PLANNING FOR BROADBAND NETWORKS

American Planning Association
Technology Division
Making Great Communities Happen

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TOP 10 REASONS PLANNERS SHOULD PLAN FOR BROADBAND

1. Planners take a holistic approach to make sure that systems are working together to achieve community goals.

2. Promote partnerships between broadband networks and other projects.

3. Find cost efficiencies in coordinating with other public improvements.

4. Broadband is critical for smart city technologies.

5. Broadband is critical for economic and global competiveness.

6. Broadband is a tool to achieve planning goals such as downtown revitalization, smart growth and conservation.

7. Technology will help planners creatively address solutions in the 21st century.

8. Planners need to understand the infrastructure that supports innovation.

9. Constituents are demanding broadband services.

10. Planners have an obligation to make sure that all segments of the population have equitable service.

SESSION OBJECTIVES

- Understand broadband basics and trends
- Review broadband planning process
- Evaluate broadband deployment models

FCC BROADBAND DEPLOYMENT REPORT - 2018

- Fixed Services

25 mbps download/3 mbps upload

- Mobile Wireless

10 mbps download/3mbps upload

- Schools (Short Term goal)

100 mbps per 1000 users

Source: https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2018-broadband-deployment-report

FCC NATIONAL BROADBAND PLAN - 2010

- Residential Goal

100 mbps upload/50 mbps download

- Anchor Institutions Goal

1 Gigabit

https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf

BROADBAND STATS BY GEOGRAPHY

	Fixed Service 25/3 mbps	Mobile Service 10/3 mbps	Both Fixed & Wireless	Fixed Service 50/10 mbps
Urban	97.9%	90.5%	89.0%	97.3%
Rural	69.3%	70.1%	54.0%	64.0%
Tribal	64.6%	63.7%	50.0%	58.3%

Source: https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2018-broadband-deployment-report

BROADBAND STATS BY DEMOGRAPHIC GROUPS

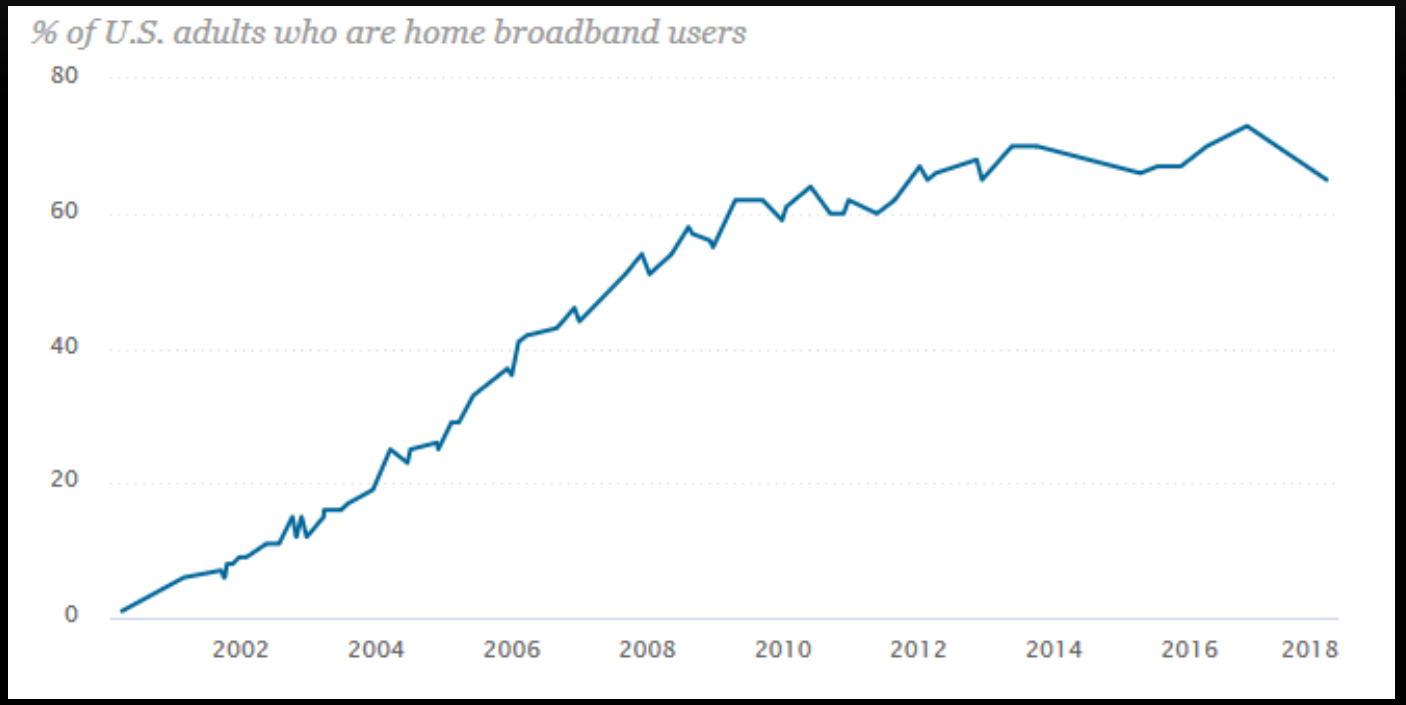
	Fixed Service 25/3 mbps	Mobile Service 10/3 mbps
High Income Counties	84.1%	97.7%
Low Income Counties	58.2%	95.4%
High Pop. Density Counties	93.8%	99.9%
Low Pop. Density Counties	55.4%	92.4%

