Stronger Economies Together

Doing Better Together

Broadband: Session 3

SET COACHES' GUIDE

Broadband: Session 3

DEVELOPING A COMMUNITY BROADBAND ROADMAP

OVERVIEW

Purpose: This slide deck is to highlight the importance of the planning process to achieve communities' Broadband vision.

Estimated Time to Complete: 3 hours

Materials Needed: None

SLIDE 1

INSTRUCTIONS

Have this slide up when participants enter the room.

Thank you for joining us today for our third SET workshop entitled: Developing a Community Broadband Roadmap. The session today will include some of the guidance that we have found particularly useful offer to as well as best practices on building a broadband infrastructure business plan.

SLIDE: 1

TIME: 1 MINUTE

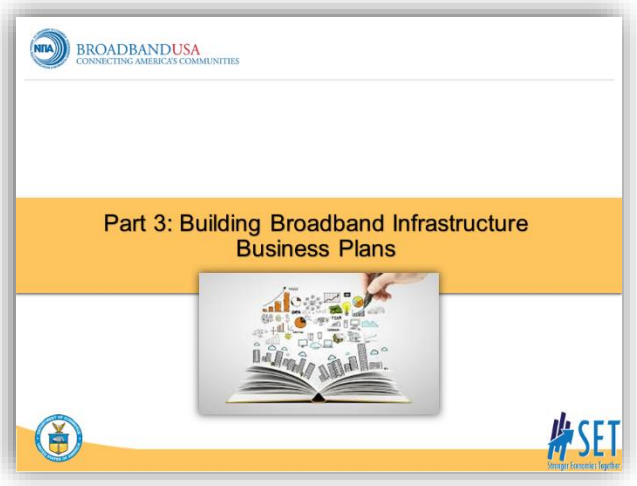
SUPPLIES: NONE

HANDOUTS: NONE

SLIDE 2

INSTRUCTIONS

The business plans for infrastructure projects should include implementation and financial details. The necessary information depends on whether the community is encouraging local providers to expand services, using services from existing providers or constructing and/or operating a new network with partners. The details of the plan also depend on who will benefit from the project, for example — residences, local or tribal government sites, public safety, community anchor institutions, businesses and economic development districts and third parties purchasing wholesale services. This session will take you step by step though building a business plan.



SLIDE: 2

TIME: 1 MINUTE

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SLIDE 3

INSTRUCTIONS

In Part 1 we discussed planning. The outputs from the communities planning activities should inform their selection of a specific broadband implementation strategy and business plan. In Part II of this series, we discussed how to build partnerships that help your community be successful.

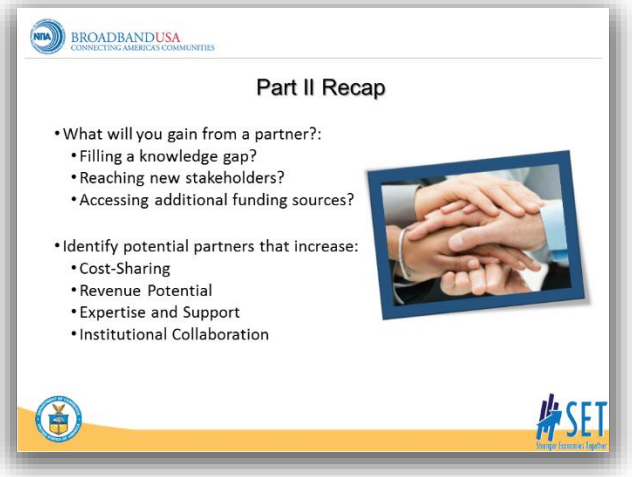
Consider what your community hopes to gain from a partner:

- Would they fill a knowledge gap?
- Could 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:

- Cost-Sharing
- Revenue Potential
- Expertise and Support
- Institutional Collaboration

Partners can be key to expanding the availability and adoption of robust, high quality, affordable broadband services.



