



Planning & Funding a Broadband Infrastructure Project

Missouri Broadband Leaders Academy

Missouri Department of Economic Development
Camdenton, MO
June 10, 2019

Speaker Introduction/Biography



Don C Williams, PhD
Infrastructure, BroadbandUSA



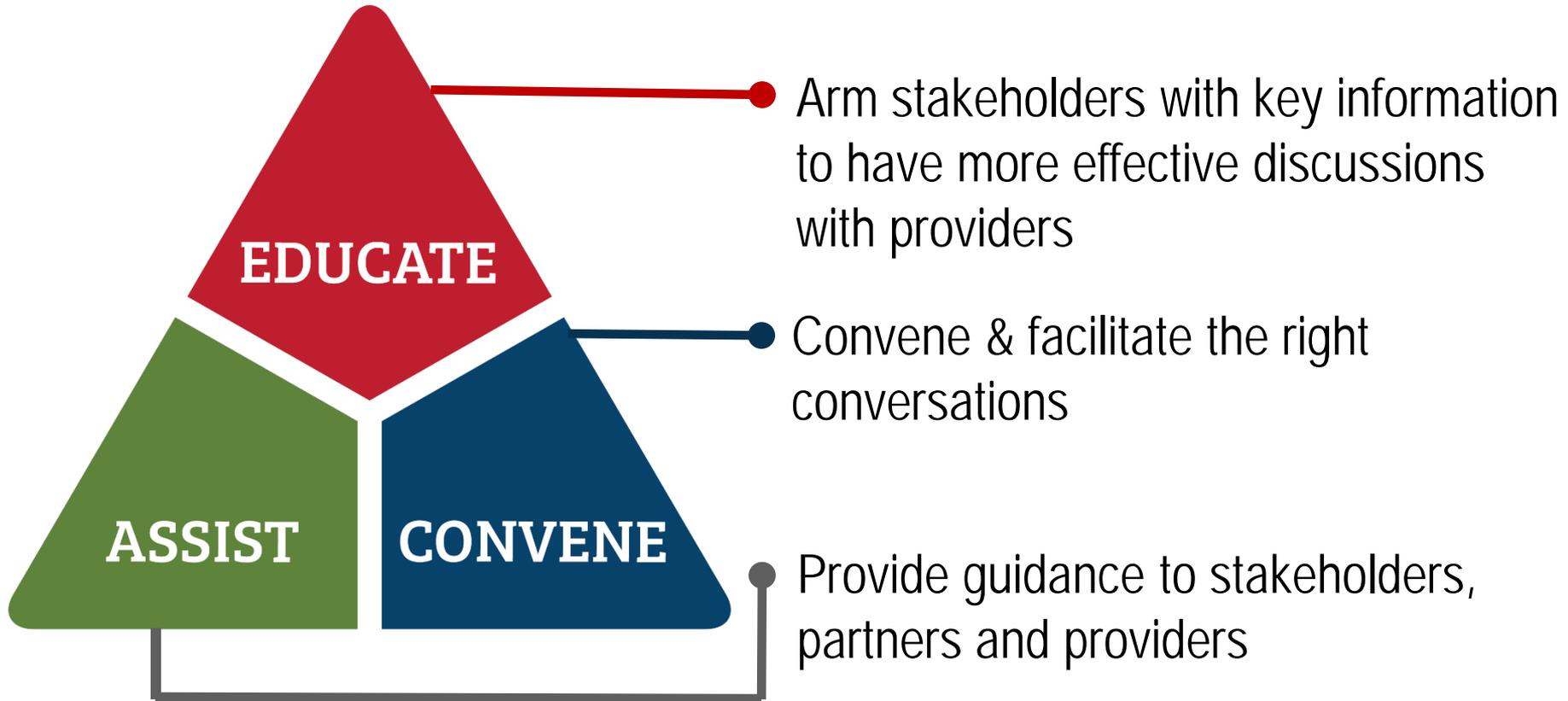
Scott Woods
Manager, Broadband Technical Assistance, BroadbandUSA

The National Telecommunications and Information Administration (NTIA) advises on telecom policy issues

- Expanding broadband access and adoption
- Expanding the use of spectrum by all users
- Ensuring that the Internet remains an engine for continued innovation and economic growth
- Supporting public safety communications



NTIA's BroadbandUSA program educates stakeholders, facilitates relationships, and provides helpful resources



Broadband Basics

Overview of the information needed to understand fundamental Broadband terms, issues and network operations.

What is Broadband?

Broadband refers to **high-speed Internet access** that is always on and is significantly faster than traditional dial-up access. Broadband includes several high-speed transmission technologies, such as **fiber optic, wireless, Digital Subscriber Line (DSL) and coaxial cable.**

Minimum upload and download speeds are essential to quality of service for end user customers. **The FCC currently defines high speed Internet access** as download speeds of at least **25 Mbps** and upload speeds of at least **3 Mbps.**

Broadband speeds are important when sending (upload) and receiving information (download)

Upload Speeds

The speed with which a system sends data to a remote server

Download Speeds

The speed with which a system receives data from a remote system



There are several key terms that are typically referenced when discussing broadband networks

Speed

Pace at which data can pass through a network connection, generally measured by Megabits per second (Mbps)

Bandwidth

Capacity or maximum amount of data that can pass through a network connection at any time

Latency

Delay between a user's request for data (e.g. "click") and the delivery of data (e.g. website accessibility)

