

BroadbandUSA: An introduction to effective public-private partnerships for broadband investments

JANUARY 2015



Broadband is critical to the economic development and vitality of communities across the United States. Given its importance, many local leaders are exploring how to expand the availability and adoption of robust, high-quality and affordable broadband services in their communities. To reach these goals, many municipalities have utilized public-private partnerships. While no partnership structure is exactly like another, there are some common models and best practices that communities should research before embarking on a broadband partnership. The best approach for a particular community will depend upon several factors specific to each community.

This publication provides an overview of common broadband partnerships, the factors communities should consider in developing a successful partnership model, and tips and best practices NTIA has observed through its oversight of \$4.5 billion in broadband grants to public, private and joint projects across the country.

KEY QUESTIONS TO CONSIDER

DEFINITIONS

Community Anchor Institution (CAI):

Schools, libraries, medical and healthcare providers, public safety entities, and other community support organizations and entities.

Last-Mile: Components of a broadband infrastructure project that provide service to end-user devices. In most cases, the last-mile connection goes to the end-user device in a home, business or a CAI.

Middle-Mile:

Components of a broadband infrastructure project that provide broadband service from an Internet point of presence to one or more centralized facilities (i.e. the central office, the cable headend, the wireless switching station or other centralized facility), which allows a last-mile provider to provide Internet access to a home, business or CAI user.

Why is Broadband Important?

Broadband should be a necessary component of any community's economic development planning. Local communities typically promote broadband to improve productivity and reduce costs in schools, healthcare institutions, public safety, energy management and other vital functions. Citizens and businesses also benefit by gaining access to new services and information. As a White House report noted in 2012: "The build-out of broadband infrastructure itself is a major driver of American investment and job creation, but even more significant are the ways that connectivity is transforming a range of industries, from education to entertainment to agriculture to travel."¹

Ongoing research clearly demonstrates the positive impact of broadband in America:

1. Students with access to broadband at home have "a big or moderate advantage in the classroom,"² teachers and parents overwhelmingly agree.

2. Farmers are using "smart farming" technology, which relies on real-time data analytics made possible by broadband, to reduce crop damage from weather events by up to 25 percent.³
3. Searching for jobs on the Internet shortens the duration of unemployment for individual workers by around 25 percent as compared to offline searches.⁴
4. Broadband enables medical specialists to treat patients in remote regions of the country. One study reports that "remote patient monitoring was associated with a significantly lower number of hospitalizations" for heart failure.⁵
5. Businesses across all industries generated \$2.3 trillion in online sales in 2013.⁶

Broadband supports both individual and economic vitality. It is the lifeblood of our information society, fueling economic growth, innovation and civic engagement.

-
1. See "Four Years of Broadband Growth," Office of Science and Technology Policy and the National Economic Council, June 2013, page 2, http://www.whitehouse.gov/sites/default/files/broadband_report_final.pdf.
 2. "Poll Finds Overwhelming Support for Use of Technology," Leading Education by Advancing Digital (LEAD) Commission, undated, <http://www.leadcommission.org/poll-finds-overwhelming-support-for-greater-use-of-technology-in-k-12-education-among-teachers-and-parents-a-diverse-sampling-of-u-s-teachers-and-parents-strongly-believe-schools-should-increase-ado/>.
 3. "Precision Farming Gains Global Foothold (Op-Ed)," Lloyd Treinish, Livescience.com, June 12, 2013, <http://www.livescience.com/37400-smart-farming.html>.
 4. Peter Kuhn & Hani Mansour, "Is Internet Job Search Still Ineffective?" IZA Discussion Paper (Sept. 2011), <http://ftp.iza.org/dp5955.pdf> (published in *The Economic Journal* Apr. 4, 2014).
 5. C. Klersy, et al, "Economic impact of remote patient monitoring: an integrated economic model derived from a meta-analysis of randomized controlled trials in heart failure," *Eur. J. Heart Fail.* 2011 Apr. 13(4): 450-9, <http://www.ncbi.nlm.nih.gov/pubmed/21193439>.
 6. Press Release, Connected Nation, "Connected Nation Business Assessment Reveals Significant Education and Skills Gap in Workforce," <http://www.prweb.com/releases/2014/09/prweb/2194345.htm>.

