



BROADBANDUSA

Best Practices from BTOP & Key Implications for Bidding & Sustainability

New NY Broadband Program: Bidders/Stakeholders Forum

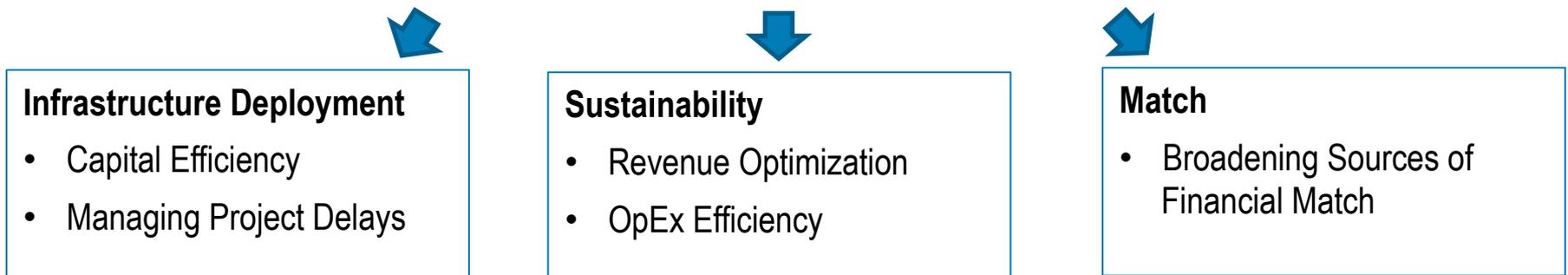
Liverpool, NY

February 9, 2016

Objectives

- Discuss key lessons learned and best practices from one of the single largest broadband grant programs that targeted unserved and underserved communities.

Key Lessons Learned via BTOP



- ✓ Competitive Bid
- ✓ Sustainable Project
- ✓ Network Launch On-Time and Within Budget

Topics

- BTOP Overview
- Infrastructure Deployment
- Sustainability Drivers
- Broadening Sources of Financial Match
- Broadband USA
- Q/A

NTIA Overview

- NTIA is an agency within the U.S. Department of Commerce.
- NTIA has responsibility – by law – to advise the President on telecommunications & information policy.



Key Activities

- Administering grant programs that foster broadband access and adoption
- Managing the Federal use of spectrum
- Developing policy on issues related to the Internet economy

Product of the American Recovery and Reinvestment Act (ARRA)

Overview

- President Obama and Congress developed the American Recovery and Reinvestment Act of 2009 in response to the economic and financial crisis.
- ARRA aimed to:
 - Jumpstart the nation's economy
 - Create and save millions of jobs
 - Develop the infrastructure to help the country thrive in the 21st century
- Congress appropriated \$4.7 billion to NTIA to create the Broadband Technology Opportunities Program (BTOP), a grants program focused on expanding broadband Internet access and adoption.



- Requested NTIA to allocate funds for: a) providing broadband access to unserved and underserved areas; b) providing broadband access, education, training and equipment to community institutions, organizations serving vulnerable populations, and job-creating strategic facilities; c) stimulating demand for broadband usage; d) improving access and usage by public safety agencies.



Four Project Categories

- NTIA's broadband grants portfolio includes 275 recipients across four project categories.
- Staff reviewed more than 2,800 applications requesting \$36 billion.



Infrastructure - \$3.5B - 123 Grants

Construct or upgrade broadband networks to connect unserved and underserved areas



Public Computer Centers - \$201M – 66 Grants

Provide access to broadband, computer equipment, computer training, job training, and educational resources