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TIME: 2 MINUTES

SUPPLIES: NONE

HANDOUTS: NONE

SLIDE 4

INSTRUCTIONS

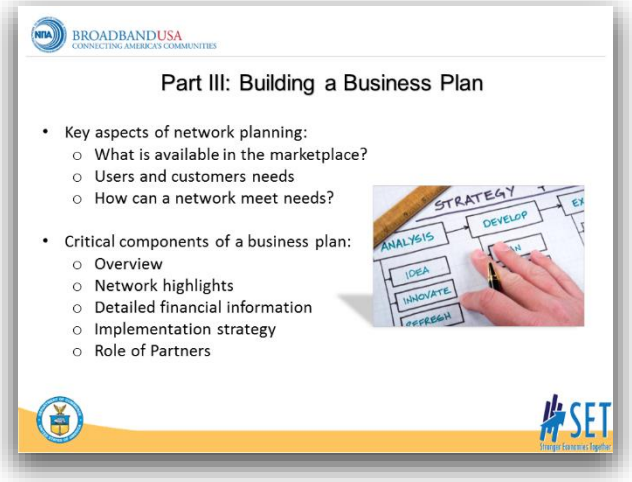
In part 3, we will discuss how to build a broadband infrastructure business plan. Implementing broadband network infrastructure — alone or with partners — is a major financial investment requiring significant expertise, staff time and resources. Communities should draft preliminary business plans (and financial pro forma forecast models) to evaluate the financial and operational implications of each option under consideration.

Consider key aspects of network planning:

- What is available in the marketplace? Ask 'what is the marketplace in my community?' Institutions, businesses, residential, all of the above?
- What do users and customers need? Don't assume you know. Do the research.
- How can a network meet those needs and what type of network?

Understand the critical components of a successful business plan:

- Overview of the project and its objectives
- Network build, operations, marketing and maintenance highlights
- Detailed financial information, including the economic return, including forecasts of expenses and income, revenue, potential cost savings and/or other factors.
- Implementation strategy
- Role of Partners



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TIME: 5 MINTUES

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HANDOUTS: NONE

SLIDE 5

INSTRUCTIONS

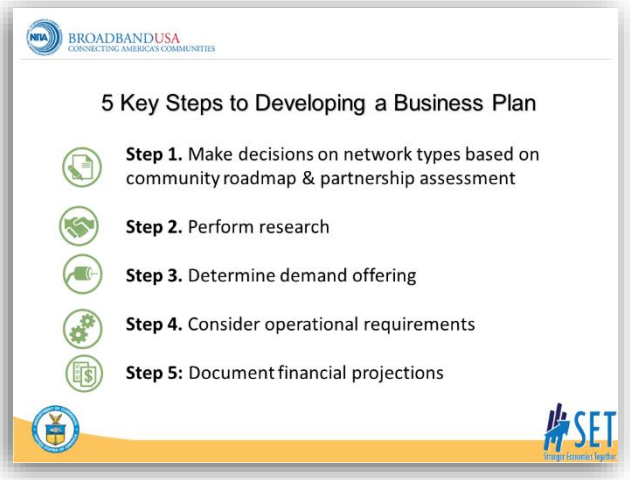
Each community can work through 5 key steps to develop a successful business plan.

1. Make decisions about your network project based on community roadmap and partnership assessment- including organizational structure.
2. Perform research on resources, target market, providers, and gaps - including an asset inventory.
3. Determine demand for target users and program offering. Just internet or triple play? And to who?
4. Consider operational and marketing requirements and available resources. Each type of network will have differing requirements.
5. Document funding financial projections. Remember your projections are only as realistic as your assumptions and the assumptions need to be based on research.

At this point, the planning process will have identified the technologies for the project, primary partners, options for organizational structures and possible financial plans. Now it is important to document how to finance and implement the specific projects through a business plan.

Communities need to determine:

- Whether their plans can leverage existing projects or facilities.
- How they plan to implement and operate the projects.
- How they plan to finance the project and how to make financing sustainable.
- The scale and scope of the project plans, which include operational and financial models. May differ significantly depending on the types of projects and communities involved. Since circumstances change, the information in the business plan will need to be continually updated.



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TIME: 10 MINTUES

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SLIDE 6

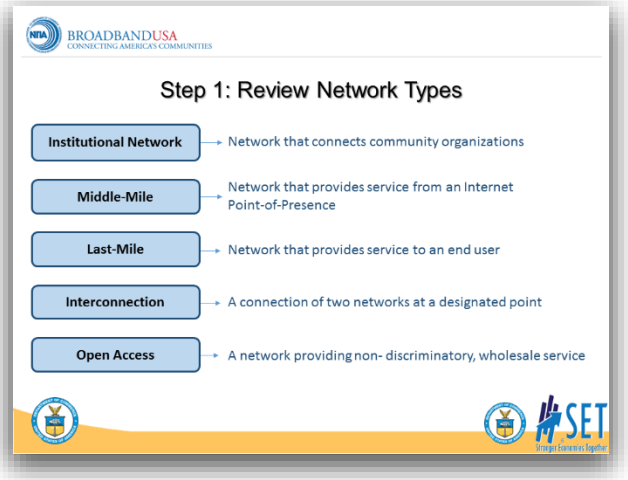
INSTRUCTIONS

Communities should speak with other stakeholders – including private broadband service providers – to discover common interests and to lay the ground work for potential partnerships and to assess what network type is needed.