Reliability

Consistency and predictability at which broadband service is provided

Broadband Network Architecture 101

Backbone

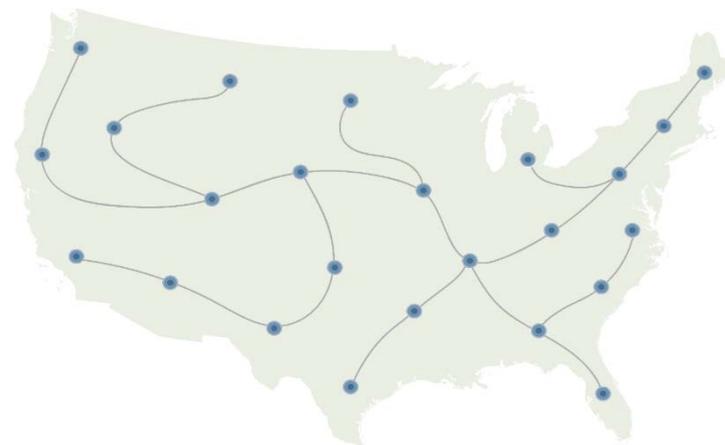
Major high-speed transmission lines that link smaller networks across the country

Middle Mile

Connection between the backbone network and local networks

Last Mile

Connection between the local network and end user homes and businesses



Broadband Technologies: No Silver Bullets!

Technology	Application		
	Backbone	Middle Mile	Last Mile
Fiber			
Aerial Fiber	✓	✓	✓
Buried Fiber	✓	✓	✓
Copper-Based			
Coaxial Cable		✓	✓
DSL			✓
Wireless			
Fixed		✓	✓
Mobile (4G/5G)			✓
Satellite			✓
Microwave		✓	✓

Roadmap for Planning a Broadband Infrastructure Project

MISSOURI BROADBAND LEADERS ACADEMY

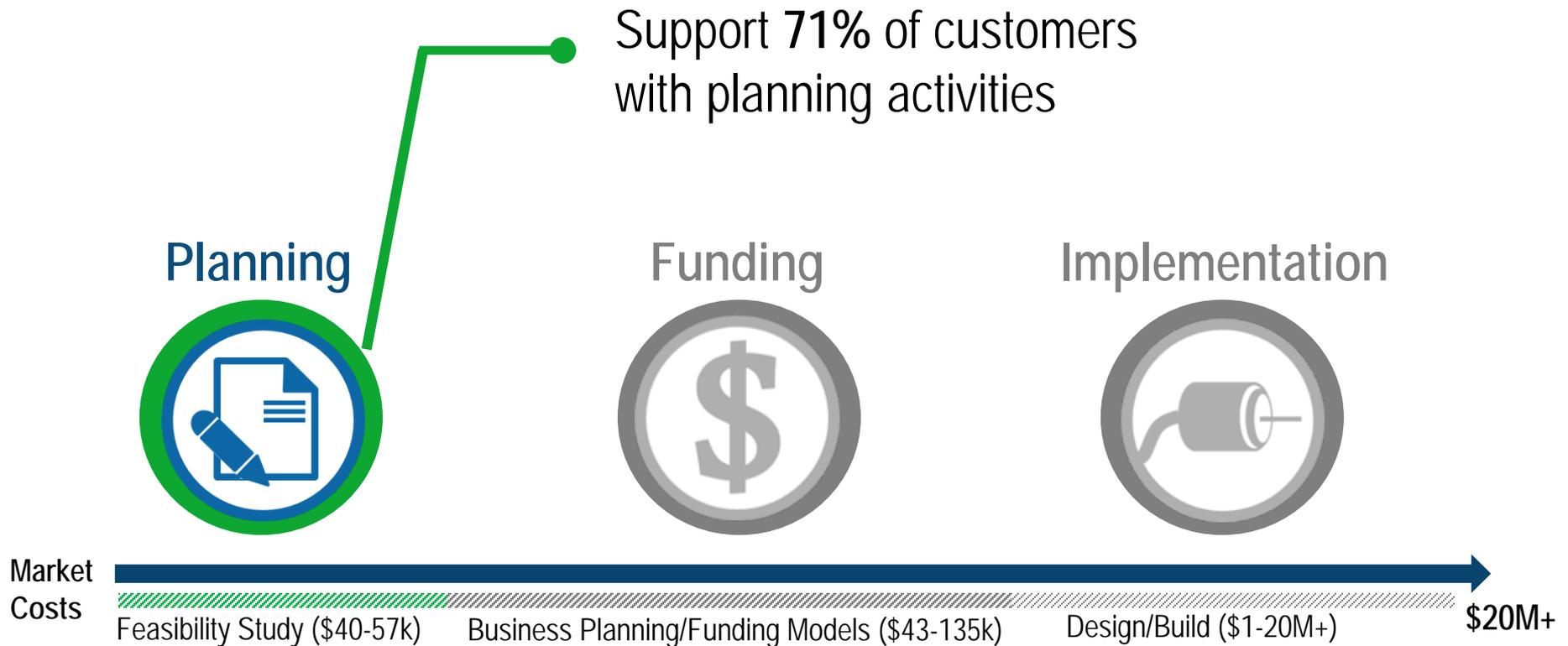
In Missouri, rural areas experience significant broadband connectivity challenges

*Broadband availability maps show service availability, adoption and use over geographic space. These maps of Missouri indicate there are **higher advertised speeds in large urban metro areas** such as Jefferson City, Springfield, St. Louis and Kansas City than other areas of the state.*