Sustainable Broadband Adoption

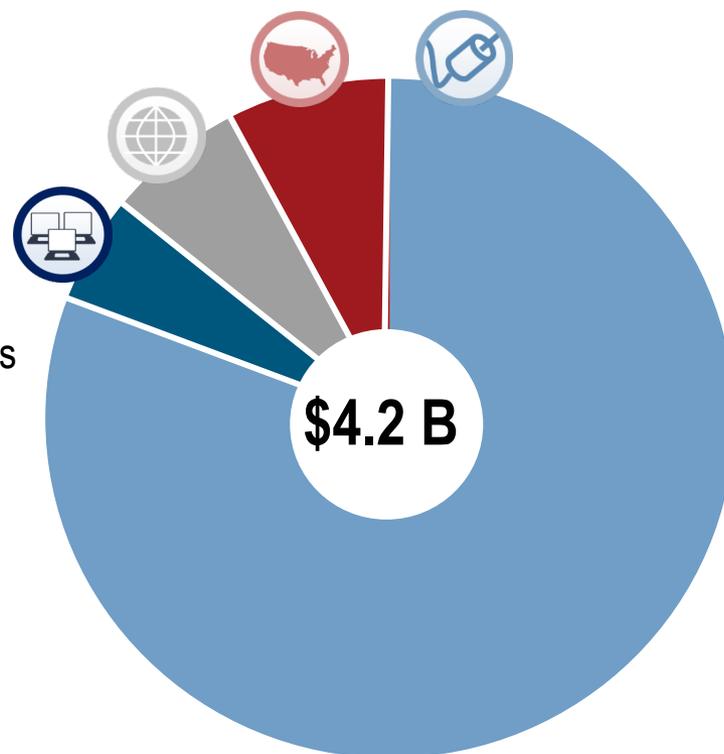
\$251M – 44 Grants

Promote broadband adoption, especially among vulnerable population groups



State Broadband Initiative - \$293M – 56 Grants

Gather data for use in the publicly searchable, interactive National Broadband Map



Perspectives on Magnitude of the BTOP Initiative

**Deployed More Than
115,000 Miles of Fiber**



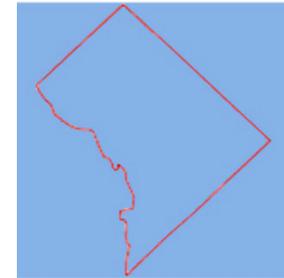
Enough to circumnavigate
the globe 4.5 times

**Delivered 20 Million
Training Hours**



Equivalent to taking classes
24/7 for more than two centuries

**Trained More than
4 Million People**



More than six times the
population of Washington D.C.

Other Impacts

- BTOP impacted over 7,600 communities across the United States.
- Connected over 26,000 community anchor institutions.
- Established or upgraded 3,000 public computer centers.
- Helped over 735,000 households sign up for broadband service.
- Supported over 200 local broadband planning teams across the country.

Strategic Priorities of the Infrastructure Program

The following strategic priorities helped define the scoring framework and ultimate awards selection.

Middle Mile Networks

- Lack of high-speed backhaul networks prevent the upgrade or new deployment of faster last-mile networks.
- High-speed “highways” enable greatest scalability.
 - Pass the most communities.
 - Lowers the cost of last-mile deployment.
 - Reduces the risk of overbuild.
 - Avoids picking “winners/losers” for last mile strategies.

Community Anchor Institutions

- High-speed networks are critical to schools, libraries, health-care providers, government and public-safety facilities, and other CAI’s.
- Stretches the lateral into the communities and makes the last-mile deployment more cost effective.
- Generates revenue and long-term contracts; promotes sustainability.
- Match: Require 20% match (cash or in-kind), but those offering +30% received greater consideration.
- Last-Mile Component: Include commitments or letters of support from last-mile carriers; actual deployment and/or upgrade of last-mile networks.

Public Private Partnerships

- Invites sharing of resources: capital costs, marketing/outreach, technical expertise, etc.
- Fosters accountability during project implementation (e.g., scope, budget, timely deployment)
- Leads to a number of innovative business models.

Other Consideration Factors



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Leveraging Existing Assets

- Leveraging existing assets can save capital expenditures and thus lower your subsidy request.
- However, requires early planning and coordination to confront potential obstacles.

Opportunity

- **Network Facilities:** Fiber, conduit, poles, towers, and colocation facilities.
- **Non-Telecom Facilities:** Gas/electrical conduits, abandoned sewer or water mains, and water towers.
- **Dark Fiber:** IRU's (especially for middle-mile)
- **Upgraded Networks:** Deployment of advanced routers and switches

Key Challenges

- Owner's refusal to lease or sell such access
- Unreasonable contract terms
- Exorbitant pricing for access
- Logistical challenges in gaining access

Potential Solutions

- Partnerships with Asset Owners
- Public Outreach
- Collaboration with Public Authorities

Managing Key Delay Drivers: Permitting and Pole Attachments

- Securing permits and make-ready constitutes two of the single largest causes of delay for BTOP Grantees.