The following are the types of networks that can guide the project's planning and implementation.

- **Institutional network** – Network that connects community organizations (e.g., schools, libraries, local and tribal governments, hospitals). These are often owned and operated by a local government.
- **Middle-mile** – Network that provides broadband service from an Internet Point-of-Presence to one or more networks. The connection between a local network, also called a "last mile" connection, and the backbone Internet network.
- **Last-mile** – Network that provides service to an end user (e.g., home, business of CAI).
- **Interconnection** – The linking of numerous telecommunications networks to exchange user traffic. A connection of two networks at a designated point providing access to a variety of customers or end-users.
- **Open access** – Networks that offer wholesale access to network infrastructure or services provided on fair and reasonable terms with some degree of transparency and nondiscrimination. A network providing infrastructure that provides non-discriminatory, wholesale service.

Service offerings and whether they are offered to institutions-only and businesses-only or residences will largely determine the type of network. Communities choose an implementation strategy based on their strengths, weaknesses and capabilities, and those of their potential partners, along with the market demand and needs of their end users. Communities should evaluate the degree to which they want to take on a significant role in a complex broadband infrastructure project and how each of the network types described above can best help it realize its goals.



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TIME: 15 MINUTES

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SLIDE 7

INSTRUCTIONS

Based on potential uses, users or customers, the business plan identifies the services that may be offered by either the wholesale and/or retail broadband network. The work associated in developing the service plan varies depending on the scale and the market for the broadband initiative. Although the exact service to be offered can be refined further in the implementation process, the business plan should reflect the grouping of services that are targeted to different types of customers and a broad sketch of the price structure.

SLIDE: 7

TIME: 15 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

Residential

- Residents of a defined community or location. These will include home businesses which may require a higher level of service.
- Multi-family residences, MDUs

Institutions

- Schools (public K-12,community colleges, technical schools, higher education) and libraries
- Hospitals and healthcare sites
- Local and tribal governments including remote facilities
- Community and senior centers

Smart Cities

- Smart grids (transportation, street lighting)
- Big data, public Wi-Fi
- Health, water & environment

Businesses

- Business license data by industry code (manufacturing, technology, media, medical, banking, entertainment, production, incubators, etc.)
- Land use plan and circulation element (systematic upgrade and ongoing maintenance of a transportation system)
- Redevelopment data

Utilities

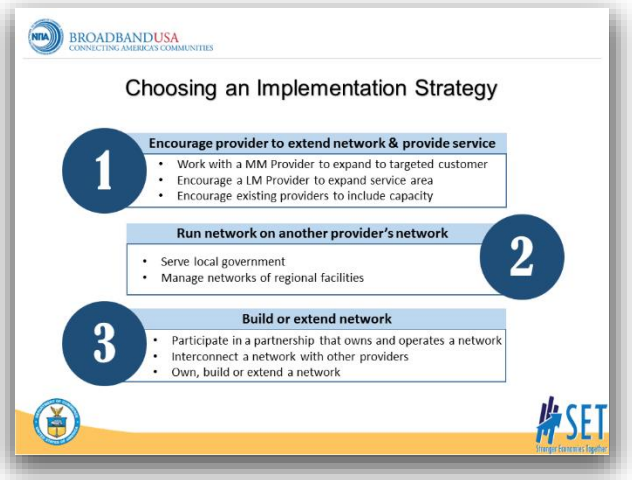
Communities should always plan for the future by adding fiber and conduit that exceeds the plan's initial estimates. The expense of adding fiber and conduit during the initial construction phase will be far less than adding it later. Adding structural supports on towers during construction will open up future revenue opportunities from other network operators that are willing to lease tower space for their equipment. Broadband networks and innovative ideas to use them are always growing. The network design should accommodate locations where future development may occur, such as proposed sites for industrial parks, government offices, healthcare facilities and other community buildings.