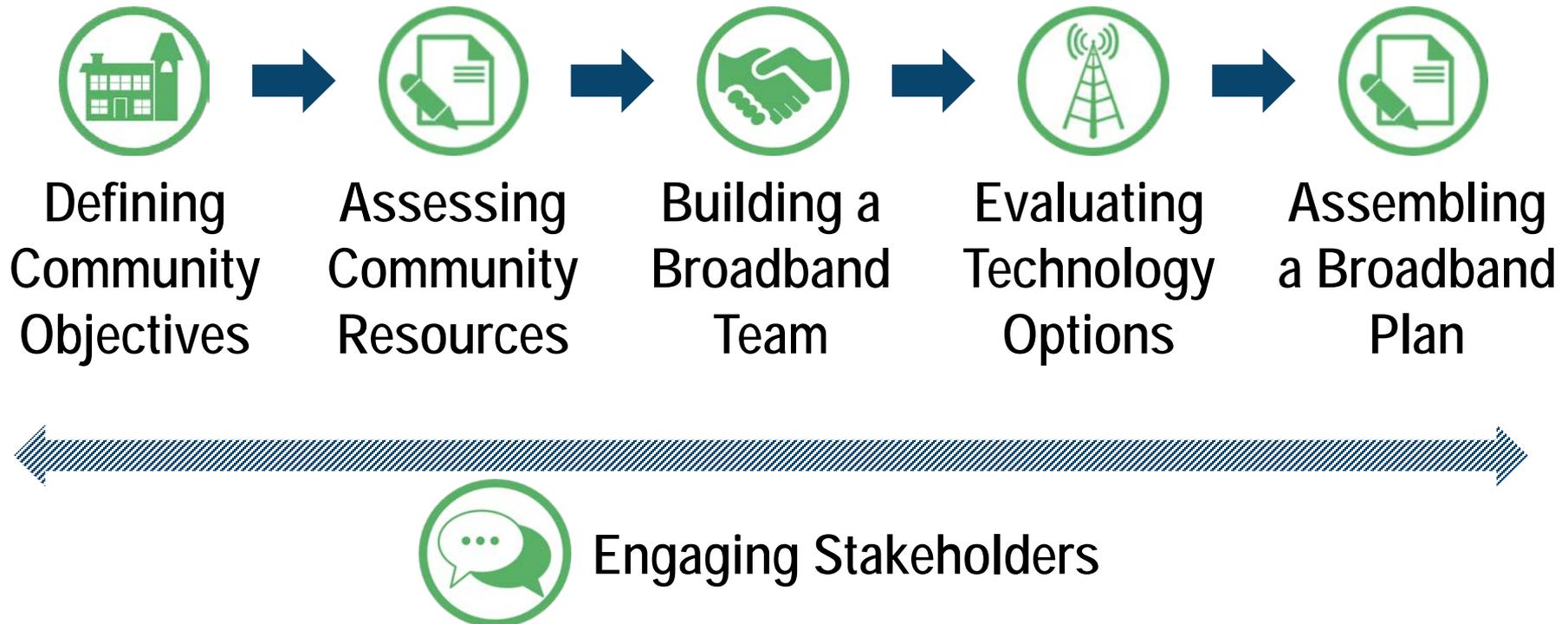
Accordingly, broadband infrastructure and implementation efforts are focused on rural areas as these communities are fertile ground for innovation in:

- ✓ Economic Development & Commerce
- ✓ Education
- ✓ Healthcare (telehealth & telemedicine)
- ✓ Government services
- ✓ Security
- ✓ Smart energy use
- ✓ Smart Agriculture

BroadbandUSA shares best practices for broadband infrastructure deployment



Communities can enhance planning efforts by developing a comprehensive broadband roadmap



Broadband access and use are critical to the growth of communities in our country