Permitting: Time and Access

- Challenging Permits: public rights of way, private easements, railroad crossings, bridge attachments
- Generally take less than six months, but the exceptions define the critical path for network launch.
- Some were never obtained; forced our Grantees to make numerous route changes.

Pole Attachments: Coordination and Costs

- Most of our Grantees (deploying aerial fiber) had difficulty obtaining pole attachments per their original project schedules.
- Challenges: a) the high volume of make-ready moves; b) complex coordination process; c) negotiating the costs to complete make-ready; d) high degree of pole replacements

Best Practices

- ✓ Know state and local laws and regulations
- ✓ Leverage relationships with elected officials, government agencies, business leaders, community groups, etc.
- ✓ Provide frequency updates on progress and challenges
- ✓ Form relationships with the local utility companies
- ✓ Actively manage and track the process in order for the construction deadlines to be met
- ✓ Form alliances with other grantees post-award to share challenges and best practices, and present a unified voice to authorities

Other Considerations During Deployment

Building Drops

- Take advantage of this opportunity
 - Save 20-50% on the implementation costs when installing drops in conjunction with the wider network.
- The average cost per subscriber will be lower if you build the drops during the time of deployment.
 - Assumes optimal adoption rate (e.g., 50% or greater)
- Engage with potential customers shortly after winning the grant to minimize stranded capital.
 - BTOP Grantees confronted various challenges in achieving targeted take rates (e.g., adoption issues, competitive preemption)
 - A “build it and they will come” strategy will limit the adoption rates.

Design and Build Procurement

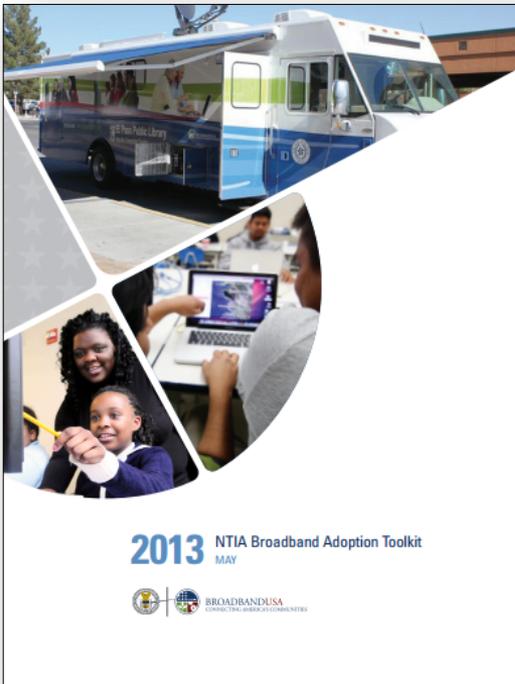
- Hire different vendors for design and build functions.
 - The design firm may also supervise the build contractor.
- Engage in fixed priced contracts with network builder; transfer risks to builder.
 - The transferred risks may result in a higher cost (e.g., cost per installed foot or mile)
 - Consider linking fixed price to a unit (e.g., cost per mile) rather than the total cost of build-out (Maine Fiber Company)
- Break large networks or geographically dispersed networks into separate segments, and invite individual bids for building those segments.
 - Creates competition and avoids putting “eggs into one basket”; however, volume discounts may favor a single builder.

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Driving Subscription Rates

- While national adoption rates stand at 74%, a “build it and they will come” approach will not yield that rate.
- NTIA developed the Broadband Adoption Toolkit to share tools, techniques, and best practices to increase adoption.



Key Adoption Barriers

- Access and Availability
- Costs
- Perception
- Relevance
- Digital Literacy Skills

No Simple, One Size Fits All Solution... But Key Elements Include

- Communication
- Partnerships
- Training
- Discounted Programs (for access and computers)

Expanding the Market Opportunity

- Design your network to capture a variety of wholesale service revenues.

Backhaul for Mobile Wireless Operators

Opportunity

- A significant percentage of wireless towers still rely on copper-based networks for backhaul.
- Many of our Grantees laid fiber to connect these towers. In return, they have secured high dollar, long-term contracts with the mobile wireless providers.