Dark and Lit Fiber: In a fiber network, a provider or lessees may not be actively using every individual fiber strand. Those that are in use are considered “lit,” while those that are unused are “dark.”

Wholesale Services: Services sold by one service provider to another service provider. Services sold directly to end-users are “retail” services. Wholesale services may involve lit or dark capacity.

Why Should Communities Pursue Broadband Partnerships?

Communities develop or support broadband partnerships for a variety of reasons. Certain communities, especially those in rural areas, may confront significantly higher deployment costs due to low population density, lengthier middle-mile networks or challenging terrain. A partnership can address such economic challenges through sharing capital costs, enhancing revenue potential (e.g., finding anchor tenants and aggregating community demand, and removing regulatory barriers to expedite deployment). In other cases, communities create partnerships to foster high-speed, affordable broadband solutions for government and community facilities (e.g., schools, libraries). These institutions may find that the total cost of ownership, over the long-term, may be less through a network dedicated to serving such segments. Although local, state or federal funding may be available to support community broadband efforts, it rarely covers the entire cost of a project. A partnership with commercial operators, however, can complement public funding opportunities, while also bringing expertise on particular technical issues to an initiative. In all these cases, successful partnerships can leverage public financing, community assets and local leadership, in collaboration with private-sector expertise and capital, to expand broadband.



What Are the Types of Broadband Partnerships?

GENERAL PARTNERSHIP MODELS:

An effective broadband partnership spreads the risks and costs related to necessary capital investment, execution challenges and adoption hurdles between the private and public sector. While the structure of each community’s partnership reflects local needs and circumstances, most follow one of three models:



PRIVATE SECTOR-LED:

A commercial operator (private or non-profit) builds, owns and operates the network. Community Anchor Institutions (CAIs) and economic development authorities support the business case by contributing planning, monetary and regulatory support, and by aggregating demand and securing customer commitments in advance.



GOVERNMENT-LED AND PRIVATE SUPPORTED:

A public entity (e.g., state, county or city government, municipal electric utility or rural coop) owns the network and private partners construct, operate and/or maintain the network in exchange for financial and in-kind support, as well as the types of contributions described in the private-sector led model. The public entity may either use an existing organization, such as a municipal electric system, or create an entirely new one.



JOINT-OWNERSHIP MODEL:

A commercial operator(s) (private or non-profit) and the public enterprise jointly invest in the network and share capacity. Both partners also contribute a mix of financial, in-kind and other support to the project.

KEY SUCCESS FACTORS:

Regardless of which model a community chooses, the partners play important roles that are often critical to success:

✦ **Broadband Leadership and Catalytic Role by Government:** Local and state government entities may serve as leaders and catalysts to garner community support, identify needs, develop innovative solutions and attract private investment through rights of way (ROW) access, streamlined permitting processes and financial support.

✦ **Private Sector Ingenuity and Funding:** Private network service providers, equipment vendors, developers and technology firms bring expertise, resources and innovation in network deployment and operations, customer support and new broadband applications to support the work of local government.

✦ **Support from Community Forces:** CAIs, non-profit groups, research, education and government networks can drive initial demand and promote capacity building over the long-run.



South Dakota Network crews deployed a fiber network to connect local anchor institutions — schools, hospitals, public safety agencies and government offices.



Public-Private Partnerships and Broadband Adoption

If increasing broadband adoption is a priority for a community, partners should develop an adoption plan at the beginning of the project and not wait until the network is built. Adoption programs have many variations. Through its oversight of \$250 million in investments from its broadband adoption grant program, NTIA identified these important practices that are keys to success:

- ✦ Digital inclusion — helping people get online — is a multi-faceted challenge that requires a multi-pronged approach. Each community's needs and assets are unique, and communities should engage a wide range of stakeholders to better understand where there are gaps in broadband adoption and develop solutions.
- ✦ Developing an adoption plan and integrating a community's adoption goals into local economic development and technology plans at the beginning of the project, rather than after the network is built, ensures that these needs are taken into account.
- ✦ Private sector partners can boost public awareness, augment training and contribute discounted broadband services or equipment. Communities should consider how best to encourage their involvement.
- ✦ Leveraging public assets, such as libraries, schools, workforce centers and websites, to promote broadband adoption is an effective tool for success.
- ✦ Trusted local organizations — community centers, youth centers, faith groups and other grass-roots organizations — are essential to reaching hard-to-serve populations, and communities can benefit by exploring partnerships with these groups.
- ✦ Small businesses benefit greatly from using online tools but require targeted assistance to increase broadband adoption.
- ✦ Low income citizens need convenient, affordable training and public access programs to spur their adoption of broadband technology.