Up to \$600 Per Student Saved Annually Using Digital Resources



Hospital Admissions by 35%



Hospital Stay by 59%



Home Value by 3.1%

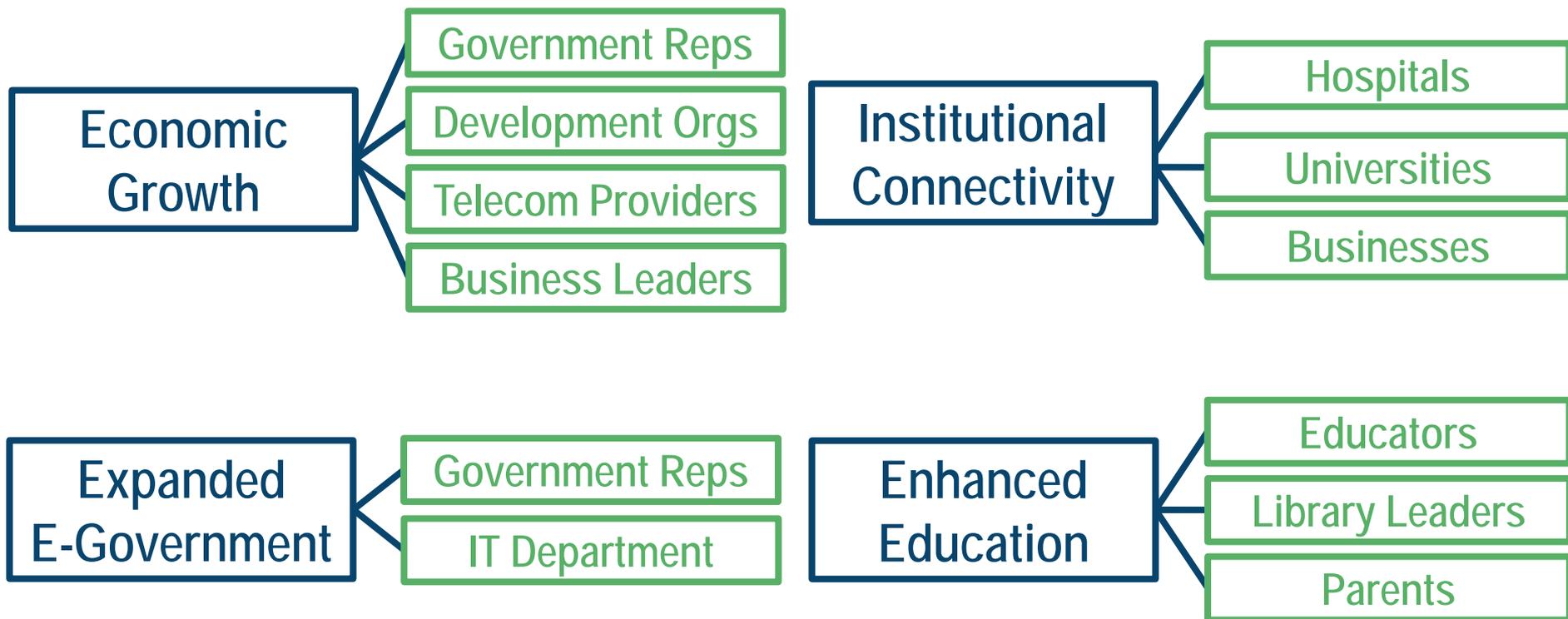


79% of Unemployed Americans Search for Jobs Online

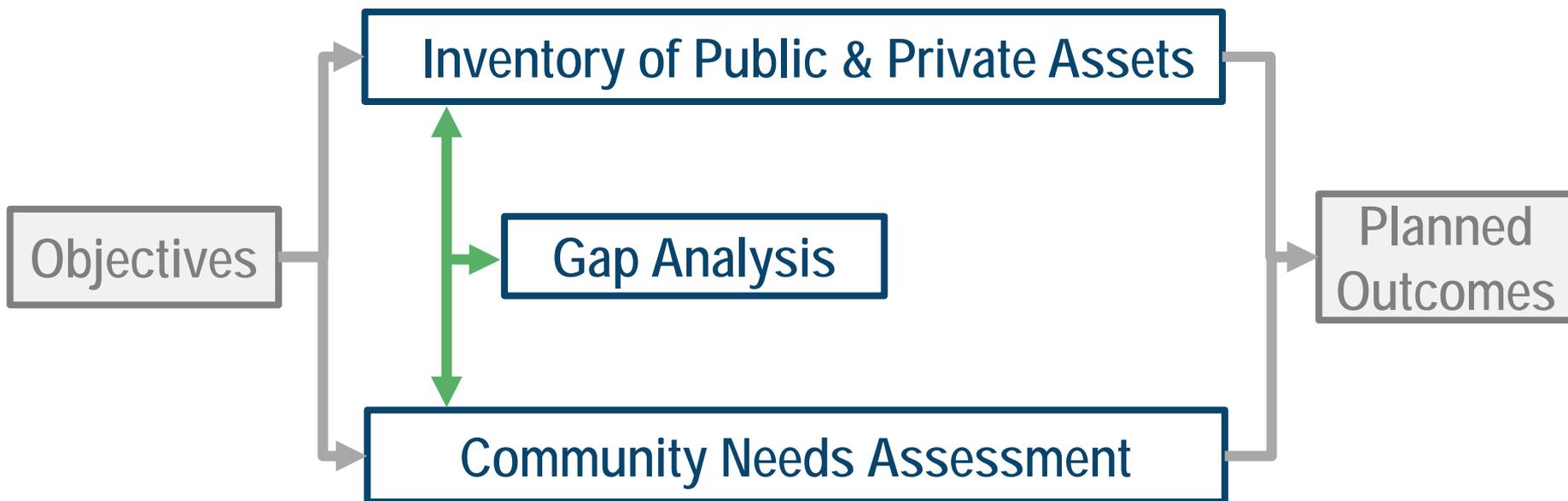


Annual Median Business Revenue by \$300,000

Communities can use defined objectives to shape the vision and direct planning teams to support their broadband efforts



Once a community determines its objectives, it can assess its existing resources



Community leaders can make stakeholders a critical part of ongoing broadband efforts



Effective Stakeholder Outreach helps establish:

- Project Support
- Two-way Communications
- Transparency

Strong partnerships can provide financial and personnel resources and increase project impact