Source: https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2018-broadband-deployment-report

BROADBAND DEPLOYMENT TRENDS

- Smart Phone Data Usage: 2012 = 1 gigabit per month
  2016 = 4 gigabit per month
- 18% of the population has access to 1 Gigabit service
- Public comments that the upload speeds need to be increased.
- Wireless is not a full substitute for fixed service. Must have both.
- Broadband adoption lags behind broadband availability
- Broadband cost in U.S. ranks in the middle of industrialized countries

HOME INTERNET CONNECTIONS



http://www.pewinternet.org/fact-sheet/internet-broadband/

BROADBAND PLAN OBJECTIVES

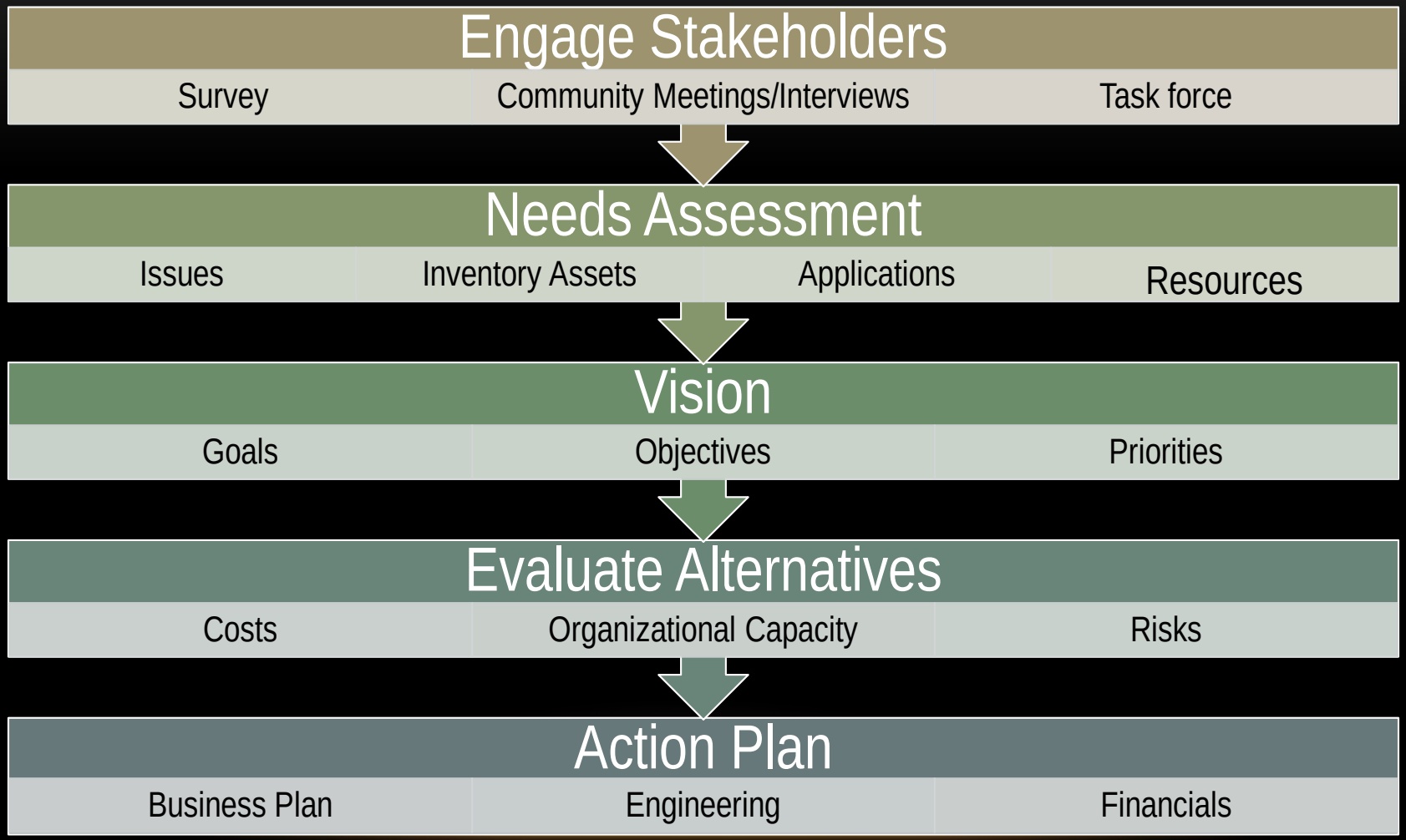
Educate

Build Support

Vision

Action Plan

PLANNING PROCESS



WHO ARE BROADBAND STAKEHOLDERS?

