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# The Middle Mile as a Catalyst:

Municipal Investments  
for Broadband Equity  
and Affordability



## | Executive Summary

This guide identifies the key steps, areas, and decision points that allow a community to leverage a middle-mile program to create ubiquitous local broadband without bearing the full cost or responsibility of the buildout. Municipally-enabled, middle-mile, Wide Area Networks are one method a city or county can use to incentivize and guarantee affordable last-mile broadband.

Below is a summary of recommendations for local government leaders:

### Conduct a Needs Assessment and Build Stakeholder Engagement

- Identify critical broadband infrastructure needs, focusing on missing, over-priced, or unreliable connectivity, outdated technology, and digital adoption barriers.
- To secure support and funding, engage with stakeholders across all levels, from interested individuals and local organizations to government staff and elected officials.
- Appoint a dedicated advocate as an intermediary, align community needs with project objectives, and ensure vendor accountability.

### Consult Experts and Document Assets

- Utilize experts with industry-specific knowledge to navigate contracting complexities, ensuring agreement clarity.
- Complete comprehensive documentation of essential infrastructure assets, leveraging government investments for project impact and scalability.
- Establish and maintain a detailed inventory of capital funding (private, local, and federal) for middle-mile investment.

### Strategic Procurement and Clear Contracts

- Adopt flexible, outcome-based procurement strategies (e.g., RFQs, multistage RFPs) to enable tailored solutions aligned with community needs and specific timeframes.
- Balance project progression against funding requirements to optimize resource use and ensure successful completion.
- Above all, establish clear Service Level Agreements (SLAs) and contract terms, including service definitions, testing protocols, succession planning, fixed network expansion costs, and progress toward last-mile broadband objectives.

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## | Overview

Over the past decade, broadband has become as necessary as electricity. Yet issues of Internet access, affordability, equity, and digital literacy persist and contribute to a nationwide digital divide.

The COVID-19 pandemic accelerated Americans' reliance on online platforms. Businesses, schools, and public service organizations sought new ways to remain connected to customers, students, and clients. Witnessing this, local governments reacted and invested. They began using their convening and funding capabilities to increase the amount, accessibility, and equitability of broadband. The federal government also deployed several funding mechanisms, including funding from the US Department of Treasury; NTIA's Broadband Equity, Access, and Deployment (BEAD) within the Infrastructure Investment and Jobs Act; the American Rescue Plan (ARPA); USDA's ReConnect Loan and Grant Program; and the FCC's High-Cost Fund. Additional initiatives not mentioned here support training and access programs and broadband construction projects at the state and local levels.<sup>1</sup>

However, unlike water departments or utility cooperatives, local governments are reluctant to act as owners/operators of broadband. State regulations, lack of expertise, staffing, funding, scalability issues, and risk aversion contribute to the reluctance. Moreover, government leaders recognize that experienced and successful private sector organizations fill the marketplace and can be well-positioned to provide broadband services. Government and community leaders, with taxpayer support, may be cautious about competing with commercial providers and feel ill-prepared to undertake large-scale activities.

The key for local governments is to assess where their involvement can boost broadband access and affordability. In those cases where it is difficult for the private sector to justify investment, local governments can leverage funding and influence with partners to ensure equitable broadband rollout and provide a catalyst for market competition. Simultaneously, local governments can secure their own long-term access to high-speed, scalable broadband to deliver key everyday services, including public safety, public works, or Smart City operations. These measures aim to enhance community access, affordability, and livability while stimulating economic development and security.

One effective method for creating equitable broadband access is constructing a municipally enabled, middle-mile fiber backbone, which can encourage the private market to extend fiber connections to every address.

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<sup>1</sup> See "The Case for Open Access: Providing Optionality for U.S. Municipalities" ([https://www.us-ignite.org/wp-content/uploads/2022/04/OAN\\_Insight\\_032822\\_USIgnite\\_v02-1.pdf](https://www.us-ignite.org/wp-content/uploads/2022/04/OAN_Insight_032822_USIgnite_v02-1.pdf))

Local governments can secure long-term fiber assets for their use and contract guarantees for last-mile delivery without assuming extensive financial or operational risks by utilizing one-time capital and recurring operational funds. This approach enables governments to significantly expedite service delivery to constituents.

The case studies of Fort Worth, Lake Cities and Joplin offer two examples of successful municipal investment in broadband. These cities of vastly different sizes and with different expectations for a successful project used competitive solicitation processes and encouraged participation from multiple companies, including local and disadvantaged businesses. While large broadband infrastructure projects may seem daunting, proper planning, procurement, and contracting structures allow local governments to mitigate ongoing operational risks and execute these initiatives within reasonable timeframes.