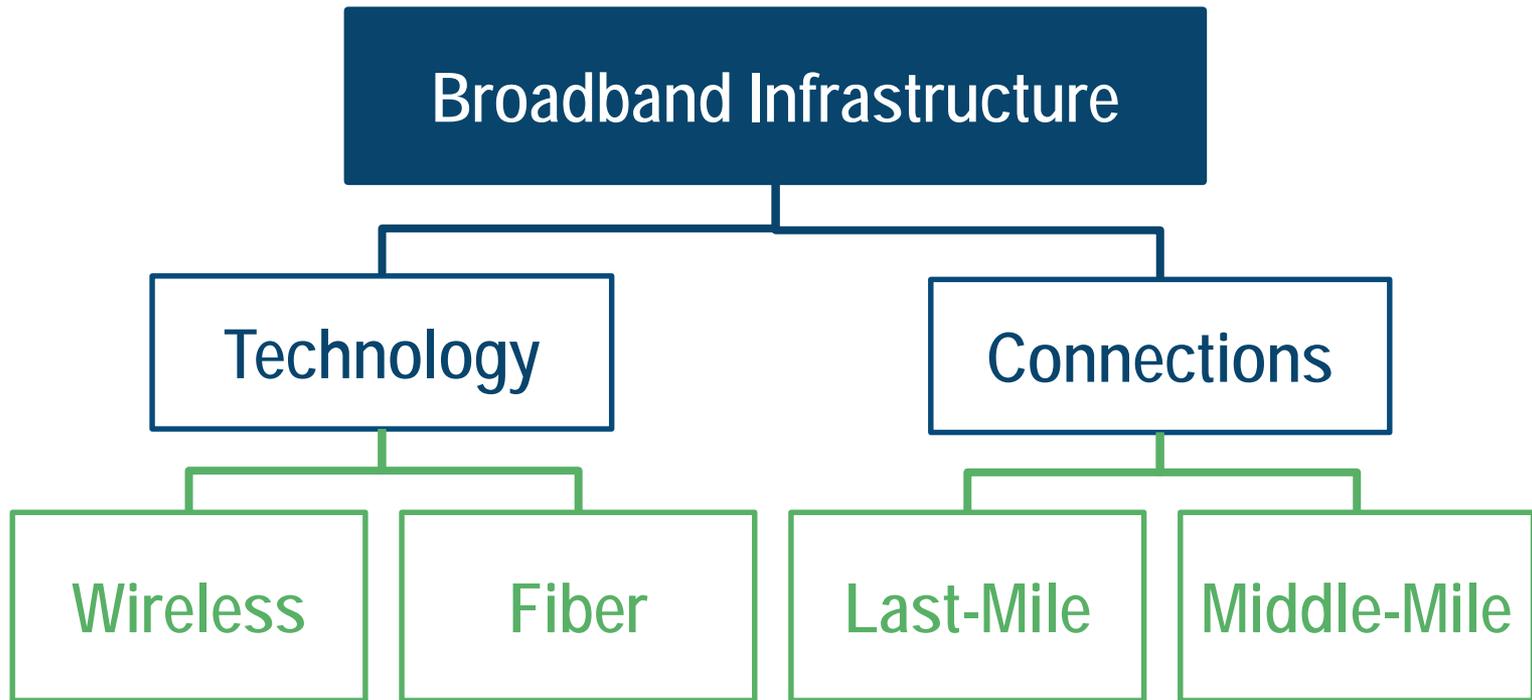
Potential Considerations



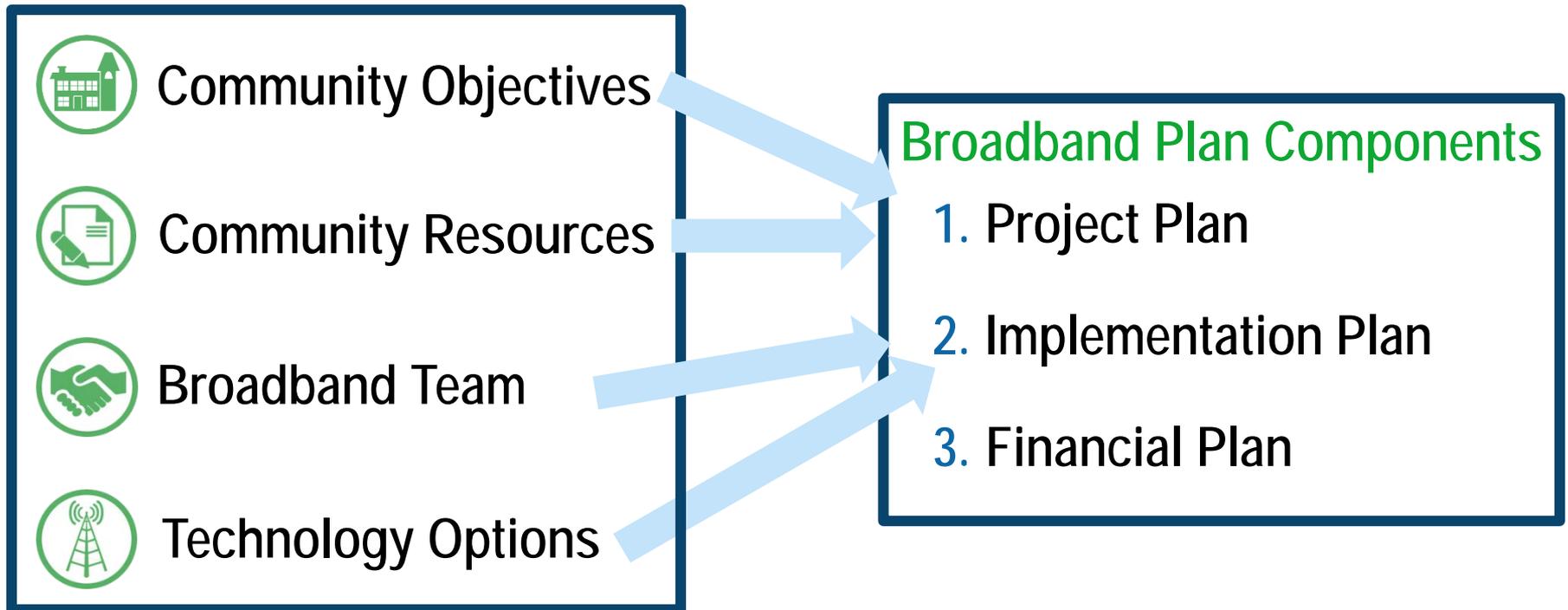
Based on key partnerships, the community can select an appropriate organizational model



Communities can select the “right” technology based on community characteristics and needs