Ways to identify potential users, use or customers:

- Speaking engagements
- Surveys
- Working with government and community boards of directors
- One-on-one meetings
- Public forums, meetings, and workshops

SLIDE 8

INSTRUCTIONS



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TIME: 15 MINUTES

SUPPLIES: NONE

HANDOUTS: NONE

A community can choose an implementation strategy based on strengths, weaknesses, and capabilities and those of their potential partners, along with the market demand and needs of their end users.

Option 1: Find out who currently provides high-speed Internet service to local residents and businesses. It may be more than the cable company. Are discounted and/or low cost subscriptions offered to low-income residents?

- Digital literacy and public computing: Who offers digital skills classes? Where are public computer centers located? Is training targeted to particular segments of the community (e.g. seniors, immigrants)?
- Internet adoption and use: Is public Wi-Fi available? Do any organizations offer discounted or refurbished computers to residents in need?

Typically, integrating the demand side for broadband is important to encourage other broadband providers to increase supply by building or expanding their networks. Communities have several ways to incentivize this outcome, such as leveraging their buying power by aggregating the broadband demand of several government departments. In this scenario, all departments would collectively form one long-term customer contract for the broadband network. Governments can also take the initiative to assess broadband demand from local institutions in addition to their own departments to help broadband providers

Option 2: VPN? Leased lines? Strands of fiber? Dark fiber?
Communities can buy services from a broadband provider, freeing them from the responsibility of managing equipment, networks or other implementation duties. Others may choose to run virtual networks over another provider's broadband infrastructure. By doing so, they can serve local and tribal government facilities and other CAIs as well as manage networks of regional facilities via a middle-mile network. If a local or tribal government operates its own virtual network, it is usually responsible for the equipment, operations and management of the virtual network.

Option 3: This broadband network implementation strategy is used when communities seek to:

- Participate in a partnership that owns and operates a broadband network.
- Interconnect a network with those of other broadband providers.
- Own, build or extend its own broadband network.
- Own, build or extend a broadband network but have it operated and/or services provided by one or more separate entities.

Communities need to decide what level of involvement they have capacity for:
Option 1: requires little hands-on implementation responsibilities but calls for significant political action to update and streamline regulatory requirements
Option 2: requires a local or tribal government to have the financial resources to enter into a contract with a broadband service provider
Option 3: requires significant resources to build infrastructure and sustained oversight and staff effort to ensure network engineering, construction, marketing, customer support and management tasks are being carried out

SLIDE 9

INSTRUCTIONS

SLIDE: 9

TIME: 15 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

Step 2: Communities can research the customers, offerings and the market.

Factors for consideration:

Demographic data (age, education, employment, income)

- Housing trends – location of new developments, MDUs, rental or home ownership
- Employment – Occupation profiles, unemployment, home prices direction, location of new business parks, revitalization plans

Resources

- Government or partner-owned assets – Does the local government have its own inward looking institutional network (INET)? Is the INET owned by the government? Does the INET serve schools or libraries? Has the government replaced T1 leased lines with fiver or internal communications?

Potential Community Uses

- Economic development – Has the local government created a Tax Increment Financing (TIF) district (public financing method used as a subsidy for infrastructure based on improving property values)? Has the local government supported a Business Improvement District (BID) (business pay an additional tax in order to fund projects within the districts boundaries)?

Market – current product offerings and pricing, gaps in service offerings and infrastructure

Barriers to Entry – Elements that might hinder broadband service deployment. Look at what the local community can offer or make easier, such as, one stop permitting or time certain review for ROW use or making assets available.

Plots of local land suitable for node for NOC locations; inside space of government buildings for hub locations. This can be used to attract private investment or the community can put in conduit or fiber itself as the cost can be greatly reduced.

Is a dig once policy in effect?

- Planned street resurfacing – when and where?
- Planned sidewalk repairs – when and where?
- Planned underground public works projects – when and where?
- Scheduled underground permits to contractors and telecommunications companies

SLIDE 10

INSTRUCTIONS

When assessing a market, a community can also consider the market's operational elements.

Industry trends - Have improvement to existing networks been made, such as, upgrades or rebuilds and if not, what would they look like? Deeper fiber into neighborhoods, added backhaul capacity, more towers, FTTH?

- Nationwide trends, research what similar communities to yours have been doing to improve broadband
- Use of fiber-to-the-premise or fiber to community organizations
- Is your community looking at what is needed to be a Smart City?