Above all, communities should remain open to the possibility and opportunity that a wide array of partners can contribute to ubiquitous, equitable, high-speed broadband for all.

## | Assembling a Solution



### ***Funding Strategies***

Achieving a community's last-mile broadband goals doesn't necessarily require extensive broadband expertise, a dedicated broadband office, or substantial special budget allocations. Communities can also accomplish their broadband objectives compliantly without the city or county assuming the role of an ISP or service provider. As an alternative approach, some communities are building municipally-enabled backbone networks supported by federal funding or private investment. Establishing a municipally-enabled middle-mile backbone provides a significant leverage point for developing last-mile networks within communities, especially in states that restrict municipal government ownership of last-mile delivery.

Municipally-enabled backbone networks enable the community to play a significant role in incentivizing last-mile broadband. Funding the deployment of new backbone fiber infrastructure stabilizes long-term broadband access and costs for government facilities. Communities can create a mutually beneficial arrangement by allowing providers to expand their capacity for last-mile connections while participating in the network's construction. This approach supports local providers by reducing their construction costs and enabling them to extend their services to areas and households that might not otherwise be financially feasible.

It is important to note that any government effort to deploy new infrastructure should be carefully evaluated for financial feasibility. However, by adhering to the planning, procurement, and contracting steps outlined below, communities can reap the full benefits of a fiber utility infrastructure at a fraction of their historical cost.

**This paper considers two well-known methods of funding middle-mile infrastructure:**

- 1) **One-Time Funds:** Cities and counties use one-time capital funds like the ARPA Local Fiscal Recovery Fund to construct a middle-mile fiber network for their needs. As part of their proposal, the service provider who builds and manages the network commits to serving residential and business locations in areas without broadband investments.
  - Corinth, Shady Shores, and Hickory Creek, identified here collectively as [Lake Cities](#), crafted an interlocal agreement. The agreement allocated funds (Approximately \$3.025 Million) from their allotments of one-time American Rescue Plan Act Local Fiscal Recovery Funds. An RFP was issued to find a broadband service provider to design, engineer, and build a middle-mile fiber backbone network connecting over 20 municipal sites and deliver a fiber-to-the-home (FTTH) solution for homes and businesses in Lake Cities. For more information, see the case study below.

## Future Proofing

The National Telecommunications and Information Administration (NTIA) defines adequate service for homes as a minimum of sustained 100 Mbps down to the home and 20 Mbps up from the home. Adequate service for community anchor institutions (libraries, recreation centers, places of worship, government offices, schools, museums, and places of public assembly) is set at a minimum of sustained 1 Gbps down and 1 Gbps up. Note that these are minimums and that, historically, from 1970 to the present, what is considered adequate has been increasing by a factor of 10 every 10 years. Today (2024), fiber providers to the home are offering 10 Gbps symmetrical connections. Adequate speeds for middle-mile fiber backbones will also increase. It is important to choose fiber standards that will allow faster speeds in the future by upgrading the electronics and fiber terminations.

- 2) **Annual Expenditures:** City and county departments will increasingly rely on broadband connectivity. If a city or county pays monthly for broadband connectivity to government sites today, it should plan for how these broadband costs will rise over time.
  - Fort Worth projected that broadband costs would increase by 3-5% annually because of increased use and inflation. This means that costs would double every 14 to 23 years. The city wanted to fix costs at today's levels. It committed 32 years of city broadband spending at today's levels to help build a

network that would fix city administrative broadband costs and gain a commitment from a service provider to upgrade broadband infrastructure and broadband service to residential and business locations in areas that have not yet attracted broadband investments.

These two common methods to provide reliable and equitable broadband service for all residents and businesses across a city, county, or region involve specific funding vehicles.

Local governments have the flexibility to adopt alternative strategies if they are fortunate enough to have extensive fiber infrastructure holdings, including those privately owned. Local governments should ensure that their actions directly benefit residents and businesses in underinvested areas to build trust in legislative decision-making.

Regardless of the chosen funding method, any investment must efficiently and cost-effectively address broadband service requirements. Such strategic investments promote equal access to broadband services for residents and businesses throughout the city, county, or region.

## Case Studies: Funding Strategy

Communities have used CARES, ARPA, BEAD, other federal programs, and their own annual broadband budgets to expand project funding. Even without these additional funding sources, the return on investment for communities can be substantial. Recently, cities have leveraged their dollars 6x-12x against private investment.