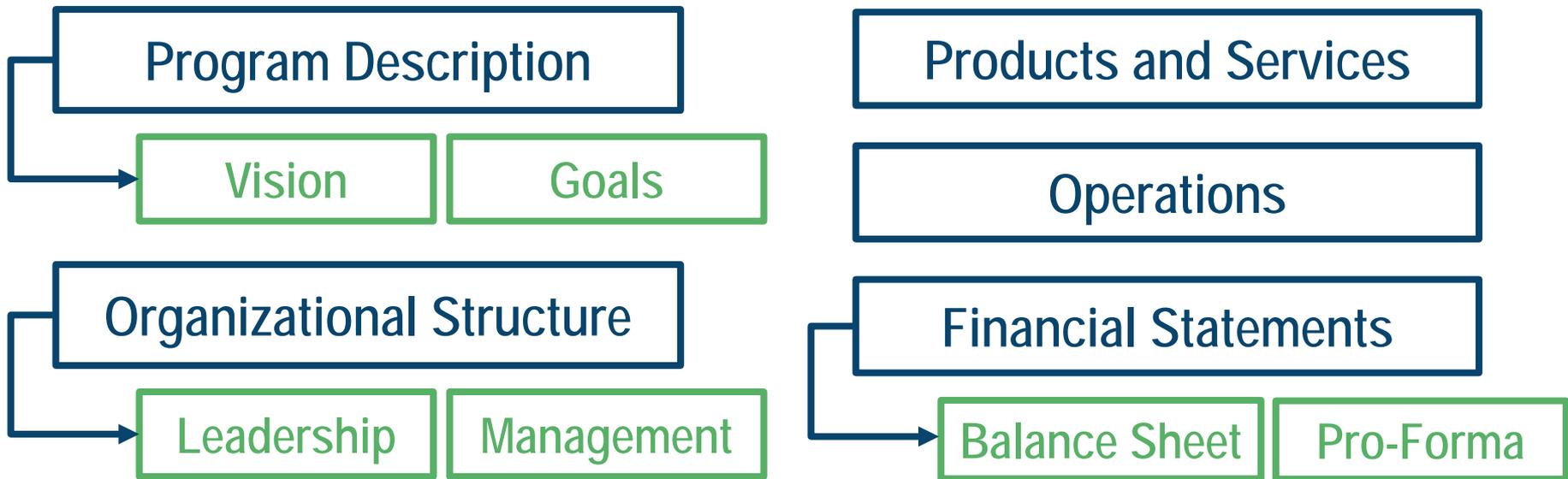


A community can prepare a Community Broadband Plan to showcase its planning efforts



Project Plans: Key Components

A community can develop project plans to share with partners, investors and stakeholders

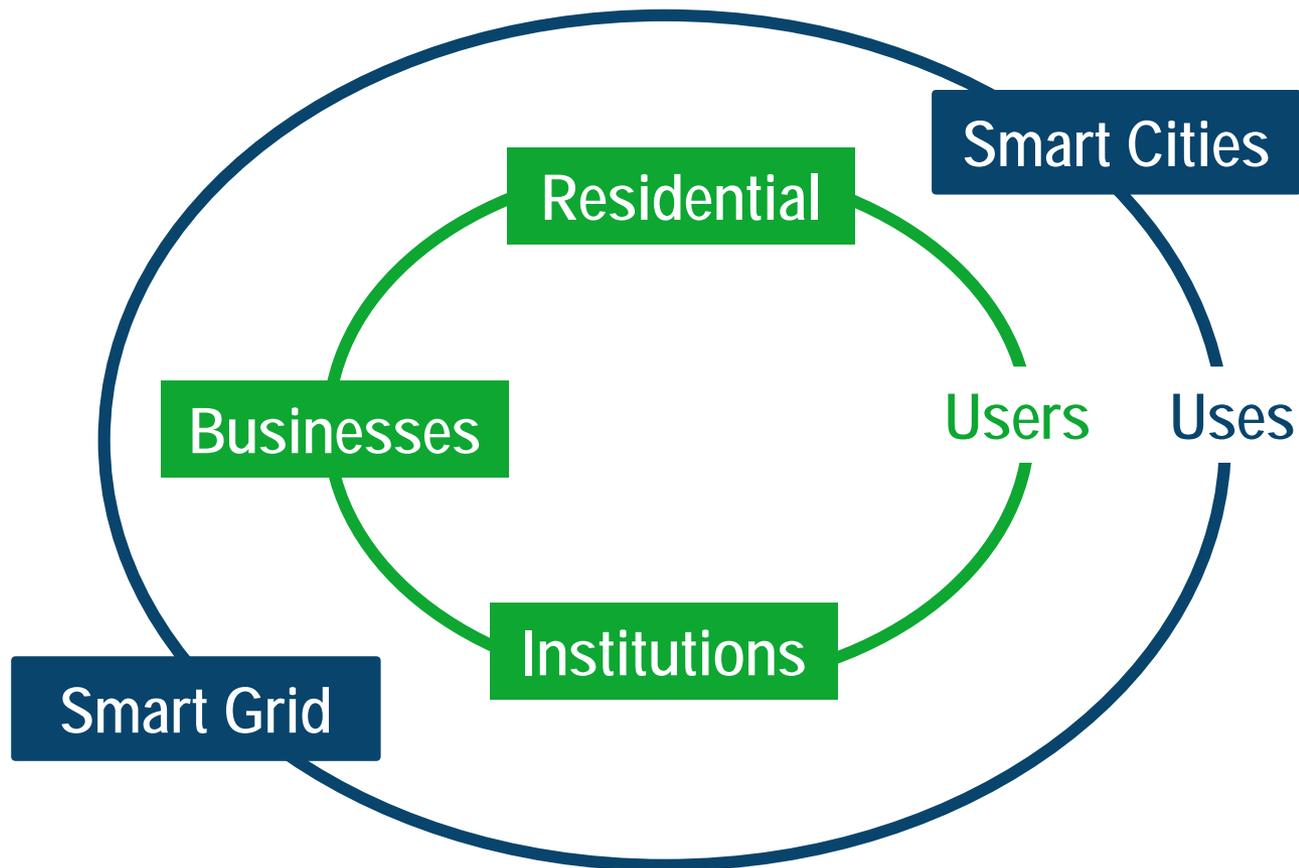


Implementation Plans: Key Components

A community can choose an implementation strategy based on strengths, weaknesses and capabilities