To learn more about broadband adoption, see NTIA's Broadband Adoption Toolkit: <http://ntia.doc.gov/toolkit>.



CASE STUDY: SHO-ME TECHNOLOGIES, MoBroadband — PRIVATE SECTOR LED (COOP) MODEL

OVERVIEW: Prior to NTIA’s Broadband Technology Opportunities Program (BTOP), south-central Missouri relied on copper-based broadband access and needed significantly higher speeds to enable distance learning, telehealth and public safety applications. NTIA provided a \$26.6 million grant to Sho-Me Technologies to deploy a 1,494 mile network connecting 101 anchor institutions across 30 counties. The origins of the project date back to 1997, when Sho-Me Power Electric Cooperative, a public entity, created a technology subsidiary, Sho-Me Technologies, to leverage its existing internal advanced optical communications network to offer high quality, high bandwidth connections to both internal and external customers, particularly rural communities. Sho-Me collaborated with the State of Missouri to develop the project’s network design and identify the unserved and underserved areas to target its network build. The project forms an integral part of Governor Jay Nixon’s MoBroadband Now initiative, launched in 2009. For its BTOP award, Sho-Me Technologies contributed 954 miles of existing fiber, valued at \$8.8 million, and \$2.6 million in cash.

BUSINESS MODEL: This project reflects a private-sector-led model capitalizing on the expertise and resources of an electric cooperative. Sho-Me Power Electric Cooperative created Sho-Me Technologies as a subsidiary in order to expand and leverage its advanced networks to offer high bandwidth solutions. Sho-Me Technologies expanded broadband and fostered SmartGrid applications in partnership with electric co-ops for more efficient, secure energy use. The company also improved student education by connecting K-12 schools, improved government services limited by budget cuts and strengthened public safety services by connecting regional law enforcement databases. In addition, by offering last-mile broadband providers low interconnection pricing, Sho-Me’s middle-mile network enabled them to extend enhanced broadband services to customers at affordable prices.

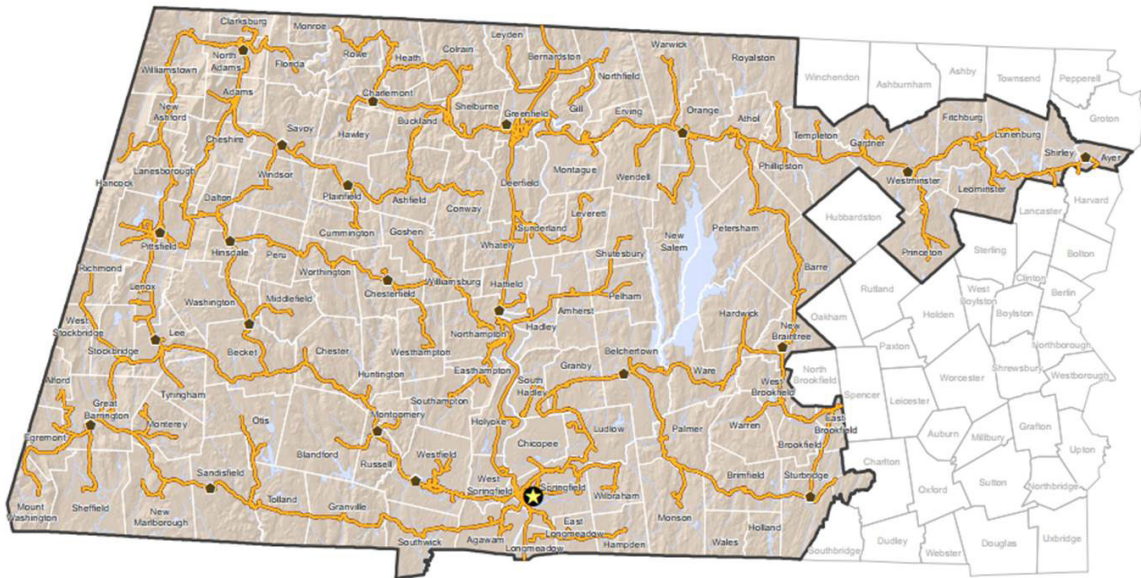




CASE STUDY: MassBroadband 123 — GOVERNMENT-LED AND PRIVATE-SECTOR SUPPORTED MODEL

OVERVIEW: Massachusetts Technology Park Corporation (MTPC) is a state economic development agency responsible for promoting growth in technology-based sectors in Massachusetts. MTPC recently completed a fiber project that connects 123 towns and over 1,100 community anchor institutions across Western Massachusetts. NTIA provided a grant of \$45.4 million, and MTPC contributed \$44.2 million.