Target Customer

- Residences
- Businesses
- Community institutions
- Smart Cities projects

Current/Future Demand

- Estimated 3-5 year subscribership rates
- Factors leading to market fluctuation
- Need more speed and capacity

Provider Analysis

- Service offerings
- Reliability of incumbent service
- Incumbent market share
- Current customer base

Continued consideration of the markets operational elements as they might affect the financial health of the broadband project in future years.

SLIDE: 10

TIME: 10 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

SLIDE 11

INSTRUCTIONS

Step 3: A community can determine future service offerings based on customer and user needs.

Identifying demand allows project leaders to:

- Select service offerings, internet only, 3 play dark fiber etc.
- Determine pricing structure
- Forecast revenue and expenses and or cost savings and goal achievement

Forecasting future offerings:

- Gives a forecast for the community, partners and funders
- Demonstrates growth potential
- Can illustrate risk thresholds

Based on this analysis and the analysis of the markets operational elements, communities should consider:

- How to leverage and expand existing networks and services
- The service package and pricing to meet the needs of the local market and whether services will provide wholesale or retail and how to aggregate demand by groups of users.

As part of this plan communities should be ready to:

- Develop top notch customer outreach and marketing plans, which are essential to any successful service launch
- Develop information about services and pricing
- Develop packages that scale as customer or user needs expand
- Work with other service providers to expand offerings (cloud services, building control systems, video)

SLIDE: 11

TIME: 15 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

SLIDE 12

INSTRUCTIONS

Communities can consider customers and benefits to choose service and network options.

New construction – Is it better to expand an existing network or build a new network?

Potential benefits - What benefits does the new project provide to your community?

Solution orientation - Are there any current problems that a network will alleviate?

Customer base - What is the customer base size? Who will use the service?

Product offerings - What are the services and offerings? What differentiates them?

Partners - Do partners bring a complementary skillset to the project?

Funding - What financing sources are available to your project?

SLIDE: 12

TIME: 5 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

SLIDE 13

INSTRUCTIONS

Communities can base their pricing structure on demand and specific service offerings. One thing is needed above all else. The network must be sustainable over time.

Pricing can be specific to service offering type, primarily based on speed

- Cost-based: Price based on costs and estimated total return

Communities can also base price on community preferences

- Value-based: Price based on the value customers or users place on a product or its features

Communities can consider market prices when deciding on pricing structure

- Penetration: Services priced competitively initially and overtime

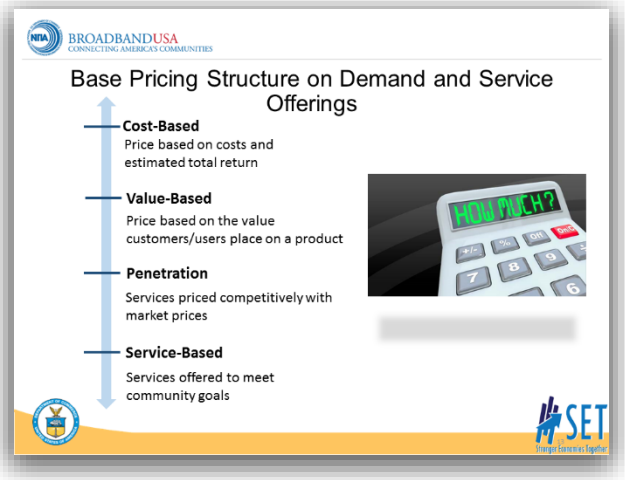
Communities can provide services that meet community goals

- Service-based: Services offered to meet community goals

Questions to ask when determine the value driver and set prices

- What underlying factors drive the customer or user to seek a particular service?
- What motivates their purchase decision?
- How does the broadband service offer meet this customer need?

Decisions on the mix of services and capacity to be offered are directly related to developing the capital and operating cost estimates to build the network and configure it to deliver the service.



