but no one wanted to come into Pharr because the household income on average is $38,000 a year."

She added that the community had to "think outside the box to achieve its goals. If we wanted the ability to provide a long-term solution for our community

and an affordable one, we knew we had to act," Garza-Reyes said. "That's where the idea came regarding owning our network to control the price."

To test the waters, the city wanted to understand how local families accessed the internet and if they knew how to use it. The city initially used a Cambium wireless network platform to connect 50 households and invested $100,000 in external devices. Pharr also committed to improve digital literacy.

"We gave people the tools to understand how to work the internet," Garza-Reyes said. "Unfortunately, we had some families that never used an online banking system, so we provided a full-blown class on digital literacy and helped them do things such as create an e-mail address."

LACKLUSTER COMPETITION
Broadband competition in Pharr traditionally has been sparse. The primary incumbent broadband provider was Charter/Spectrum.

"The southern part of town always had problems with connectivity," Peña says. "High-speed services were unavailable, which is why Pharr was the worst-connected city."

The southern side of Pharr is home to 30,000 people. "That's where we started and are trying to get everyone connected," Peña says. "We can't offer video or voice, but we can offer internet."

Pharr officials reached out to Charter/Spectrum, which told Pharr it was going to craft an agreement with the city to expand broadband services, but Peña says the cable MSO never followed up. "After talking to our mayor, we found that a full fiber network would be the best solution," he says.

A PARTNERSHIP APPROACH
Pharr is employing the help of a variety of partners to make its ambitious fiber-to-the-home (FTTH) dream a reality.

The City works with a team that includes contractors, consultants, engineers, fiber distributors, network equipment and software providers, including CTC, Brownstone

Consultants, Cobb Fendley & Associates, Graybar, Calix, IQGEO, Corning, Extreme Networks and STX Underground.

On the network core hardware side, Pharr is deploying Extreme Networks routers and the Calix E9 series to deliver services to the home and GigaSpire BLAST Wi-Fi platforms within the home.

"We are working as a team with different partners and are trying to provide the best experience possible and make the best decisions to move forward," Peña says. "We follow our mayor's lead, who sets the vision and secures the funding to deploy."

CREATIVE FUNDING SOURCES
Pharr had to get creative in its approach to funding the network build. Although it applied for NTIA grants, it has not been awarded any yet.

After being turned down by the USDA to tap into special funding, the city proceeded with its plans. It had already made the decision not to wait for new funding because it had its financial feasibility study in place. "We made a goal last June to build out our 1 Gbps network in a year," Garza-Reyes said.

Instead, the city took a different, two-pronged approach to fund the fiber project: It issued revenue bonds and secured a small portion of the funds from the American Rescue Plan Act, which included broadband provisions.

"The city did not need to raise property taxes," Peña says. "Our mayor worked with our Pharr Economic Development Corporation to find a solution to secure funding to start this project, and that's why we're ahead of other communities."

He adds, "As more funding resources become available, the supply is going to be a bit scarcer. This means projects will take more time to get done, so it was great to start a year ago."

"The City of Pharr is innovative, and when the idea came up, the Pharr EDC was happy to partner with the city to bring broadband to our residents," says Victor Perez, Pharr EDC President/CEO. "Even before the pandemic, we saw much success from a broadband pilot project the city partnered on with our local school

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WORKFORCE TRAINING, EDUCATION OPPORTUNITIES

As Pharr completes the buildout of its fiber network – one driven to help the community's students – the city plans to create a greater opportunity for secondary education and job training.

"We have gone through this journey, and we know we're light years ahead of other communities, which we're excited about, but we're not done," said Garza-Reyes at the Fiber Connect show. "Our final phase is to connect the educational pipeline."

The city plans to partner with its original partners, including local school districts and community colleges. In particular, the focus will be on providing IT education opportunities. "We're going to take advantage of the High School Dual Enrollment program," Reyes said. "State funds are given to students so high school students can earn college hours, and by the time they graduate, they have certificates or associate degrees."

She adds that these students "will become our employees troubleshooting technical issues for our population." Pharr will partner with a local school district to sponsor and assist two of its high school Cyber Patriot cybersecurity teams as they compete with other high schools. In addition, Pharr has a grant through the Texas Workforce Commission to provide paid IT internships. Interns will learn about aspects of private enterprise networks and about Pharr's FTTH network, cybersecurity systems, network operations and customer service.