BUSINESS MODEL: This project reflects a public-private partnership in which the state government owns the network and develops strategic policies but authorizes commercial operators to deliver service. The “open access” architecture allows any Internet service provider to purchase wholesale services and backhaul capacity. To avoid potential conflicts of interest, MTPC does not offer any retail services. Through a competitive procurement process, MTPC contracted with Axia, a private firm, to operate the network and market wholesale services. A profit-sharing arrangement incentivizes Axia to execute as many wholesale agreements as possible. MTPC’s profits are used to expand the network to unserved areas. This effort, combined with this revenue-sharing open access model, has attracted over 20 broadband providers to purchase capacity. Customers include an incumbent local exchange provider, community broadband operators and wireless Internet service providers. MTPC chose this partnership model to respect its primary mission as an economic development arm of the Commonwealth of Massachusetts. In this context, its strategy helps incentivize many providers to compete for retail services and allows MTPC to focus on other economic development programs, while still performing critical oversight and governance roles over the project.



MASSBROADBAND123 SERVICE AREA AND NETWORK POINTS OF INTERCONNECTION

CREATING A PUBLIC-PRIVATE PARTNERSHIP

1. Start by Planning

Variations in local government structures, private sector firms, community forces, state laws and local conditions bring a unique set of circumstances to each broadband deployment. As a result, communities should initiate a planning process that encompasses a comprehensive effort from all community stakeholders. Communities should seek input from businesses, residents, government leaders, public safety officials, community institutions and non-profits. A comprehensive community approach helps identify all unserved and underserved areas and leverage all existing resources.

A community should consider pursuing the following activities before it determines the most relevant partnership model:

- ✦ **Establish a Diverse Project Team Led by Community Champions:** A project team that represents a cross-section of key stakeholders is a necessary component of community planning. Case studies from BTOP show that having one or more “community champions” significantly enhances the potential success of the project. These champions often possess three key traits. First, they foster inclusivity, which helps bring many groups and disparate voices together. Second, they are problem solvers and can apply sound business judgment, policy acumen and creativity to help surpass the many obstacles that will likely arise during the planning and deployment phases. Third, they exemplify passion and patience, which are both imperative given the complexity, time and obstacles likely to be encountered in establishing a public-private partnership and launching a broadband network.
- ✦ **Set Community Goals:** Identifying the community’s economic and social development goals, and defining the role broadband plays in helping the community attain such goals, is an important next step in the planning process. These goals may pertain to attracting or retaining businesses, expanding private investment, fostering workforce development, improving educational outcomes, promoting access to healthcare or other targeted goals.
- ✦ **Define Broadband Network Requirements:** Accurately defining the scope and specific requirements of the broadband project, such as targeted end-user segments, geographic coverage, required services, minimum speeds and pricing objectives, helps set a community’s expectations and provides the framework to guide the project to completion.
- ✦ **Perform an Inventory of Existing and Planned Assets and Services:** An inventory of existing communications infrastructure and available services should include both last-mile and middle-mile services. A community’s inventory assessment should include telecommunications assets that can be shared, including conduits, towers, poles and colocation facilities. Communities should also consider including non-telecommunications assets, such as gas and electrical conduits, abandoned sewer or water mains and water towers, in the assessment.

✦ Identify Gaps Revealed by the Inventory Assessment:

The gap between a community's broadband today (existing infrastructure, including capacity, speed and pricing, and level of adoption) and its needs will drive the type, technology, size and scale of the project.

✦ Perform a Feasibility Study: Commissioning an independent

firm to conduct a feasibility study or assessment, which involves a detailed analysis of the technology options and their comparative strengths and limitations (e.g., performance, costs, time to implement, revenue estimates and regulatory issues) ensures that the community receives an objective analysis of the project's advantages and disadvantages.