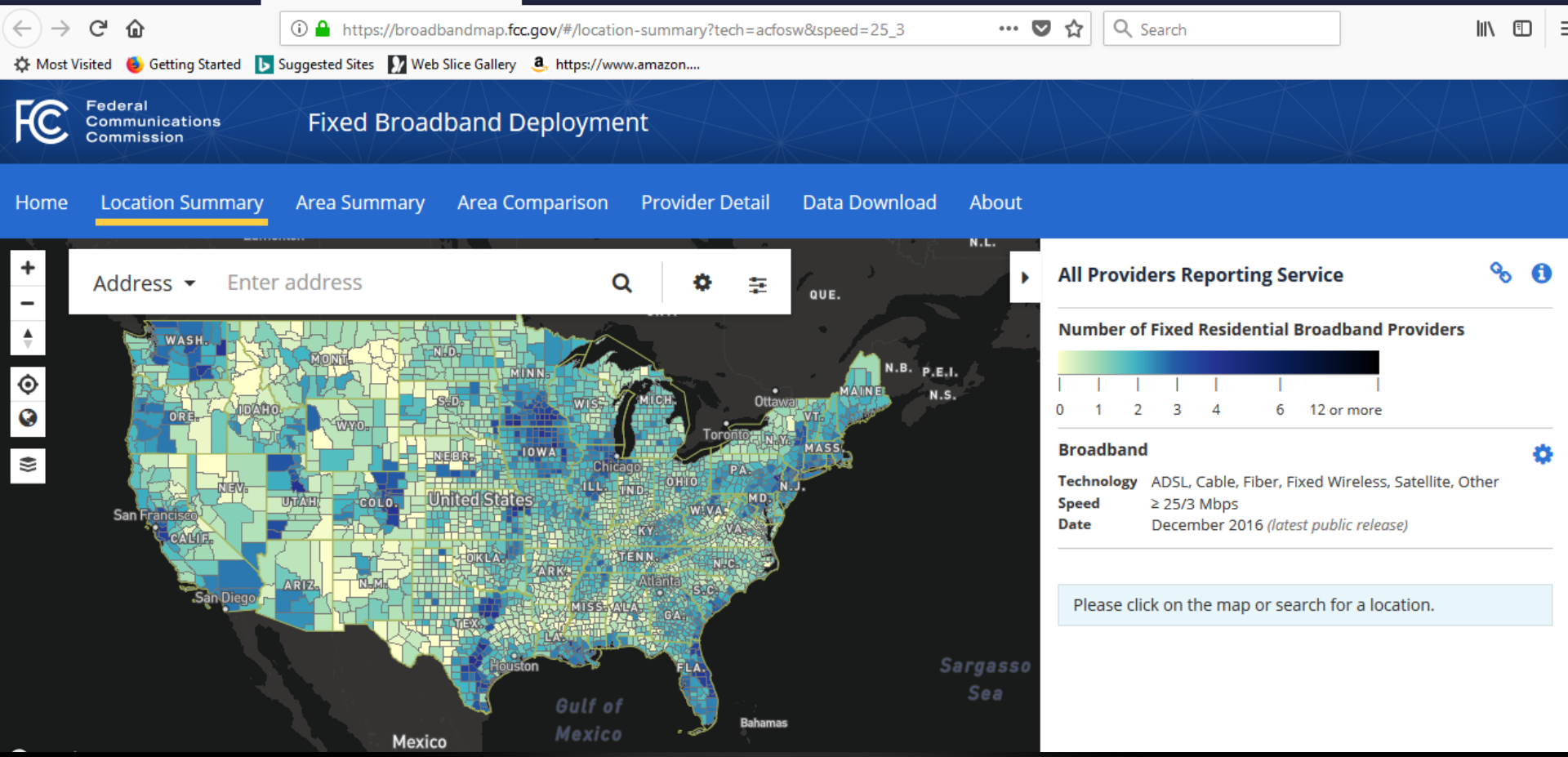
EVERYONE IS A STAKEHOLDER

- Broadband Providers
- City, county, regional governments
- Economic Development - Business
- Education (Local schools & higher ed)
- Health Care
- Libraries – community organizations
- Public Safety
- Technology Companies & Professionals
- Large Employers – Business Clusters
- Downtown
