Local Broadband Planning Guide

NEW MEXICO OFFICE OF BROADBAND ACCESS AND EXPANSION

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Purpose

This Guide provides a phased approach to support local communities in deploying broadband infrastructure that addresses communities' connectivity challenges.

Limitations

This Guide is offered solely for informational purposes and is not intended to mandate the form, content or process of any broadband access or expansion plan, nor guaranty the efficacy or approval of any such plan.

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Local Broadband Plan Overview

Community improvement towards broadband availability and adoption may be successful by adopting the following suggested phased approach. Most important is identifying a broadband champion to drive progress.

Phased approach for development local broadband plan:

Phase 1

Scope the Challenge

- Conduct outreach to understand connectivity challenges
- Understand the broadband infrastructure landscape
- Determine the causes and provide solutions

Phase 2

Consult Experts to Evaluate Solution Options

- Determine which technical solution(s) will be required to meet the needs of your community members
- Assess alternatives to building local broadband

Phase 3

Develop an Action Plan

- Quantify community's current demand and potential future subscribers
- Design a network strategy
- Identify and apply for relevant Federal Funding

Phase 4, if applicable

Build a Local Broadband Network

- Initiation
- Planning
- Design
- Implementation
- Close-Out

Phase 5, if applicable

Operate and Maintain the Network

- Outsource Operations and Maintenance
- Monitor the Network Quality

A **local broadband champion** will drive forward momentum throughout the plan by partnering with key stakeholders**:**

Community Outreach Champion to canvas the community and conduct outreach to local community anchor institutions and existing or neighboring ISPs

Local Business Leaders to support the development of financial analysis and negotiations with Internet Service Providers (ISPs)

Local Government Representatives to provide insight into permitting, regulatory, and/or right of way processes, as well as federal and/or state funding

Local Broadband SMEs to support the development of a network strategy

Third Party Vendors to build and/or operate and maintain the network

Phase 1: Scope the Challenge

Important that communities understand the broadband environment and assess the area's broadband connectivity challenges, geographic conditions, and existing broadband infrastructure to develop a holistic perspective.

1.1 Conduct outreach to understand local connectivity challenges

1. **Engage with local schools** to gain a strong understanding of unserved students/households and potential funding opportunities through federal programs like e-rate.

2. **Engage with community anchor institutions and businesses** who often have relevant visibility on issues like affordability and/or household locations as well as sector specific needs (e.g. telehealth and/or agriculture)

3. **Launch paper and electronic surveys to private citizens/ local population to obtain community member input**

Consider including information such as:
- **Household details**: address, number in household, age, current ISP provider and type, service details, pricing, monthly usage if known, etc.
- **Internet Need**: work/school video, email, entertainment streaming, web browsing, gaming, etc.
- **Pain Points:** downtimes, low speeds, intermittent connectivity, etc.
- **Speed Test:** output and analysis of those data.

1.2 Assess existing infrastructure and capital challenges

1. **Identify the nearest middle mile interconnection location** to inform where the local community network will connect

2. **Assess any geographical limitations** that may impact the build plans, such as mountains, rivers, or land ownership (private, state, local, or federal)

3. **Consider any existing last mile broadband or communications infrastructure** that could be enhanced or leveraged to meet the needs of the community, such as local exchange carriers or telecommunication towers

1.3 Work with ISPs to determine the challenges from their perspective

1. **Determine why investment has not been made to build or improve infrastructure** to gain insight into what level of funding and/or technology may be required in order to overcome capital and/or operational challenges

   - Insufficient bandwidth capacity from internet backbone and/or local ISP network
   - Lack of infrastructure due to high capital cost to build internet backbone and/or local ISP network
   - Outdated infrastructure due to high cost of operating and maintaining the internet backbone and/or local ISP network
   - Lack of affordability and adoption limits the financial feasibility of adequate maintenance and operations, resulting in poor performance and inadequate capacity

Phase 2: Consult Experts to Evaluate Solution Options

Depending on the nature of the connectivity and/or capital challenges optional solutions may be considered.