✦ Solicit Partnership Interest: Determining the willingness of potential partners to participate in the project is a critical step in the planning process. Potential partners will have varying levels of interest in taking on key project roles, such as investment participation, capacity purchasers, network operations and marketing/sales of services. Some communities issue Requests for Information (RFI) to gauge partnership interest in the project.

2. Build the Business Case and Financial Plan

The business case uses all of the information gathered during the planning phase to develop a financial model for the project. A community should always keep the goals it previously identified, combined with the knowledge of its own assets and limitations, at the forefront of any decision.

In most cases, communities should explore a number of potential funding sources for infrastructure or adoption projects. Some of the funding sources include: state, federal and foundation grants; bonds (revenue or double barrel); low-interest loans; tax deferment or reduction; and tax increment financing districts. Grants and other subsidies (the Federal Communications Commission's Universal Service Fund and state funding programs) have the advantage of not having to be repaid; therefore, they take on increased importance when private investors cannot otherwise achieve a reasonable return on investment. However, a community may have to meet

certain eligibility requirements to qualify for grants or other subsidy programs, which may limit their availability as a reliable funding source. Commercial and private debt tends to be a more readily available funding source to communities, but it has the disadvantage of increasing the financial risks as cash flows are then required to pay back principal and interest. However, many lenders — like the Rural Utilities Service and rural-focused banks — have special programs to manage such risks. Examples include longer-term loans, lower interest and reduced restriction on financial thresholds. Communities should weigh the pros and cons of each option before selecting their funding methods.

Deployment Enablers

State or local governments also encourage deployment through:

- ✦ Revising ROW requirements by including reforms such as "dig once" policies
- ✦ Adding conduit to all street and parking lot projects
- ✦ Streamlining permitting and zoning processes
- ✦ Reducing or eliminating fees and rents (ROW fees, physical structures, fiber, conduit and manholes) in exchange for services or use of infrastructure (fiber, wireless)
- ✦ Compensating a partner's participation by offering capacity on unused fiber (indefeasible right-of-use (IRU) agreements)
- ✦ Providing access to a local Geographic Information System (GIS)

Communities should also consider whether to incorporate demand aggregation into their model, in which residential and institutional customers commit to purchasing service in advance of construction. Such commitments provide certainty to potential investors regarding market size and pricing, and leverage the buying power of customers, allowing them to negotiate more advantageous contracts.

Partnership Arrangements

Since a partnership is more than just a financial transaction between two parties, the business case may rely on additional obligations for each partner. Below are common examples:

- ✦ In exchange for providing financial, in-kind and policy support, a public entity may require a private partner to offer affordable rates, minimum broadband speeds, quality of service guarantees, help in increasing broadband adoption or open access obligations, through which any provider may purchase wholesale capacity and offer retail services.
- ✦ Partners may build and own a fiber network together, each controlling and managing a certain number of fiber strands.
- ✦ Partners might share the cost of trenching roadway, but each could install its own fiber.
- ✦ One partner may own the network, but commit to sell long-term leases for dark fiber to other investment partners, including public, non-profit, academic and commercial service providers.
- ✦ Partners may jointly lease network capacity to multiple broadband providers, which then provide last-mile service to residential and business customers.

3. Determine Responsibilities

The partners' technical experiences in deploying, operating and maintaining networks, as well as management's background in governing a partnership, are critical to a successful project. In addition to strengths in project management and partnership governance, partnerships should assess each partner's ability across three functions: construction, operations and adoption.

Staff Skillsets in a Broadband Partnership

✦ Construction

- ▶ Design and engineering
- ▶ Construction technique (e.g., aerial fiber, buried fiber, overlash or microwave)
- ▶ Knowledge of local topography
- ▶ Project management

✦ Operations

- ▶ Retail sales
- ▶ Wholesale sales
- ▶ Customer support
- ▶ Network Operations Center and monitoring
- ▶ Response and repair
- ▶ Billing

✦ Adoption

- ▶ Training and support capacity
- ▶ Outreach and marketing effectiveness
- ▶ Community knowledge and trust

A community may already have a partner (an existing broadband provider or a municipal electric utility) ready to help; otherwise, it should determine which activities it can take on itself and find partners to take the lead on other functions. Once a community and its partners have assessed both the public and private sector assets and challenges, they can develop a partnership that reflects community need, financial capacity and partner experience.