- Developers – Realtors
- Utilities (Water, Sewer, Power, ….)

NEEDS ASSESSMENT

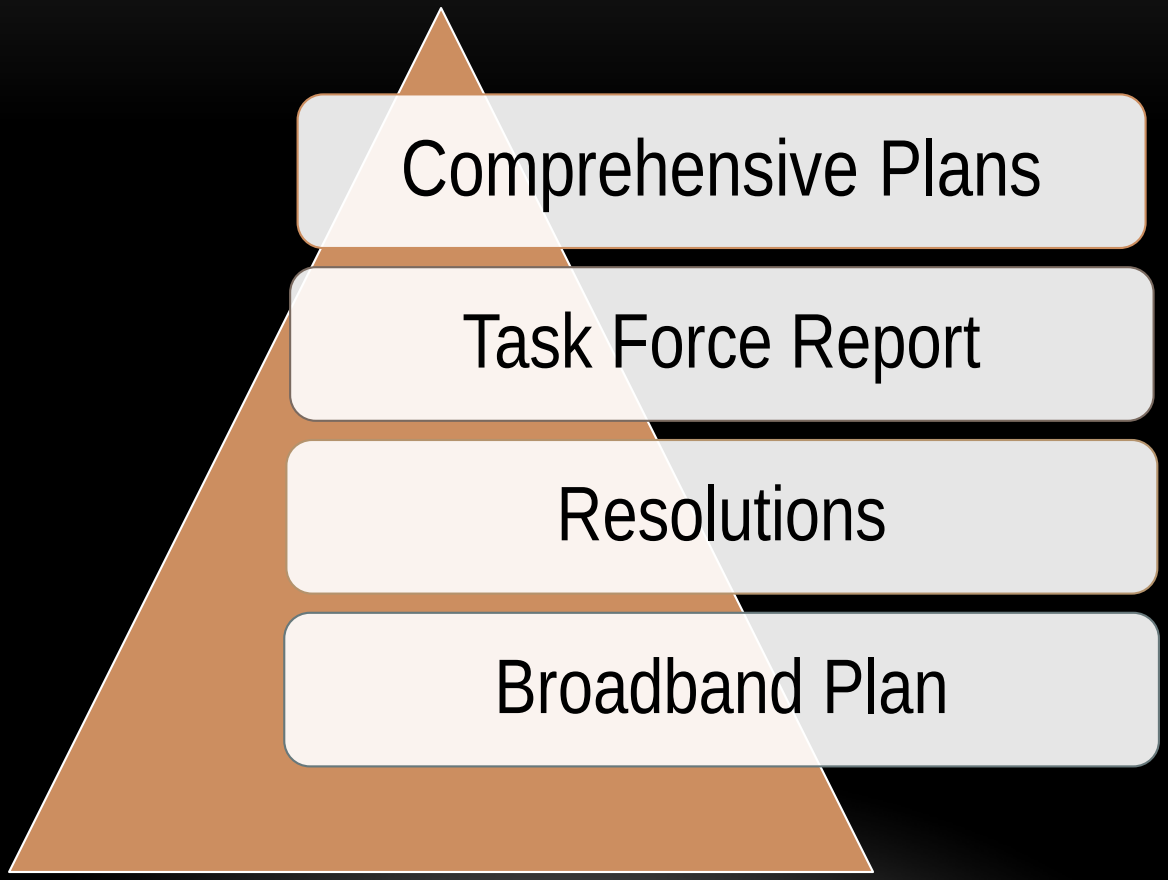
- **Connectivity –** Access to reliable broadband
- **Capacity –** Bandwidth for future growth
- **Cost –** Affordable – Compare with other areas
- **Choice –** Multiple Providers - Mobility – Redundancy
- **Community –** Anchor Inst. & Digital Divide

