STATE OF NEW MEXICO

OFFICE OF BROADBAND ACCESS & EXPANSION

Office of Broadband Access and Expansion
Department of Information Technology
State of New Mexico

Statewide Open Access Middle Mile Network Initiative

Request for Information
RFI# 2022-01

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1.0 Introduction

The New Mexico Office of Broadband Access and Expansion ("Office") aims to facilitate the deployment of a Statewide Open Access Middle Mile Network ("Network"). Among benefits, this network will help foster universal broadband access to all unserved and underserved communities across New Mexico. This can occur by expediting the deployment and upgrades of last-mile broadband networks currently lacking affordable, high-capacity middle mile facilities.

1.1 RFI Purpose

The Office issues this Request for Information (RFI) to obtain input from key stakeholders such as broadband providers, broadband asset owners, local governments, tribal communities, and various state agencies. This input serves several objectives. First, the feedback will help the Office and potential collaborators – across government and the private sector – develop a comprehensive strategy for Network funding, design, deployment, and administration. Second, the input will facilitate future plans and proposals for state and federal funding sources. Third, it allows last mile providers to express their middle mile needs and interest in connecting to the Network. Fourth, it will align effort behind various state middle mile broadband needs and initiatives, including in education, transportation, public safety, etc.

1.2 Definition of Terms

Term	Definition
Community Anchor Institution	A school, library, medical or healthcare provider, community college or other institution of higher education, government office, or other community support organization or entity
Last Mile Provider	A service provider that provides broadband access to end-user locations (also known as Internet service provider ("ISP")
Location	Any physical structure that may receive broadband
Middle Mile Network	Defined as a network for which the predominant purpose involves connecting a last-mile network to a regional or national Internet backbone to enable transport of local traffic to the public Internet; services may include interoffice transport, carrier-neutral internet exchange facilities, transport connectivity to data centers, lit service transport, leased dark fiber, and other similar services
Unserved Location	A household that lacks access to a wireline-based broadband connection with a data rate of at least 25 Mbps download and 3 Mbps upload
Underserved Location	A household that has access to a wireline-based broadband connection of at least 25 Mbps download and 3 Mbps upload but no greater than 100 Mbps download and 20 Mbps upload
Open Access	Networks which permit any broadband provider to connect to the network on nondiscriminatory terms and conditions

1.3 New Mexico Office of Broadband Access and Expansion (Office)

The New Mexico Broadband Access and Expansion Act created the Office of Broadband Access and Expansion, administratively attached to the New Mexico Department of Information Technology (DoIT). [1] The Office coordinates broadband deployment efforts among various stakeholders – state, local, and tribal governments, non-profits, and the private sector.

2.0 Middle Mile Network: Strategic Overview

2.1 Broadband Unserved Locations in New Mexico

The implementation of an open access middle mile network (Network) is intended to facilitate broadband service to New Mexico's unserved and underserved locations via interconnection to last-mile service providers. New Mexico has an estimated 196,000 unserved locations per the 2020 State of New Mexico Broadband Strategic Plan. Many of these locations can be viewed via the New Mexico broadband map available at [New Mexico Broadband Map (nmbbmapping.org)](nmbbmapping.org).

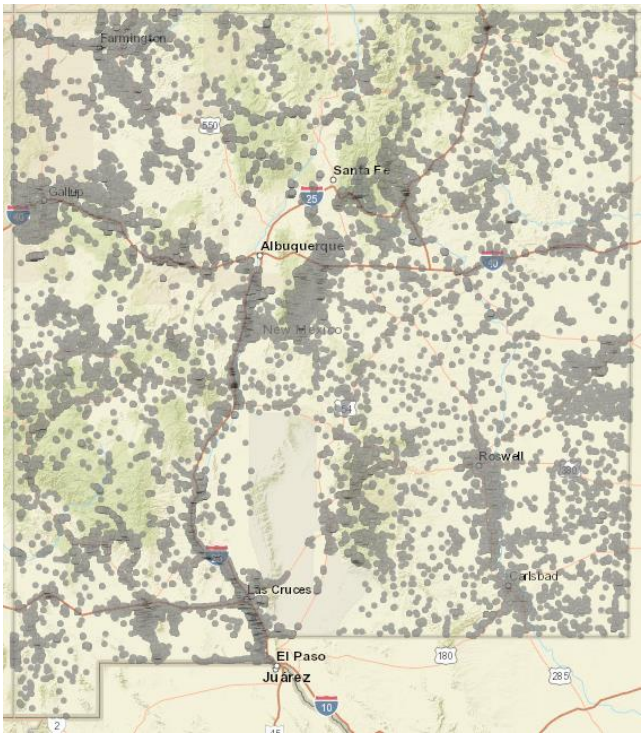

Figure 1. Unserved Locations

Figure 1 shows certain estimated unserved locations in New Mexico, as currently published in the New Mexico broadband map.