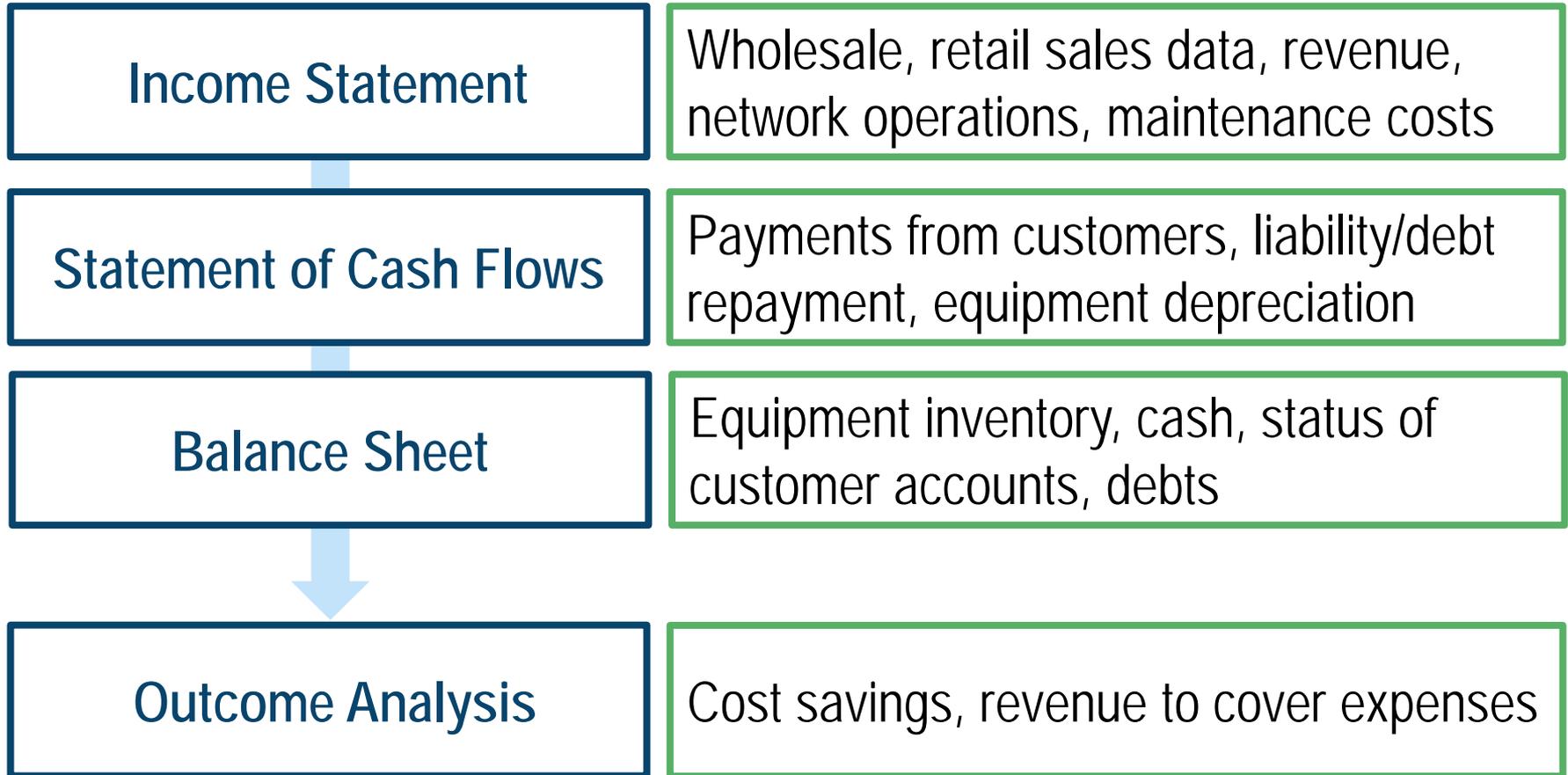
Option 1	Encourage provider to extend/build network and/or provide service
Option 2	Run network on another provider's network
Option 3	Build or extend network

Communities can identify potential uses, users or customers to shape project implementation