FCC – 477 DATA



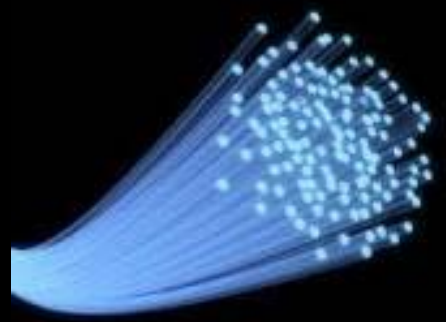
https://broadbandmap.fcc.gov/#/location-summary?tech=acfosw&speed=25_3

VISION – GOALS – POLICY FRAMEWORK



BROADBAND GOALS

- Affordable & reliable broadband to homes, business and anchor institutions
- Address digital divide issues
- Use broadband technologies to promote sustainability
- Expand broadband infrastructure
- Coordinate broadband plans with other planning processes
- Address cybersecurity, privacy, user friendly applications
- Promote telework/telecommuting
- Use public private partnerships to deploy broadband



ONE SIZE DOES NOT FIT ALL

BUSINESS MODELS

Private Provider

Municipal Utility

Community Open Access Networks

PRIVATE PROVIDER MODEL

- Private provider owns and operates networks.
- End users contract or purchase service from provider
- Maximize Return on Investment (ROI)

PRIVATE PROVIDER STRATEGIES

Reduce Cost

- Dig Once – Joint Trenching Policies
- Reduce fees
- Reduce regulatory barriers
- Lease towers, conduits
- Co-Location sites
- Share costs for studies/engineering
- Grants for construction
- Low-interest loans

Enhance Revenue

- Aggregate Demand
- Financial Incentives
- Increase customer base – Digital Literacy
- Marketing
- Long – Term contracts