In Lake Cities, TX (pop.30,000), a \$4,000,000 outlay enabled fiber deployment to every home. The investment in Lake Cities resulted in a 23-mile fiber build that connected over 20 government sites and served as a backbone network for fiber-to-the-home deployment to residential and business customers. Pavlov Media, the service provider, provides a lit service to the government sites at no cost for the first 5 years and then at reasonable rates (adjusted for inflation) after that.

Fort Worth, TX, invested \$7,500,000 upfront including a contribution of \$4,500,000 from ARPA funds from the North Central Texas Council of Governments, supplemented by \$3,500,000 annually over 32 years to achieve a similar result. The investment in Fort Worth will create over 300 miles of a new fiber network to serve 217 government sites and the backbone network for fiber-to-the-home deployment to residential and business customers. Sprocket Networks provides a dark fiber solution to city sites for 32 years for an annual fee. The city also directly gains a share of revenue as Sprocket Networks attracts other public sector customers.

As part of its implementation of the "Smarter Joplin" vision, Joplin, MO, used ARPA funds to secure a development agreement with ALLO Fiber to construct, operate, and maintain a citywide fiber optic network. Key design aspects include a fully buried fiber mainline, and buried feeders to an extensive list of anchor institutions across the city. The full lifecycle of this effort spanned more than a decade, across various city leaders and new federal funds and global events that have altered how the world views connectivity.

Read the case studies on Fort Worth, TX, Lake Cities, TX, and Joplin, MO, below for more information.

## Planning

### Adequate fiber connectivity for every residence entails thorough planning across several key areas:

- 1. Assessment of Need:** Defining the broadband need (municipal and end users) is crucial at any project's outset. Various factors drive broadband investment including unreliable broadband in rural or low-density areas, outdated infrastructure in economically stagnant regions, and barriers to adoption including device affordability and lack of digital literacy.
- 2. Local Support:** Gaining endorsement from local elected officials and senior staff is vital. Projects require funding and a well-supported value case to remain on track. Additionally, project partners seek assurance from municipalities that support high-speed broadband initiatives. Local governments should carefully craft their value case, keeping in mind that the benefits of this investment are not near-term and can be hard to grasp. Emphasizing improved fiber access, speed, and consistency can help demonstrate the benefits of middle-mile investment.
- 3. Stakeholder Engagement:** Local governments should identify stakeholders that can help drive the project forward and ensure alignment with community needs. A community or city leader, a recognized technology leader (CTO, CIO), or an economic development leader can play this role to champion the project. Some larger communities may rely on a broadband office or a nonprofit intermediary. This leader synthesizes community requirements into project goals and solicitations and oversees vendor commitments across the deployment cycle.
- 4. Budget/Financing:** Municipal investment in middle-mile infrastructure powers the project's success, even though projects designed this way will be significantly below the cost of a full fiber network buildout. Many factors influence middle-mile network construction costs including topography, permitting fees, and the need for directional boring or micro trenching.
- 5. High-Level Goals and Needs:** Beyond fiber deployment, communities must articulate additional priorities, like fixed costs for population growth and access to anchor institutions and muni-buildings. Pilot projects and proof of testbeds can negatively impact the project budgets and may distract stakeholders from the overall project and business case. These projects should align with the broader business case to avoid undermining project viability and success.
- 6. Basic Middle Mile Map or Endpoints:** Understanding middle-mile connectivity points, often government buildings or controlled structures, is crucial for initial planning. Other factors may also impact the cost of fiber construction, including soil conditions and installation methods (aerial, buried in conduit, direct bury, microtrench conduit). As the endpoints form a network ring, cities can facilitate provider collaboration for



last-mile connections and prioritize the construction schedules. Strategic planning guarantees coverage of high-demand areas and accurately estimates funding requirements based on construction costs and installation methods.

With an understanding of these areas and a commitment to research and learn, the community can move into engaging the market.

## Procurement

Local governments frequently face difficulties with procurement when embarking on large projects like broadband deployment. These challenges stem from a lack of familiarity with the topic, uncertainty about attracting competitive bids, compliance complications, and a tendency to avoid risks common in large public projects. However, implementing structured approaches can streamline and improve the solicitation process and make it more likely to succeed.

The procurement process should allow bidders to propose innovative solutions that focus on identifying fixes to the specific community's needs and creating the desired outcomes within well-defined timeframes. In addition to the economic indicators that bidders will use to assess potential project revenue, procurement documents should highlight key timelines, milestones, digital equity goals, and project feasibility data.