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district, and we knew that the time to invest in broadband was now."

HANDS-ON INSTALLATION

After Pharr representatives returned from the Fiber Connect trade show in June, the city started to install its new FTTH service. During the first phase, the city is connecting three neighborhoods to the fiber network. After connecting 80 homes in the first target neighborhood, the city lit a second with 400 homes. It is now installing its third neighborhood of 70 homes and the entire South Pharr area will be ready for fiber installation by the end of September.

City staff register and provision home equipment and a third-party home installation.Net crew schedules the installation and activates the service.

"It is a full hands-on approach," Peña says. "We work with everyone to get them connected as soon as possible."

Calix's GigaSpire BLAST portfolio, which includes multiple Wi-Fi 6E systems, is installed by a certified technician and consists of the CommandIQ/TeamPharr.Net app with enhanced parental controls and network security.

"We try to make subscribers aware that they're not just getting routers," Peña says. "They're getting a managed-

The Pharr-Reynosa International Bridge has grown to be the seventh-busiest port in the U.S.

The TeamPharr.Net app offers enhanced parental controls and network security.

services experience and if they ever have any questions, they can call us. The mobile app offers security and parental control at no cost."

Pharr's mayor encouraged the fiber network team to make a big marketing push in each neighborhood. "When we get a neighborhood ready to start connecting, our marketing team goes door to door and visits residents," Peña says. The marketing team leaves a bilingual door hanger if a resident is unavailable. "Although we have a large social media following, we still find that many people were unaware of our broadband service offering," he says. "We've doubled our registrations per neighborhood after our marketing team visits them."

To Peña, the most rewarding part of the process is seeing customers get connected. "To be able to have customers on board finally makes it come full circle," he says. "We're

now pushing more marketing to bring awareness to the community and commercial customers that we're providing a direct fiber service at the lowest cost in the area."

ATTRACTING BUSINESSES

Pharr's service is not just about serving residents. The city is keen on attracting and supporting businesses with its broadband service.

As a border town with 80,000 people, the city is the location of the Pharr-Reynosa International Bridge, which measures more than 3 miles long and has the fastest commercial crossing time in the Lower Rio Grande Valley.

Since it was built in 1994, the bridge has grown to be the seventh-busiest port in the U.S. and the fourth-busiest port on the southern U.S. border with Mexico. "Being on

Trucks from Mexico line up to cross the bridge into Pharr.

the Mexico border, we have a large industrial trade zone," Peña says. "We have a lot of global manufacturers and electronics distributors."

During the recent International Bridge Association meeting, Pharr officials met with local businesses and promoted its new broadband service.

OVERCOMING SUPPLY-CHAIN WOES

Like other providers, Pharr is not immune to the supply-chain issues that have plagued the entire service provider industry. In particular, the city had challenges procuring fiber cabling to connect neighborhoods and residents to its FTTH network, but it recently received a large fiber order from Corning. "We'll be able to finish a lot of neighborhoods," Peña says.

The city is partnering with Graybar to procure fiber and other related products to operate the network. Graybar works with OMNIA Partners, which helps communities

take advantage of collective buying power. The company's cooperative contract enables public-sector agencies to save costs on everything from data and communication to networking, wireless, security, electrical and lighting. Moreover, the cooperative contract allows cities such as Pharr to maximize savings on needed products and reduce procurement time. Peña says the cooperative agreement has "made things so much easier."

Timing for Pharr was of the essence given the mayor's goal to have the city wired with fiber within a year.

Guillermo Aguilar, a consultant for Brownstone Consultants, suggests that other communities looking to take on similar projects should be prepared. "You have to pick winning teams," he said. "Once you confirm you have funding, partner with engineering suppliers and get bills of material early. That way, you can get Graybar, Hubbel, Calix and Corning to see how they can support your project."

INSPIRING NEIGHBORING CITIES

Pharr's FTTH plans are inspiring neighboring communities to pursue fiber broadband. "A few nearby communities have expressed interest in our project, but right now, our main focus is to finish our initial project, which is to connect citywide all our zones – south, central and north parts of the city," Peña says.

He adds, "School districts outside our jurisdiction are interested in us helping them provide a service similar to ours." ❖

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