Recommendation

- Identify these existing tower locations, and include them in your network design.
- Include extra fiber strands, as increasingly, the mobile wireless providers seek dark fiber.
- Take advantage of the emerging market for small cells. Small cells are inconspicuously installed on existing right-of-way infrastructure, such as street signs, telephone poles, or streetlights.

Point to Point Transport Services

Opportunity

- Long-haul network providers (e.g., Level 3, Zayo, etc.) seek dedicated capacity across a County, Region, or State.
- Your last-mile fiber assets, when interconnected with adjacent fiber networks, provide a high-value solution.

Recommendation

- Create meet-me points with adjacent fiber network providers.
- Reach major carrier hotels – either through direct build-outs or leasing fiber.
 - Lowers your own IP transit rates, which can be up to 80% cheaper in urban-based carrier hotels
- Deploy as many interconnections points.
 - Many of our Grantees installed future interconnection points every ¼ mile in urban areas and 1-2 miles in rural areas (e.g., handholds and slack loops)

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Potential Sources of Financial Match

- Sources of match financing can be found through upfront revenue sales, public-private partnerships, and other creative sources.

IRU Sales

- Selling dark fiber may allow you to raise a portion of your match.
- Our Grantees made those sales during the build-out period or after launching the network. They would raise the capital in anticipation of such deferred revenue opportunities.

Public Private Partnerships

- A number of our Grantees invited a variety of investment partners to the table.
- Such partnerships included a blend of private ISPs, R&E networks, and state/local government agencies.
- All would contribute a financial match in return for a proportional amount of capacity.

Fiber Swaps

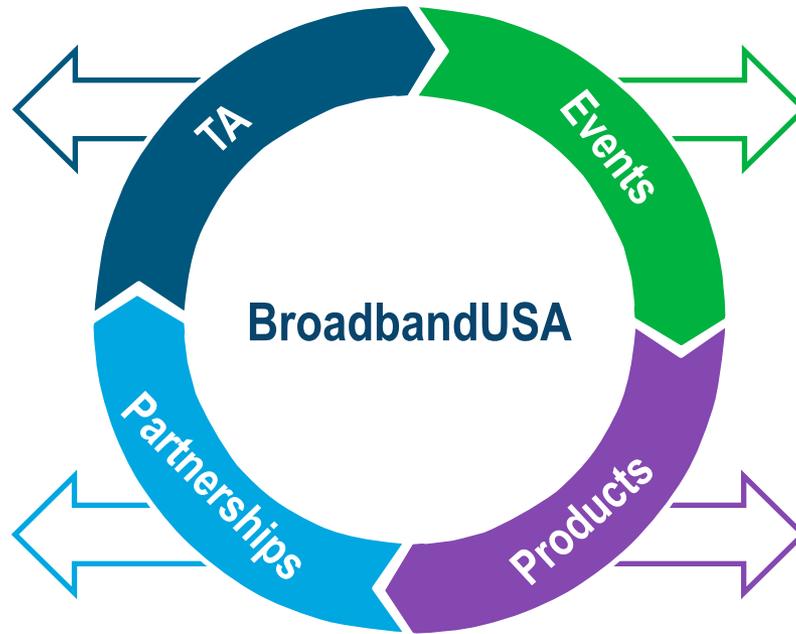
- Many of our grantees engaged in fiber swaps, either among each other or with other ISPs. Such swaps offer a cost-effective way to extend your network footprint.
- Such swaps could lower the upfront capital that you require, thus enabling your ability to provide a higher match.

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BroadbandUSA Overview

Direct, hands-on assistance to communities interested in planning and implementing broadband initiatives.



Established partnerships with federal and state governments, industry organizations and broadband thought leaders.

Events that bring together government officials, community leaders and other broadband stakeholders to share real-world broadband success stories and lessons learned.

Products that incorporate best practices and guidance proven by BTOP, SBI and other BroadbandUSA partners.

BTOP Related Websites

BroadbandUSA Website

<http://www2.ntia.doc.gov>

National Broadband Map

<http://www.broadbandmap.gov>

**Economic and Social
Impact Study**

<http://www2.ntia.doc.gov/btop-reports#evaluation>

Adoption Toolkit

http://www2.ntia.doc.gov/files/toolkit_042913.pdf

**Public Private Partnership
Guide**

http://www2.ntia.doc.gov/files/ntia_ppp_010515.pdf

State Broadband Initiative

<http://www2.ntia.doc.gov/SBDD>

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