https://www.fcc.gov/sites/default/files/bdac-regulatorybarriers-01232018.pdf

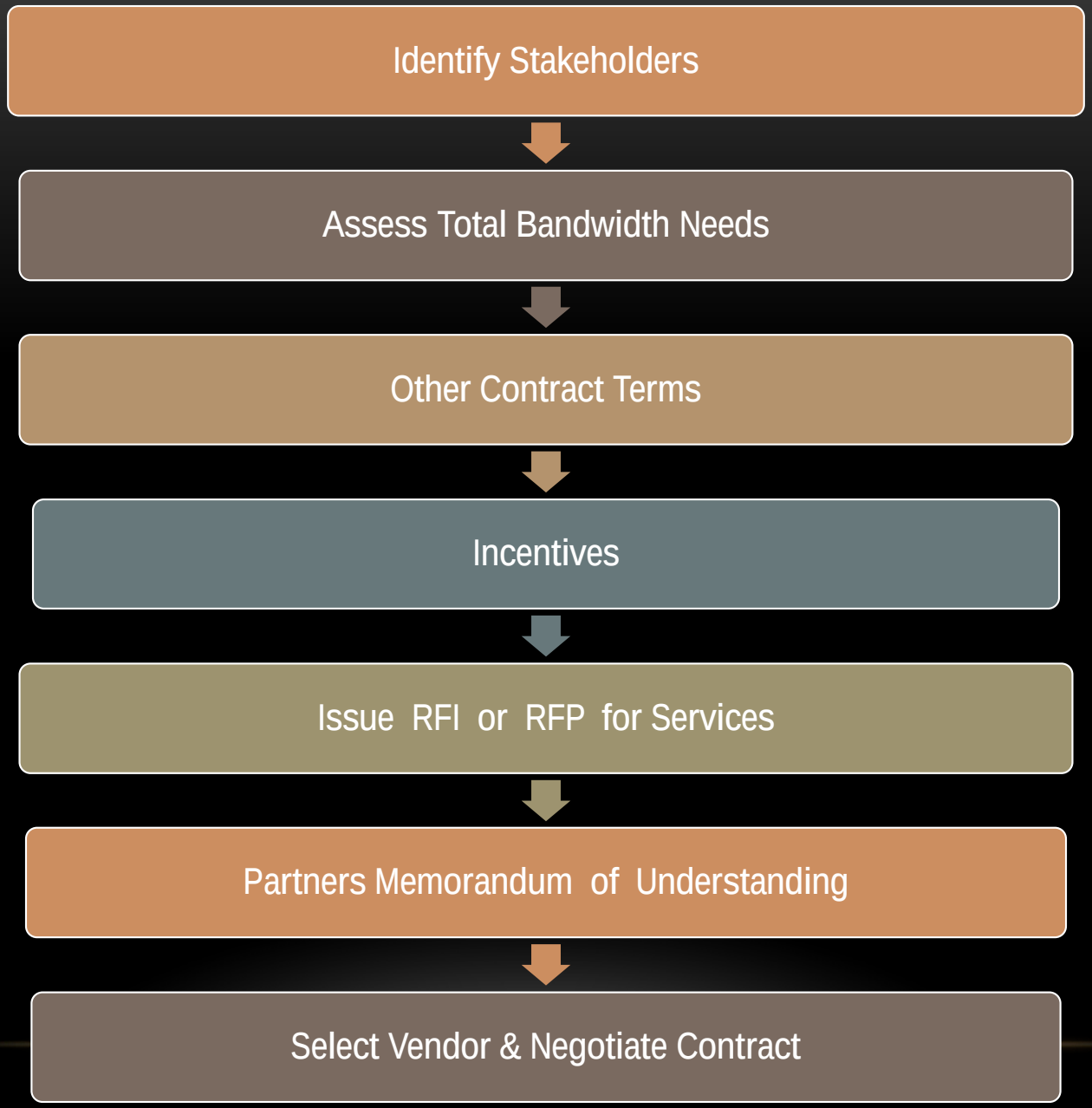
CASE STUDY - RFI

- 7,000 Population
- Before service was 1.5 to 3 mbps DSL
- Incumbent was Frontier Telephone
- Issued RFI – Farmer's Mutual Telephone Coop responded
- County & FMTC shared cost of feasibility study in 2010
- Fiber network completed in 2013 funded thru grants (BTOP) & low interest loan from the County

AGGREGATE DEMAND MODEL

Leverages the collective purchasing power of its participants to enable the purchase of advanced network services at a lower cost. Work with anchor tenants.

(AKA – Commodity Internet Purchasing)


Identify Stakeholders
Assess Total Bandwidth Needs
Other Contract Terms
Incentives
Issue RFI or RFP for Services
Partners Memorandum of Understanding
Select Vendor & Negotiate Contract

MUNICIPAL UTILITY MODEL

- Municipal utility owns and operates networks.
- End users purchase service directly from utility
- ROI – May be longer pay-off
- Cost savings to municipality

MUNICIPAL UTILITY MODEL

- Multiple funding sources
  - User fees
  - Revenue Bonds/General Obligation Bonds
  - TIF – SIDs
  - Grants
  - Existing telecom budget

- Public Benefit
  - Public Safety
  - Economic Development
  - Digital Divide
  - Cost Efficiencies
  - Smart City Technology (Smart Grid, smart water, smart transportation ….)

CASE STUDY – CHATANOOGA, TN

Chattanooga? As in, the Choo-Choo?