### The important components of the structure include:

1. **Defining the Problem:** It's crucial to clearly state the project's objectives and outcomes up front and reinforce them throughout procurement documentation. While the technology and agreement structure may vary between vendors, documents should clearly communicate the project's desired outcomes to ensure alignment of all stakeholders and potential private sector partners.

## Methods to Remain Agile

With a complex topic like broadband, crafting a single solicitation that creates clear, comparable responses is unlikely. Since you are learning while buying, remaining agile in the procurement process is necessary to get stakeholders critical information and commitments from vendors. Methods to stay agile include:

- Partnering with broadband experts for solicitation development and later for evaluation will help produce actionable responses from vendors.
- Requests for Qualification (RFQ) are the initial stage to set the project's tone and gauge the market. The issuer broadly conveys the goals, assets, timeline, and vision. The RFQ aims to initiate conversations with a limited number of interested providers (qualified providers) and allow the issuer to open focused discussions around technology, structure, and pricing in a competitive environment after seeing the RFQ responses for what the market will bear.
- Multiple interviews or rounds of vendor responses with the Requests for Proposal (RFP) finalists. With an outcome-based process, providers may offer different solutions. Having multiple touchpoints and opportunities for clarity and solution improvement with a few vendors creates better competitive options for the community.

## Casting a Wide Net

In the Lake Cities case study, Pavlov Media, the selected provider, knew very little about Lake Cities when the RFQ went out. The project's intent, clearly outlined in a concise RFQ, encouraged Pavlov Media to dedicate resources to their response. After determining the project's suitability, they completed a detailed examination of route maps and pricing.

**2. Outcome-Based Procurement:** This method suits complex, long-term projects because it doesn't require all project details in advance. The market can offer customized solutions that meet a community's unique requirements. This approach saves time and often yields superior outcomes by encouraging creative and innovative solutions from providers.

**3. Problem Statement and Assets:** The local government should clearly define its assets—existing

physical, financial, and Internet infrastructure, as well as relevant partnerships—and present an assessment of where connection is needed. Information on existing residential and commercial service rates and publicly available maps also help convey the community's needs.

**4. Learning While You Buy:** Sequential RFP rounds can be a good fit for complicated projects, because they allow for a buying journey (e.g. an RFQ followed by detailed discussions with qualified vendors before soliciting final proposals). Working with procurement officials can ensure leaders collaborate with stakeholders who can refine the ask and negotiate with vendors as part of a compliant process.

**5. Compare Responses:** Crafting concise questions with limited word/character limits to facilitate provider differentiation and ease of evaluation can save time and resources and ensure a competitive process. Simple review processes are particularly helpful as most community stakeholders evaluating and scoring the RFQ/RFP will not be broadband experts. The RFQ/RFP authors should refine questions to the core aspects of the project, allowing reviewers to compare responses against each other and evaluate them against the community's needs more efficiently.

## Contracting

When a municipality invests in capital expenditures but not operational spending, the local government does not become an Internet service provider. Still, it must enter into a multi-year partnership with one. Under this approach, the value of a meticulously documented relationship is crucial for a successful broadband deployment.

**Some best practices for contract development include:**

**1. Expertise in Broadband:** Given the infrequency of governments entering such agreements, industry-specific expertise ensures clarity and standard contract language, leveraging best practices in similar communities. Bringing in dedicated expertise supports the municipality in navigating the complexities of

alternative contracting models. When selecting expertise under this approach, consider proficiency with municipal procurements, familiarity with state and federal funding opportunities, experience with outcome-based procurements, experience with a range of telecommunications-specific contracting approaches, and the ability to reach a wide array of potential middle-mile and last-mile providers.

## 2. **Clear Understanding of the Selected**

**Model:** It is essential to clarify the selected agreement structure, such as Indefeasible Rights Usage (IRU) limitations or public-private partnerships, and communicate the benefits effectively to stakeholders. While the preferred agreement structure may change throughout the procurement lifecycle, it is a good idea to define which structures best match the project's funding, infrastructure, and service goals at the outset.

### Key Terminology

An Indefeasible Rights Usage (IRU) is a relationship that creates a long-term capital lease structure where the government entity pays up front and has control of the asset for a fixed duration but does not have ownership and maintenance risk throughout the agreement. IRUs are common in telecommunications contracting and have become an effective model for local governments to use alongside the one-time allocations from federal and state funding programs. However, they do create uncertainty at the end of the IRU period as the municipality does not retain any ownership or use rights with the conclusion of the period term.

## 3. **Ensuring Contractual Commitments**

**from Procurement:** Including Service Level Agreements (SLAs) aligned with project goals, even if the project only covers the middle mile, ensures accountability and progress towards any last-mile goals (e.g., speed, uptime, house passes, affordable pricing plans, etc.). All project goals should be memorialized in the final contract through strict SLAs with a clear and manageable reporting structure against those SLAs.