CASE STUDY: SCOTT COUNTY, MINNESOTA — JOINT PUBLIC/PRIVATE INVESTMENT APPROACH

OVERVIEW: Scott County, Minnesota began assessing its options for building a broadband network after observing a neighboring county reap financial benefits from its municipally owned network. It determined that the annual interest and principal payments on a bond, which could fund a fiber ring, would be lower than the annual charges for using slower, copper-based leased lines. To implement this vision, the County entered into a collaborative partnership with commercial providers and the State of Minnesota. In 2007, Scott County developed its 90-mile ring for \$3.3 million and expanded the network to 11 adjacent counties. The network connects all county-owned facilities, including schools, libraries, city halls, police and fire departments and public safety towers. It also interconnects with the state's high capacity backbone and with multiple private providers. Scott County saw significant benefits as a result of this investment: schools tripled their broadband capacity for 35 percent of what they previously paid, and fiber has helped to attract and retain businesses, driving the County's economic development.

BUSINESS MODEL: Scott County provided the upfront deployment costs and owns the fiber network. It partnered with three commercial middle-mile network providers to maintain and manage the network because it lacked the capacity and experience to do so by itself. The commercial providers maintain the network at no charge to Scott County in exchange for including their own fiber strands in the buried conduit — a significant construction-cost saving. Scott County also partnered with the State of Minnesota's Office of Enterprise Technology (OET) to operate the network and provide services to its own facilities and schools. The OET provides these services at no charge in exchange for fiber capacity across connected counties in which the state network serves government and community enterprises. OET found that the cost of operating its total network would be less than its cost for leased lines.



CASE STUDY: MAINE FIBER COMPANY, THREE RING BINDER PROJECT — A PRIVATE-SECTOR LED MODEL

OVERVIEW: Maine Fiber Company (MFC) is a private company that leases dark fiber to other broadband providers. The company was formed in 2010 to oversee the construction, maintenance and leasing of a high-capacity fiber optic network to enhance middle-mile fiber access for carriers seeking to provide quality broadband services to customers throughout Maine, with connections into Canada, New Hampshire and Massachusetts. The State of Maine and the state's legislature collaborated with the project, providing regulatory certainty to MFC by passing a bill that created a specific type of dark fiber public utility. This action allowed MFC to enter the marketplace. NTIA provided a \$25.4 million grant, and the company contributed \$6.1 million in investor-funded cash to deploy a 1,211 mile network connecting 100 anchor institutions.

BUSINESS MODEL: This private-sector led project is an example of a unique collaboration between a state government and a private company to remove barriers to market entry. In 2010, Maine enacted a new law that established "dark fiber provider" as a new category of public utility. This legislation enabled MFC to offer service, providing fiber for carriers to supply service to their customers. The company's customers include national and international telecommunications carriers, local broadband service providers, wireless providers and business or public sector entities with a high demand for data transmission.



TIPS FOR SUCCESS: LESSONS LEARNED FROM NTIA BROADBAND GRANT RECIPIENTS

NTIA has identified a number of key lessons learned and best practices as a product of managing over 100 broadband infrastructure projects that have built a total of 112,000 broadband network miles. Grantees have applied these practices to meet their community broadband goals, while completing projects on-time and within budget. These practices have also supported the long-term goals of financial viability and scalability of broadband projects and increased competition in broadband availability and affordability.

Partnership Agreements

- ✦ Partners must determine reporting standards and performance metrics and codify them in contracts and service level agreements (SLAs) before construction begins.
- ✦ If an agreement includes strong contract oversight, partnerships may improve capital efficiency by using a partner or a contractor in the planning, design, engineering and construction phases.
- ✦ As the network matures, a community may seek additional control or flexibility and should consider the needs for these options as it designs its contracts.

Staffing

- ✦ If a community lacks expertise in a particular area, consider retaining staff with skills to oversee that specific aspect of the partnership.
- ✦ Billing, customer service and marketing are critical to success. For this reason, a partnership may find that sales, repair service and customer service representative (CSR) functions are best performed by employees who are locally trained and located.
- ✦ A local IT department with experience running its own network may still consider working with an external partner for 24/7 maintenance and network repair — generally a more cost-effective approach due to larger-scale efficiencies of the partner.