Why did we do it? In Chattanooga, we have a legacy of taking bold steps that benefit our community. When Volkswagen announced Chattanooga as its headquarters for North American manufacturing, and Amazon.com chose our city for their new distribution centers, it was a nice confirmation that we're on the right track.

But we're just getting started. Because everything we create - from infrastructure to opportunity - we build of, by and for our community.

And we are looking for people to join us. We're open for business.

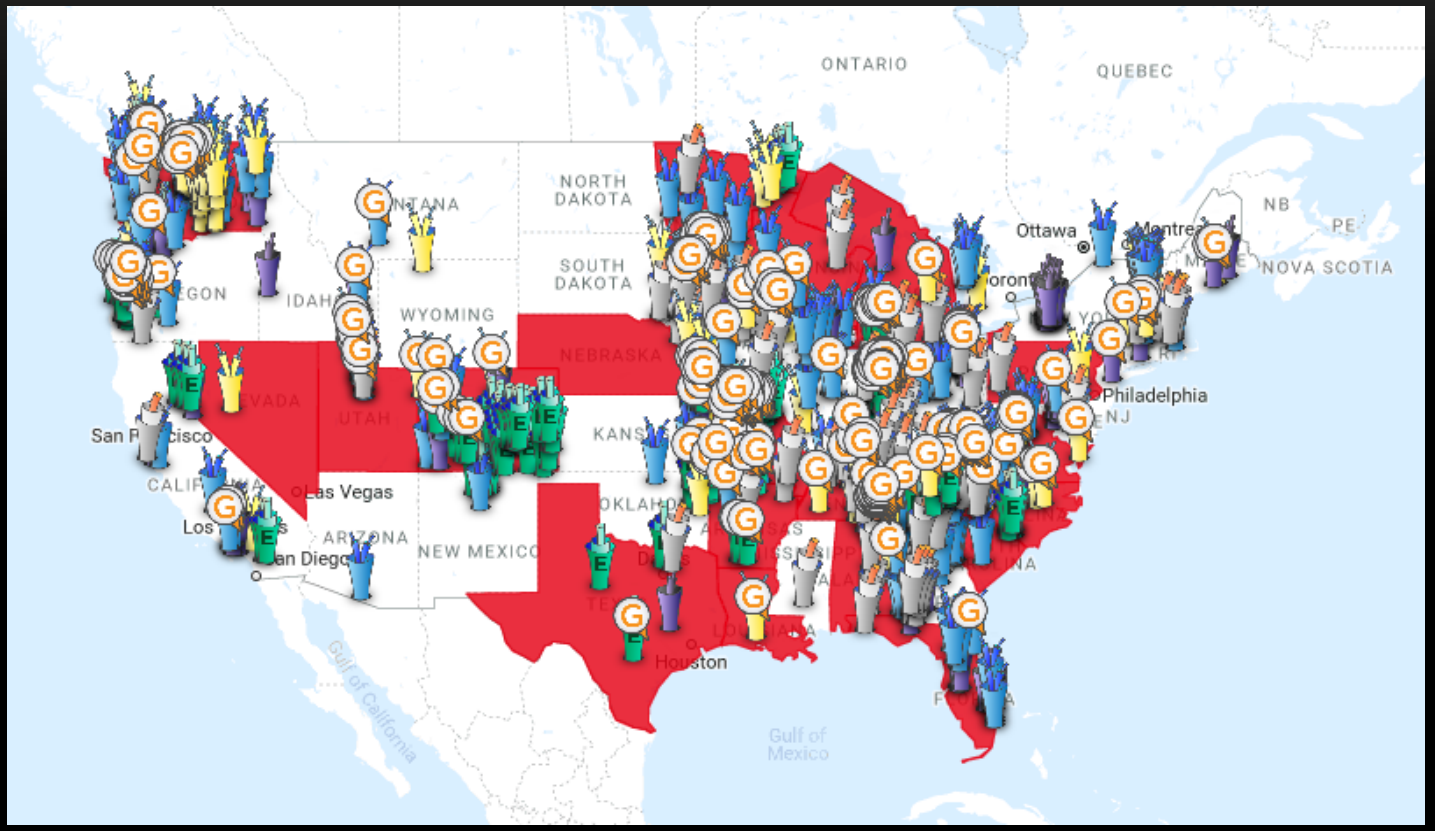
100% Fiber turns Possibilities into Potential.