2.1 Determine which technical solution(s) will be required to meet the needs of your community members

1. **Consider whether the nature of the challenge is in the internet backbone, local area, or both** to determine which set of technical solutions may be needed

Internet Backbone Infrastructure Options	Local Community Network Infrastructure Options	
Fiber Fixed Wireless	Fiber to Premise Fixed Wireless Cable TV White Space	Satellite DSL LTE

2. **Consider solutions that align to intended future use of enhanced connectivity**

2.2 Assess alternatives to building local broadband

1. **Consider negotiating a service with an ISP** to incentivize additional and/or improved infrastructure.

2. **Explore alternative partnerships with electric co-ops who may consider adding broadband to services**

The co-op broadband business case:
- **Infrastructure synergy**: leverage of existing utility poles and operational workforce reduces costs
- **Local presence**: existing relationships and presence supports greater adoption
- **Improved asset management:** connection to the internet backbone enables two-way communications
- **Financial gains:** substantial exponential revenue generation as members grow and use increases over time

3. **Position the community as a test bed for innovative technology pilots**

Phase 3: Develop an Action Plan

Based on the identified broadband challenge, communities can create a local broadband action plan

3.1 Quantify community's current demand and potential future subscribers

1. **Aggregate demand** through community anchor institutions and community members (residences and businesses) to create a strong business case
2. **Consider affordability challenges** to include impacts on revenue streams and subsidies
3. **Assess potential revenue streams** that may be generated through future lease agreements with neighboring ISPs

3.2 Design a network strategy

1. **Reach out to any existing ISPs** to understand the terms and conditions necessary for them to activate, lease, or sell any existing fiber
2. **Leverage the expertise of an engineer or provider** to conduct a technical assessment of current infrastructure to determine most cost-effective upgrades
3. **Explore opportunities for an incremental build out** of infrastructure from existing fiber connections, such as a school, hospital, library, government building, etc.

3.3 Identify and apply for relevant funding

1. **Explore federal funding programs that may apply to your community**

Example Federal Funding Programs

- **Rural Land**: USDA Reconnect, Community Connect, RDOF
- **Tribal Land**: NTIA Tribal Broadband Connectivity Program
- **Sector Specific:** FCC Healthcare Connect, FCC E-Rate, FCC Emergency Connectivity Fund, USDA Distance Learning, etc.

2. **Reach out to state representatives to identify state level funding or partnership opportunities** through state grant programs, e-rate matching, and federal broadband infrastructure grant programs

Phase 4: Build a Local Broadband Network

Given communities want to own their Broadband Network suggest following the five build phases of Initiation, Planning, Design, Implementation, and Closeout.

Phases		Key Steps
4.1	INITIATION	1. **Identification, prioritization, and selection of specific build areas** via a data driven process 2. Conduct studies to **determine the economic feasibility** of selected projects in order to make an informed decision on execution
4.2	PLANNING	1. **Establishment of Interconnect agreements** between the local community and ISPs that will operate the networks 2. **Completion of a comprehensive operational model** for the network builds 3. **Identification and consolidation of pertinent permits and regulatory applications** required
4.3	DESIGN	1. **Submission of all permits** required to build infrastructure 2. Obtainment of notice to **proceed from all regulatory steps** required 3. **Procure** Engineering, Equipment, Siting, and Construction Vendors 4. **Identification** of Interconnect sites 5. **Survey of construction sites**, and **completion of project designs**
4.4	IMPLEMENTATION	1. Building of all **new underground conduit** and **aerial construction** 2. Installation of fiber and splicing 3. Completion of vault work and **installation of fiber hub**
4.5	CLOSEOUT	1. Completion of all **site restorations** 2. Completion of **quality control assessments**, inspections, testing and startups

Phase 5: Operate and Maintain the Network

Important is a sustained community network with a strong maintenance and operation program that meets the needs of the community.

5.1 Outsource Maintenance and Operations

1. **Hand off Passive Optical Network** to ISPs to install electronics and operate the network
2. **Establish service level agreements** for operations and maintenance schedules

5.2 Monitor the Network Quality

1. **Require ISPs to install Customer Premises Equipment (CPE) devices** with software to provide the community leaders with speed monitoring capabilities, in order to ensure quality of service
2. **Conduct periodic speed tests and community surveys** to assess whether connectivity needs are being adequately met

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ADDITIONAL INFORMATION:

- **New Mexico Broadband Program Website**: https://www.doit.state.nm.us/broadband/index.shtml
- **NMBBP Online Map:** https://nmbbmapping.org/mapping/