4. **Critical Build Items:** Leverage expertise in broadband so that contracts include clear service definitions, standards for testing dark fiber, service level agreements, successors and assigns clauses, and fixed network expansion costs.

5. **Project Speed vs. Funding Source:** Understanding project timelines, risks, and funding sources ensures appropriate spending without prepayment risk. This facilitates efficient use of funds and timely project completion.

Appropriate contracting that incorporates management and mitigation of typical risks, such as technological obsolescence, regulatory changes, and construction challenges, helps municipal leaders navigate the challenges of complex broadband projects.

## | Broadband Investments that Drive Economic Development

The "Digital Town Square Project,"<sup>2</sup> spearheaded by US Ignite and funded by the National Science Foundation, underscores the critical role of middle-mile investments in overcoming broadband bottlenecks and enhancing network performance at the local and regional levels. The project involved establishing "Digital Town Squares," local hubs that merge network switching with edge computing capacity. This initiative addressed key barriers to efficient broadband service delivery including insufficient connectivity between local and sometimes competing networks, and the distant hosting of critical digital resources.

US Ignite facilitated the deployment of Digital Town Squares in partnership with Juniper Networks, which provided resilient network switches that significantly enhanced middle-mile-to-backhaul network flow-through capacity, exemplifying the symbiotic relationship between public funding and private sector expertise in enhancing broadband infrastructure. This collaboration is a testament to strategic investments in middle-mile infrastructure, supported by technological innovation, which can significantly advance the goal of universal and equitable broadband access.

### **Three examples illustrate the power of this approach:**

- 1. Eugene, Oregon:** A Case Study in Economic Revitalization Through Broadband Connectivity: Eugene's transformation showcases the economic vitality that strategic broadband investments can unleash. Eugene connected to vital Internet routes by establishing Digital Town Squares and attracted high-tech companies and venture capital. Success in Eugene illustrates how middle-mile infrastructure can stimulate local economies and reduce urban vacancy rates through enhanced broadband access.
- 2. Urbana-Champaign's Network Upgrade:** In Illinois, deploying a Digital Town Square as part of the Urbana-Champaign broadband upgrade dramatically increased broadband capacity and resilience. This infrastructure enhancement underscored the importance of middle-mile infrastructure in supporting high-tech industries and digital inclusion. The investment attracted high-tech research and jobs and supported community digital inclusion efforts, showcasing the potential of well-planned broadband investments to foster community-wide benefits.
- 3. The Power of Low Latency in Utah:** The deployment of a Digital Town Square in Utah illustrates the efficacy of targeted investments in reducing latency and extending broadband services to rural areas by facilitating a state-wide, resilient data exchange. This intervention aligns with advocacy for innovative

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<sup>2</sup> For more information on The Digital Town Square Project, check out materials from US Ignite (<https://www.us-ignite.org/the-digital-town-square-project/>)

middle-mile solutions to address the unique challenges of rural broadband connectivity, supporting latency-sensitive services like online gaming and remote medical treatments.

In summary, the Digital Town Square Project exemplifies the transformative impact of focused middle-mile broadband investments on economic development, network performance, and community service enhancement. With its tangible outcomes in Eugene, Urbana-Champaign, and Utah, this project shows that strategic, collaborative efforts in broadband deployment can bridge the digital divide, catalyze economic growth, and foster digital equity.

## | Conclusion

The structure outlined in this document can give local leaders concerned about broadband internet issues and those seeking to close the local digital divide a path forward to drive a massively important effort with long-term benefits. Multiple communities across the country have used these tenets to enable broadband access and incentivize further infrastructure investment at a fraction of typical utility build-out costs and risk.

## | Case Studies

Below are two case studies for communities of different sizes, composition, and starting points. Each used variations of the best practices outlined above to build a municipally-enabled middle-mile network.

### ***City of Fort Worth, Texas***

Fort Worth, TX, is among the 15 largest cities in the US and stands out as one of the fastest-growing. With vast reserves of land propelling its growth, the city's tax base outside the downtown area is predominantly residential. Fort Worth boasts districts in various stages of evolution, each capable of driving economic development. Recent and planned investments in the urban core, including downtown and surrounding areas, have benefitted the city.