Financing

- ✦ Communities with their own broadband infrastructure have a powerful asset that they can leverage to spur interest from potential partners. Use of assets may include economizing excess capacity; sharing supporting infrastructure like conduit, ROW and existing transmission infrastructure; providing dark fiber as a form of compensation; and partnering with last-mile providers and new market entrants to deliver services to end users.
- ✦ To ensure assets are fairly valued, communities should conduct an independent appraisal of local assets.
- ✦ If funding is required for a partnership, the community may want to evaluate whether a single partner has more financing to commit than several smaller partners.

- ✦ Local and state governments should review their rules that determine in-kind grant eligibility. NTIA's broadband programs allowed non-traditional assets because they were critical to the success of projects. In some cases, a private firm would have to pay cash for these assets; in other cases, the government's contribution resulted in reduced processing and wait times, thus saving the project money.

Business Models

- ✦ Broadband partnerships should assume that the market will respond to their entrance. For example, existing providers may improve their service or introduce more competitive rates.
- ✦ Prospective middle-mile and institutional customers often require evidence of capability and performance, so communities need to consider the value of building out networks incrementally to demonstrate success at each level of construction.
- ✦ Local CAIs likely already have contracts with a broadband provider, and these preexisting contracts may not expire for several years. This makes it imperative that partnerships entering the wholesale fiber market obtain partners and develop business plans that reflect revenue diversification beyond anchor institutions and other direct customers.
- ✦ Communities should consider offering wholesale services to established broadband providers. For example, a new public-private partnership could provide existing carriers with fiber links to wireless towers and commercial buildings or provide diversity and redundancy for their existing fiber routes.

BEST PRACTICES

Engage a Comprehensive Set of Partners:

A broad set of commercial, government and community partners provides advantages in executing ambitious projects and ensuring long-term sustainability. Close collaboration with other local and state government agencies can help streamline permitting and ROW access, especially for middle-mile networks that intersect many jurisdictions. Or, a partnership with a consortium of schools and libraries can aggregate demand for a long-term, bulk purchase contract. An alliance with commercial operators can invite investment support or capacity purchase commitments and support for network maintenance and operations. For example, a middle-mile operator may require capacity to connect wireless towers or interconnect adjacent backbone networks. A local provider may want to serve specific pockets of residential or business customers. Or, a research and education network may fund the connections to universities and other high-revenue anchor clients. A state government may operate its own network to connect government facilities.

Establish Early Measures to Facilitate Coordination:

A large number of partners increases the complexity of coordinating the project, resolving conflicts and governing the operations over the long term. During the planning stage, the community should document each partner's contribution and role in the project. A Memorandum of Understanding (MoU) is a good initial instrument and may be binding

or conditional. If non-binding, the community should establish a legal contract before funds are transferred and project construction starts. During network deployment, the community should consider engaging an independent firm to manage the project and provide objective status reports. For every phase, a robust governance model will assist the partners in making critical decisions, resolving conflicts and fostering inclusiveness, transparency and overall accountability.

Future Proof with Extra Capacity:

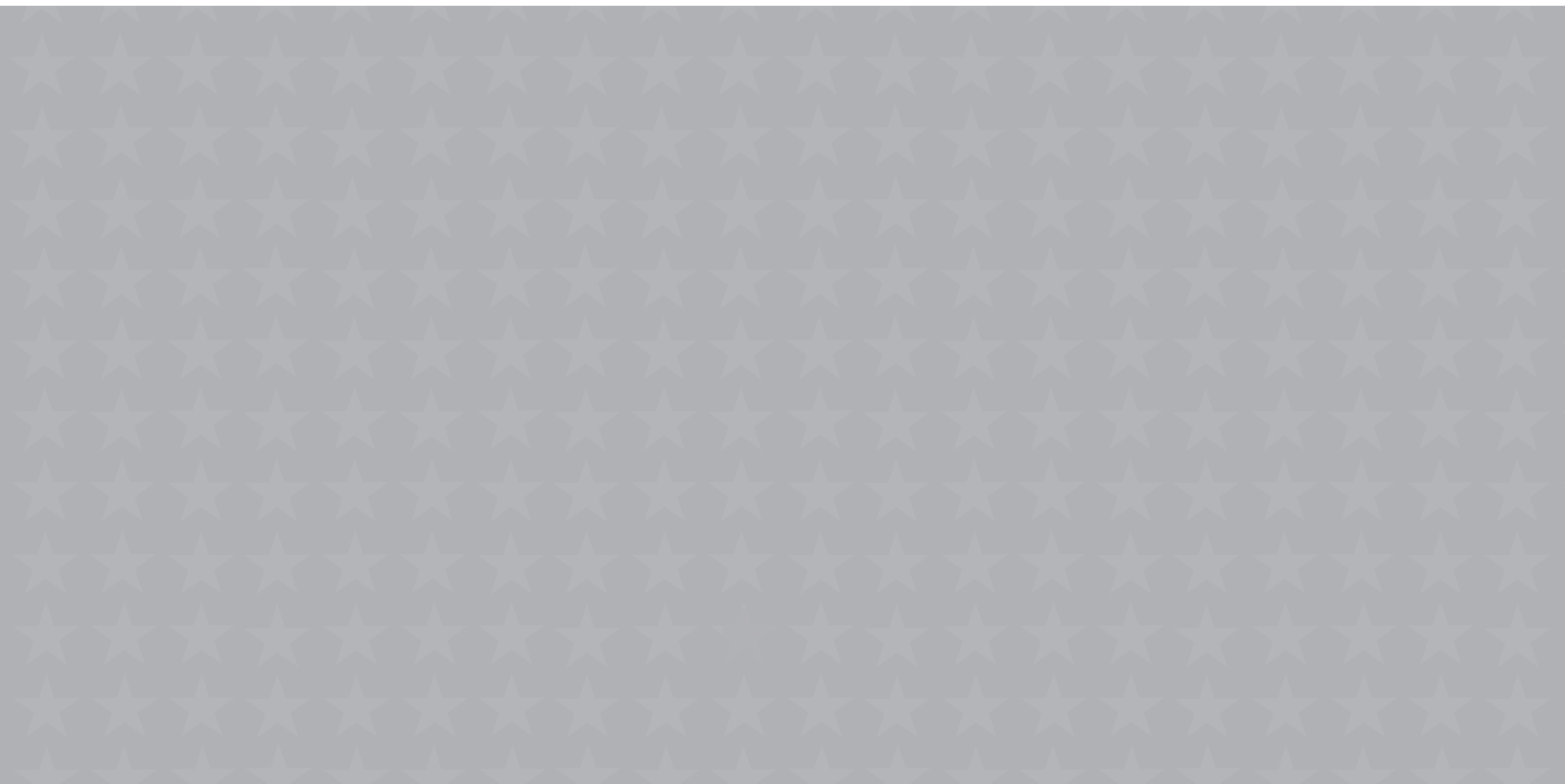
A network built with extra capacity offers many advantages. First, it "future proofs" the network, given that data demand will very likely continue to grow. Second, in the case of a fiber network, the marginal cost of installing extra fiber is minimal relative to the deployment cost. Third, the extra capacity can serve as a cost-effective way to acquire bandwidth from providers through fiber swaps or trades, for example, rather than having to pay cash or build new infrastructure. Finally, extra capacity becomes a critical asset that the investment partners can leverage to attract new partners or to develop new business models if the original model fails to achieve the targeted objectives.

CONTACT US

NTIA's BroadbandUSA program is dedicated to helping communities achieve their broadband missions. NTIA can offer assistance to communities as they plan for broadband efforts, including stakeholder outreach activities. If you have additional questions about the information contained in this Toolkit, please contact us at broadbandusa@ntia.doc.gov or 202-482-2048.

ABOUT NTIA

The National Telecommunications and Information Administration (NTIA) is the Executive Branch agency principally responsible for advising the President on telecommunications and information policy issues. NTIA's programs and policymaking focus largely on expanding broadband Internet access and adoption in America, expanding the use of spectrum by all users and ensuring that the Internet remains an engine for continued innovation and economic growth.



JANUARY 2015

U.S. Department of Commerce
National Telecommunications and Information Administration
1401 Constitution Ave., NW
Washington, DC 20230

W: www.ntia.doc.gov

E: broadbandusa@ntia.doc.gov

T: [@NTIAgov](https://twitter.com/NTIAgov)