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TIME: 10 MINTUES

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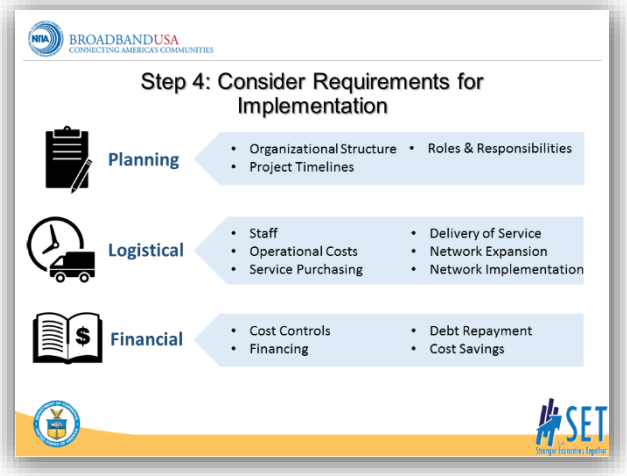
SLIDE 14

INSTRUCTIONS



Step 4: A community can consider the operational requirements for project implementation.

<u>Key components and operational requirements:</u>

Planning –

- Organizational structure → project timeline
- Project timelines → roles and responsibilities

Logistical –

- Staff → delivery of service
- Operational costs → network expansion
- Service purchasing → network implementation

Logistics is an important consideration. Communities or their project partners may have staff with the expertise to implement a broadband network. However, limited access to local personnel and the scale and scope of the broadband construction project often cause many communities to rely on outside resources (consultants or other contractors) to take responsibility for the following activities:

- Network design, engineering and construction oversight
- Obtaining environmental, historic preservation, and cultural approvals prior to construction
- Obtaining the required rights-of-way permits, approvals and pole attachment licenses prior to network construction
- Constructing one or more portions of the network
- Ongoing network operations
- Customer service
- Maintenance
- Some or all operations
- Marketing and sales

Financial –

- Cost controls → debt repayment
- Financing → cost savings

Financial plans should be updated continually during the implementation process to ensure that the project management team is working with timely data.

SLIDE: 14

TIME: 10 MINUTES

SUPPLIES: NONE

HANDOUTS: NONE

SLIDE 15

INSTRUCTIONS

Step 5: A community can communicate anticipated project financial information using pro formas. Assumptions on take rate and density drive the numbers. Sensitivity analyses can help identify risks and return variables. Know the worst case and what you need to do ahead of time to prevent it from happening. Borrow more initially, added marketing expenses and mange customer expectations.

Pro forma financial statements help communities, funders, and partners understand overall project viability

Communities can include pro formas with:

- Detailed costs and expenses
- Financial flows
- Contributions of partners (resources, assets, expertise)
- Potential cost savings or goal achievement

SLIDE: 15

TIME: 15 MINTUES

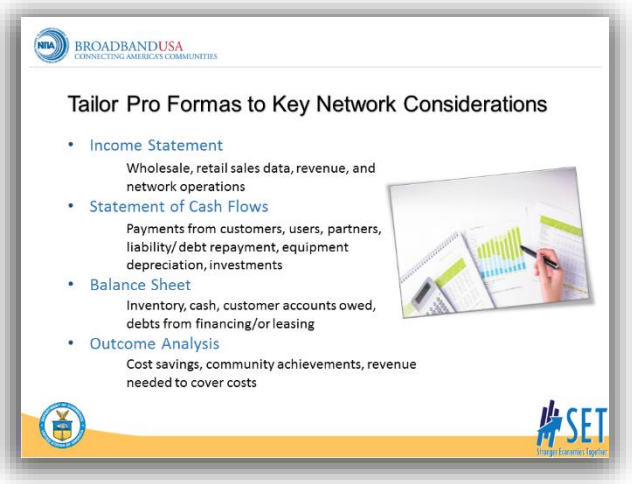
SUPPLIES: NONE

HANDOUTS: NONE

Whether revenues come into a broadband infrastructure project from a grant, a line item in a local or tribal government's budget, a partner or paying customers, the operation must stabilize its support, generate its own income streams and pursue different financial strategies to keep it going for the long term. In general, the objective is for broadband network operations to generate baseline revenue that does not fluctuate wildly year to year. Smooth, gradual growth in the income section of the business plan's financial pro forma is an indicator that the initiative's revenue is stable. Forecasting income from a broadband network must take into account the type of services to be offered, customer demand/willingness to pay for the service, local or tribal government and CAI users, and the presence of alternative sources of broadband service (i.e., competitors). The forecast should be based on the size of the potential market for broadband services and the percentage of this market that the network could capture after deployment. The revenue estimates in the financial statements will be based on the services offered to customers, the pricing structure for the services, the value of the service, and whether other alternatives exist in the community or region for the same service. If other broadband providers are offering similar wholesale or retail service, the estimates in the business plan should reflect what other players are offering, what they deliver, whether customers are satisfied, how sensitive customers are to price and how willing prospective customers are to use the new broadband service. New entrants should expect the other providers to make service and price modifications.