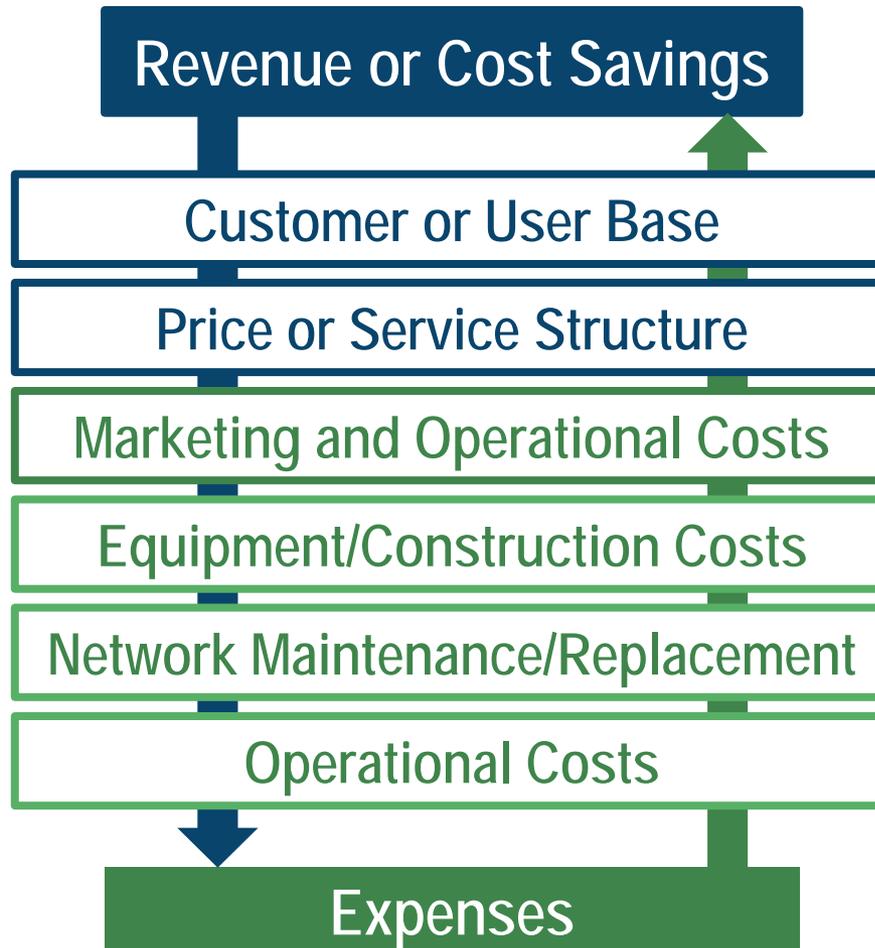


Financial Plans: Key Components

A community can communicate anticipated project financial information through its pro forma



Calculating expected revenue, cost savings and expenses helps to determine a project's sustainability



Options for Funding Broadband Infrastructure Projects

MISSOURI BROADBAND LEADERS ACADEMY

Planners can consider a number of financing options depending on resources and requirements



Bonds



Grants★



Government-Backed Loans★



Private Equity



Private Financing



Public-Private Partnerships★



Tax Credits

Infrastructure deployment often includes a variety of funding sources

Hypothetical Funding Distribution



- Bonds
- Grant Funding
- Tax Credits
- Private Loans

Government-backed loans are options to secure initial capital

Benefits

- Interest rates can be lower for government-backed loans
- Borrowers can use project revenue to repay the loan

Risks

- Loan criteria could constrain network provided service
- A loan default could bring greater public scrutiny

USDA's Rural Utilities Service provides loans and loan guarantees to fund broadband in eligible areas

Rural eConnectivity Pilot Program (ReConnect Program)

Every the proposed network must be capable of providing service to every premise in the proposed funded service area at a speed of at minimum, 25 Mbps downstream and 3 Mbps upstream.

First round of applicants have three separate funding categories to choose from:

- \$200M - 100% loan
- \$200M - combination 50% loan / 50% grant
- \$200M - 100% grant.

To be eligible for a 100% loan or 50% loan / 50% grant, the proposed funded service area must be in a rural area where 90% of the households do not have sufficient broadband access. To be eligible for a 100% grant, the proposed funded service area must be in a rural area where 100% of the households do not have sufficient broadband access.

Grant programs are funding sources that require diligent reporting

Eligibility



Application



Award

Benefits

- Typically no repayment
- Support from granting organization

Risks

- Ongoing reporting requirements
- Cost-sharing requirements

Several federal agencies have resources that can be used for broadband planning and research initiatives

HUD's *Community Development Block Grant Program* can be used for broadband deployment efforts in HUD supported housing programs

Housing & Urban Development (HUD)



EDA's *Economic Adjustment Assistance Program* can be used for broadband planning efforts as part of an economic development strategy

Economic Development Administration (EDA)



USDA's *ReConnect Rural Broadband Program* can be used for broadband infrastructure deployment efforts in rural communities

USDA Rural Utilities Service (RUS)



Before applying for funding, applicants can establish goals, examine multiple programs and develop a budget

Establish Goals

Determine concrete, measurable outcomes of your program and how the requested funding will be used

Think Critically

Consider each program component separately; the project may qualify for multiple funding opportunities

Count the Costs

Quantify costs and establish a reasonable budget along with detailed staff responsibilities for the project

Public-Private Partnerships (P3) can bring funding and expertise to a potential deployment project

Consider what your community hopes to gain from a partner:

- Do they fill a specific need for expertise?
- Can they help build project support by reaching new stakeholders?
- Do they have access to additional funding sources?

Identify potential partners that would increase or expand:



Communities can consider resources, capabilities and risk tolerance when evaluating P3 models

Partnership Models

- Private Sector-Led
- Government-Led, Private Sector-Supported
- Joint Ownership Model

- A commercial operator can build, own and operate the network
- Community institutions can offer planning, monetary and regulatory support

- A public entity can own the network
- Private partners construct, operate and/or maintain the network in exchange for financial or in-kind support

- An operator and the public enterprise jointly invest in the network and share capacity
- Network management can be determined by agreement

BroadbandUSA is available to help with broadband access and digital inclusion efforts

Request Technical Assistance:

- Email: broadbandusa@ntia.doc.gov
- Submit Technical Assistance form: <https://broadbandusa.ntia.doc.gov/ntia-common-content/how-we-can-help>
- Direct Phone: 202-482-2048

Resources:

- Website: <https://broadbandusa.ntia.doc.gov/>

Our Contact Information:

Don Williams- DWilliams@ntia.doc.gov

Scott Woods - SWoods@ntia.doc.gov



Questions?