#### *Planning*

In 2018, the City of Fort Worth unveiled an economic development strategy. Despite being published before the COVID-19 pandemic, enhancing digital infrastructure and broadband services were central themes of this plan. Recommendations from the economic development strategy included:

- Targeted investments in broadband Internet for underserved areas of the city.
- Creation of an Economic Development Bond Package, and partnering with private-sector service providers to invest in communication technology infrastructure, particularly in areas with high concentrations of tech firms and entrepreneurs. This package encompasses high-speed broadband Internet (similar to Google Fiber and Chattanooga's Gig) and investments in 5G mobile technology and other emerging technologies pivotal for business and personal communication.

Needs Assessment: The COVID-19 pandemic further underscored the deficiency in scalable, future-proof broadband services across the US, including Fort Worth. Specifically, at least nine areas in the east, south, and southeast of Fort Worth exhibited:

- Limited availability of broadband services scalable to 100Mbps download and 100 Mbps upload speeds, with fiber-to-the-home service primarily confined to areas outside these nine identified zones.
- A significant population lacking connected devices (over 10%) and subscriptions to broadband services (also over 10%).
- Low student access to broadband at home with several ZIP codes in east, south, and southeast Fort Worth lacking high-speed Internet connections.

Basic Middle-Mile Map: In response to the immediate need during the pandemic, the City of Fort Worth, in collaboration with the Fort Worth Independent School District (ISD), Tarrant County, and private-sector partners, deployed and continued to operate temporary broadband access services in these underserved areas. Fort Worth

ISD focused on establishing a private LTE network using licensed CBRS spectrum, extending connectivity to 4,000 previously non-subscribing homes by the end of Q1 2022. Concurrently, the city deployed public Wi-Fi services in five neighborhoods, working closely with FWISD to install antennas on city and ISD property for maximum coverage.

While these efforts served as essential stopgaps, the city remained committed to finding a long-term solution to its broadband equity issues.

Local Support/Stakeholder Engagement: For the long term, Fort Worth aimed to utilize its annual city spending to fix costs and deploy fiber broadband citywide. Led by key stakeholders, including the Assistant City Manager, Chief Technology Officer, Assistant Director of IT, and Director of Diversity and Inclusion, the city sought to achieve two primary objectives: scalability and cost-effectiveness of its city administration network and a solution for addressing last-mile broadband needs for commercial and residential users throughout the city.

Budget/Financing: The city proposed a 32-year commitment to a provider willing to build a new fiber network, estimated at approximately \$125 million. The source of the funds came from two budgets. Annually, the city budget includes roughly \$3.5 million for connectivity solutions for government locations. The city also allocated limited capital funding (\$7.5 million) for a new fiber build to connect these 217 locations with upgraded service. This commitment represented recurring revenue for the provider and facilitated financing to construct the network.

## *Procurement*

In February 2022, the City of Fort Worth issued an [RFP for Broadband Enhancement](#), outlining various broadband service provider requirements. Key components included:

- A municipally-enabled network serving designated city endpoints, potentially expanding to include safety technologies and public access.
- A residential and business fiber-to-the-premises network providing citywide fiber-based broadband services.
- Affordable residential broadband service offerings, including access to affordable connected devices and training on broadband/Internet usage.
- A flexible fiber infrastructure allowing expansion to accommodate future developments within and beyond the city limits following annexation.
- An agreement with the city that drives mutual accountability for the scope, quality, scalability, resiliency, and security of the broadband service provided to residential, business, and government customers.

- Flexibility to expand the network to other partners, including neighboring counties and the school and college districts

## *Contracting*

Following an integrated strategy, the RFP selection process identified a broadband service provider partner, Sprocket Networks, which entered into a contract in late calendar year 2023 to provide the network and meet the last-mile needs outlined in the RFP. By leveraging the investment in middle-mile infrastructure, the city secured an agreement to install over 300 miles of fiber throughout the city, ensuring multigigabit speeds and symmetrical upload/download rates for residents and businesses. Contract agreements guarantee high-speed, reliable broadband availability for 30 years, enhancing competition among local service providers. Through this program, the city utilized its limited capital funding resources to improve connectivity across over 250 government locations and extend quality service availability to businesses and residents, mitigating future unplanned costs and operational risks.

### **Key Message**

Through this investment, Fort Worth contractually committed Sprocket Media to leverage the municipally-enabled dark fiber backbone to reach last-mile commercial and residential users. The project team emphasized investing in enhanced digital infrastructure in the nine underserved areas that had previously relied on temporary solutions during the COVID-19 pandemic.



## ***Lake Cities (Corinth, Hickory Creek, and Shady Shores), Texas***

The Lake Cities case study exemplifies how smaller communities can leverage their unique circumstances to achieve outcomes comparable to those of larger, wealthier cities.