SLIDE 16

INSTRUCTIONS



For these types of projects, the plan should include pro forma forecast models. A pro forma financial statement is a collection of financial statements that are based on certain assumptions and projections. An organization prepares pro forma financial statements in an effort to provide a "big picture" view of its overall financial situation. Communities can tailor project pro formas to capture key broadband network considerations. Communities must define the assumptions they use in preparing these statements and provide the assumptions as part of the pro forma package.

SLIDE: 16

TIME: 15 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

Income Statement – Wholesale, retail sales data, revenue

- Operations for plant and administration, maintenance costs and inflation

Statement of cash flows - Payments from customers, users, partners, liability/ debt repayment, equipment depreciation, investments

Balance sheets - Equipment inventory, cash, customer accounts owed, debts from financing/or leasing the network or services

Outcome analysis – IRR, NPV, Cost savings, community achievements, and revenue needed to cover fixed/variable costs and expenses

- Performing a sensitivity analysis demonstrates the financial impact of different events and scenarios. Changing the pro formas' assumption shows management how cost overruns or revenue shortfalls impact different portions of the plan

The pro formas should not incorporate overly optimistic assumptions. Reasonable numbers should be used to forecast revenue, operations and capital expenditures for the total life of the project.

SLIDE 17

INSTRUCTIONS

Calculating expected revenue, cost savings and expenses allows sustainability evaluations.

Revenue and expense information shows a plan to achieve long-term sustainability. Communities, their partners and funders are interested in:

- Estimated return on investment and cost savings
- Mitigation plan for risk factors
- Plans to maintain and upgrade the network and or services overtime

Revenue or costs savings

- Customer or user base
- Price or service structure

Expenses

- operational costs
- network maintenance/replacement
- equipment/construction costs
- marketing and operational costs

To gauge long-term sustainability, communities should consider the network's initial and future upgrade capital costs, operating expenses and the logistical and political complexities of launching residential broadband service. The business plan should reflect on-the-ground realities and risks, such as lower-than-expected market penetration or staffing shortfalls. The plan should be based on the competitive environment, community needs and consumer preferences.

SLIDE: 17

TIME: 10 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

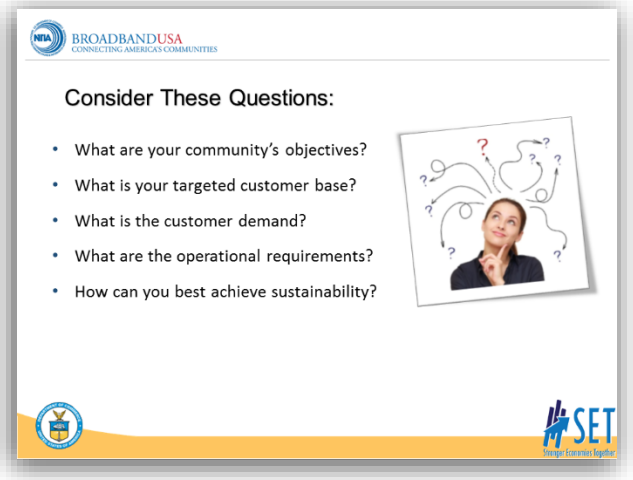
SLIDE 18

INSTRUCTIONS

As communities work through the five steps, they can consider a series of crucial questions

- What are your community's objectives?
- What is your targeted customer base for a broadband project?
- What is the customer demand?
- What are the community's operational requirements?
- How can you best meet your project's financial and long-term sustainability?

Community broadband roadmaps should have a large, comprehensive vision of what it takes to reap the economic and social benefits of broadband expansion. Every community will have different needs, resources, technology, service, financing and partnership options, so each will answer the these questions differently.



SLIDE: 18

TIME: 2 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

SLIDE 19

INSTRUCTIONS

Allow participants to ask questions.

SLIDE: 19

TIME: 5 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE

SLIDE 20

INSTRUCTIONS

Include any additional contact information.

Additional resource on broadband partnerships:

http://www2.ntia.doc.gov/files/powerbroadband_070517.pdf

SLIDE: 20

TIME: 2 MINTUES

SUPPLIES: NONE

HANDOUTS: NONE