Chattanooga's community-owned electric utility EPB is installing a 100% fiber to the premises network. Built to run America's first true Smart Grid and offer residential high speed Internet, video and telephone services, the network was also built to empower our community in new ways.

Because bandwidth is no problem, Chattanooga's Fiber Optic network enables upload and download speeds 200 times faster than the current national average, and 10 times faster than the FCC's National Broadband Plan (a decade ahead of schedule).

Make a Smart Move to EPB Fiber

MUNICIPAL UTILITY NETWORKS

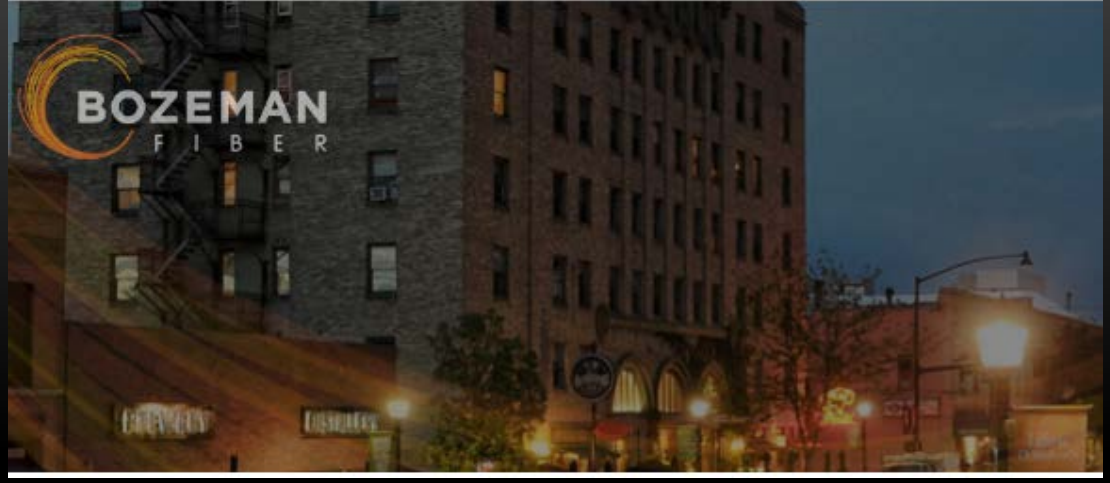


Source: http://www.muninetworks.org/

COMMUNITY NETWORK MODEL – OPEN ACCESS

- Public entity owns and operates networks.
- Sells wholesale services to private
- Longer ROI (30-year)
- Multiple funding sources
- Public Benefit

BOZEMAN, MT – OPEN ACCESS NETWORK



- Feasibility Study funded by City, Economic Dev. Agency, grants & community contributions
- Formed non-profit to build network & provide oversight
- Private contractor operates network
- Finance by local bank based on project financials & long term contracts with school/hospital
- Phase 1 Completed – Five providers offering services over network

http://bozemanfiber.com

Community network cost comparison

https://www.youtube.com/watch?v=izYslyrm3oU

FUNDING

- Federal - USDA (RBEG, RUS, Community Connect Grant), EDA, CDBG
- Existing expenditures for telecommunication services
- Revenue bonds, TIF, taxing districts, CIP, Bank loan
- Public- Private partnerships

https://broadbandusa.ntia.doc.gov/sites/default/files/resource-files/ntia_guidetofedfunding_062317.pdf

LESSONS LEARNED

- Solid Financials – Realistic Revenue projections - Return on Investment
- Develop in Phases - Initial phase as pilot to learn what works
- Deploy first to areas of high demand to generate revenue
- Community support is important - Marketing
- Leadership – Community Champion – Partnerships
- Risk Assessment - i.e.
  - Incumbent may lower rates to retain customers
  - Build-out may take longer than anticipate
  - Changes in legislation

Resources:

https://broadbandusa.ntia.doc.gov/

http://www.bbpmag.com/

www.fiberbroadband.org/

www.gig-u.org/

https://blandinfoundation.org/programs/expanding-opportunity/broadband/

https://connectednation.org/

http://www.muninetworks.org/

https://www.baller.com/category/community-broadband/

PAS Report # 569 – Planning and Broadband

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