### ***Planning***

**Needs Assessment/Stakeholder Engagement:** In September 2020, Lake Cities, comprising Corinth, Hickory Creek, and Shady Shores, established a Broadband Committee to assess broadband assets and address connectivity issues. The review revealed that existing cable broadband and DSL providers were not meeting needed to meet consumer needs for speed and reliability, particularly in new developments. Recognizing the imperative of cost-effective, high-speed broadband to support education, economic development, and government services, Lake Cities prioritized leveraging ARPA funds through public-private partnerships.

**High-Level Goals:** Approaching the project from a procurement perspective, Lake Cities identified long-term broadband certainty, deployment speed, cost certainty, and government maintenance avoidance as key priorities. By pooling ARPA funds and partnering with providers to build a municipally-enabled wide-area network (WAN), the cities aimed to extend broadband coverage to residential and commercial neighborhoods across the region, reducing providers' barriers to offering last-mile services.

### ***Procurement***

**Outcome-Based Procurement:** In partnership with Marketplace, city, and Mighty River, Lake Cities used a two-step RFQ and RFP process to engage interested providers and evaluate various proposals. The process in Lake Cities received six vendor responses, offering solutions ranging from fiber-to-the-home networks to mixed fiber and wireless solutions. This outcome-based approach enabled the cities to compare options and select the most suitable proposals.

**Learning While You Buy:** The team narrowed the field to two best-fit vendors. The subsequent RFP built on the options received in the RFQ but allowed the team to obtain clarification on qualified vendors, including contract structure, partnership structure, and pricing. Thirteen weighted criteria specific to the scope helped Lake Cities evaluate these final proposals.

Based on the needs of Lake Cities and the relative strengths of the proposals, the city stakeholders chose Pavlov Media's proposed solution as the one that provided the desired functionalities and best met the needs of their community. Pavlov was an Illinois-based company without extensive experience in Texas waiting for an opportunity to expand its operations. Pavlov Media's experience building fiber-to-the-home (FTTH) and the company's vertically integrated structure minimized the business risk for Lake Cities, who were selecting their partner for the project during supply chain disruption and a new wave of COVID-19.

## Contracting

Lake Cities utilized a 30-year IRU (Indefeasible Right of Use) lease on dark fiber as the best partnership model to guarantee service and cost certainty in the long term. The IRU model, a common structure used in the telecommunications industry, allowed Lake Cities to structure the agreement as a long-term capital lease with an upfront payment, which worked well with the community's time-restricted ARPA dollars. Leaders from Lake Cities are considering how to approach a replacement backbone when the IRU expires.

Key elements negotiated in the contract included:

- A 30-year municipally-enabled network agreement for a \$3.025 million investment, a fraction of the total build-out cost. (~\$25 million)
- A contractual commitment to deliver market-rate fiber to every residence and business in Lake Cities by 2024 with a 22-mile dark fiber ring and 200 miles of FTTH.
- Across Lake Cities, 48 dedicated fiber strands provide and options for additional future services
- Fiber/Internet managed service for government buildings for 5 years
- Options to add additional fiber at fixed rates as municipal service and smart city needs change
- Fixed price for additional “drops” if public sector/anchor institution footprint changes
- Building community support for the project across the leadership of the four cities
- Backbone, scalability, and cost certainty for an increasingly critical service. Government services, economic development, and education rely on connectivity, particularly since the start of the COVID-19 pandemic.

Lake Cities' successful implementation of an outcome-based procurement process and engaging providers beyond the traditional broadband market. Lake Cities leveraged their initial investment 7x-9x to secure over 220 miles of new fiber infrastructure. This agreement guarantees service for government buildings and residents for 30 years, with pricing guarantees and strong SLAs ensuring quality service delivery.

### Key Message

Pavlov Media deployed services less than 16 months after the contract's execution. By ensuring fiber access for the next 50 years, Lake Cities have taken an important step toward securing their community's long-term success.

# City of Joplin, Missouri

## Planning

Creating a Basic Middle-Mile Map: Following the EF-5 tornado that devastated the City of Joplin, Missouri in 2011, the need for a resilient means to connect the community in time of need was brought to the forefront. Throughout the recovery efforts, first responders, City officials, and the general community could not effectively communicate due to critical infrastructure damage posing extensive challenges to rebuilding the City. As a result of this lack of needed connectivity and the desire for the community to advance socio-economic growth following the disaster, the City of Joplin (the City) established its formal Smarter Joplin Roadmap in 2019, giving the foundation to citywide investments in technology where a resilient form of connectivity and expanded internet access was the top priority.

Assessment of Need: As the world entered the COVID-19 pandemic, the City was reminded once more how its lack of connectivity threatened the community, with students unable to access schoolwork, patients unable to tap into telemedicine, and individuals unable to work from home during lockdowns. As a result, the City performed a citywide broadband feasibility study in late 2021 to comprehensively identify connectivity gaps and needs. As expected, the study identified the City as underserved with limited provider competition.

## Procurement

Problem Statement and Assets: After the City's feasibility study was published and vetted with City leaders and as the nation began to receive generational investment to close the 'Digital Divide' through the Infrastructure Investment and Jobs Act (IIJA), the City determined it was time to further its goal of a citywide fiber optic network and better internet accessibility.

Currently, federal broadband funding mechanisms are overwhelmingly targeted to support unserved communities. One of the biggest challenges for the City (and many others) is the inability of federal broadband grant funds to meet the need for connectivity in areas that reportedly receive adequate service. With a lack of available federal funding to support the City's needs, the City solicited interest from the provider community on how they would want to support Joplin's connectivity needs and help progress the Smarter Joplin vision.

Learning While You Buy: In the summer of 2022, the City began the market solicitation process by releasing a comprehensive Request for Information (RFI) to garner interest from national providers to measure the willingness to support Joplin in its connectivity journey and what partnership models could be explored. The City received immense interest, with 15 providers responding with their ideas and approaches to further connect the City of Joplin, ranging from local, regional, and national providers.

Problem Statement and Assets, Round Two: Following the RFI and the briefing City leadership on the positive response to the City's needs for connectivity, it was determined the City was in a position to formally solicit the

market for a viable partnership through its Request for Proposal (RFP) for a citywide fiber optic network. The City conducted extensive engagement with city departments to understand what improved citywide connectivity could do for operational performance. The City developed a comprehensive geospatial database included with the RFP to provide a consolidated view into aspects of the City where connectivity would significantly advance City services and management while delivering a resilient and redundant network to increase protection should another disaster occur. Following the closing of the RFP, the City again experienced significant attention to its connectivity needs, receiving nine (9) responses from the provider community.

Throughout 2023, the city review team diligently conducted detailed financial and technical due diligence, multi-round interviews with responding providers, community reference checks where providers had deployed similar fiber optic networks, and countless internal discussions with leaders and staff from all city departments to support an aggressive and thorough negotiation process.

### *Contracting*

Clear Understanding of the Selected Model: In March of 2024, the City of Joplin secured a mutually agreed upon development agreement with ALLO Fiber to construct, operate, and maintain a citywide fiber optic network. As part of this agreement, the city agreed to invest American Rescue Plan Act (ARPA) funds to achieve a more resilient and redundant network. Key design aspects of this network which the City successfully negotiated, were the construction of a second central office that provided diverse backhaul routes into the city, a fully buried fiber mainline, and buried feeders to an extensive list of anchor institutions across the city.

#### **Key Message**

The full lifecycle of this effort spanned more than a decade, from ideation through delivery. Leaders across these years sustained the effort and reshaped the project as new federal funds and global events have altered how the world views connectivity. The success of this fiber optic network partnership is a product of city staff and leader focus, efficiency, and perseverance, which continue to propel the City of Joplin forward. ALLO Fiber will construct and begin to operate this citywide network over the course of approximately two years. Once completed, the service will provide residents, businesses, and institutions in the City of Joplin with stronger and resilient connectivity and the infrastructure it needs to transition Smarter Joplin from a vision to reality.

## | Acknowledgments

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### ABOUT THE AUTHORIZING ORGANIZATIONS

**US Ignite** works closely with communities, military bases, startups, and researchers to solve their toughest economic development and technology innovation challenges. Operating like a high-tech startup, our organization delivers customized results through stakeholder engagement, technical expertise, and targeted tools. Want to learn more about smart communities and broadband connectivity from US Ignite? Contact our communities team at US Ignite at [communities@us-ignite.org](mailto:communities@us-ignite.org), and visit our website, [www.us-ignite.org](http://www.us-ignite.org).

**Marketplace.city** helps governments source, evaluate, and procure technology products and services, saving time, resources, and money. Marketplace.city has helped multiple communities, from large counties to small cities, navigate the sourcing and procurement of fiber and broadband solutions in an efficient and compliant manner. To learn more, go to [Marketplace.city](http://Marketplace.city) or contact Andrew ([andrew@marketplace.city](mailto:andrew@marketplace.city)) or Valentine ([valentine@marketplace.city](mailto:valentine@marketplace.city)).

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