[1] The Office of Broadband Access and Expansion was created by the Senate Bill 93, "Broadband Access and Expansion Act" (Laws 2021, Chapter 123), https://nmlegis.gov/Sessions/21%20Regular/final/SB0093.pdf

2.2 Potential Benefits

- **Improve economics of last-mile network deployment in rural New Mexico.**

An underlying reason for the digital divide in rural communities involves the challenging economics that prevent an ISP from achieving a viable return on investment. This is attributable to the relatively lower population density common to rural communities. The high fixed cost of the last-mile broadband network means a relatively higher cost per premises passed. Therefore, the upfront cost per each customer is further elevated. Also, various rural communities across New Mexico face economic distress – e.g., lower employment, lower per capita income, high poverty rates. This limits the adoption rates, and often necessitates lower price services to achieve higher customer subscription. Together, the high capex per user, lower adoption rates, and lower pricing can limit the viability of a privately financed business case. Finally, the economics are further challenged due to having to build a middle-mile network span to reach the closest point of interconnection. These spans may range from a few miles to 10-20 miles, if not longer. This initiative can serve as a catalyst to last-mile deployment across such communities.

- **Allow last-mile providers to focus on their core mission.**

An open access middle mile network enables last mile providers to have access to the public Internet and other resources via an interconnect point near their service area. The provider can then allocate its limited resources to deploy or upgrade broadband for end-users, rather than building a middle-mile span to the closest interconnection point, which may be dozens of miles away. An open access middle mile network changes the last mile provider business case and allows more efficient use of resources towards the end user location. Open access refers to providing services in a non-discriminatory manner and making services available to any interested party that uses the network in-line with New Mexico objectives of broadband for all locations.

- **Avoids duplication and geographic overlap with planned middle-mile spans.**

As federal and state funds are directed toward last mile network expansion, the Office wants to avoid unnecessary and inefficient duplication of middle mile infrastructure. For this reason, having one open access middle mile network is preferred versus multiple, fragmented and “closed” middle mile networks.

- **Directly connect community institutions.**

The Network may also directly connect anchor institutions along the path, if they lack access to scalable broadband as required by the anchor institution. The anchor institutions may serve as a location for a “community access point”.

2.3 Role of Network

The Network would act as a "wholesale" provider with services available to the last-mile service provider. Services may include dark fiber lease and/or "lit" connections to a carrier hotel, usually located in an urban center. This enables the ISP to exchange traffic with other ISPs through peering arrangements, or the purchase of IP transit services.

The middle mile network is not expected to interconnect directly to end user locations, but rather provides interconnection points to facilitate circuits to end user locations. Open access middle mile benefits include:

- Introduce a nearby "on ramp" to the public Internet for last mile providers
- Provide new broadband connections between key locations in New Mexico
- Increase redundancy and resiliency of existing and planned broadband connections
- Enable low latency, direct connectivity between key interconnection points in neighboring states
- Provide a foundation for a research and education network, supporting frictionless big data transfer

2.4 Prioritization Framework

The potential federal and state funding available may be less than the required capital expenditure for middle-mile capacity. The following framework illustrates several consideration factors to help prioritize the potential communities where the expanded Network may traverse. This is not an inclusive list.

Prioritization Framework Factors

- Unserved and Underserved Communities: Defined as communities lacking 25/3 Mbps (unserved) or is between 25/3 and 100/20 Mbps (underserved).
- Lack of Open-Access Middle-Mile: Community lacks access to high-capacity, price competitive middle-mile.
- Consideration of Planned Last-Mile Deployments: The Office will consider planned middle-mile deployments in the route planning analysis.
- Community Institutions Lacking Adequate Broadband: Defined as community institutions lacking access to scalable high-speed Internet.

2.5 Proposed Specifications

The following table highlights proposed specifications. The input from this RFI will influence the actual specifications.

Topic	Details
Fiber Count	• At least 144 strands
Fiber Placement	• Underground and placed in conduit; otherwise aerial if poles are available or can be installed
Handhold Splice Cases	• Locations: Placed at road intersections and other relevant locations • Frequency: Splice points spaced every 0.5 to 3 miles
Adjacent to State Roadways	• The fiber and conduit will be laid along roadways, including interstate highways, state routes, county and local roads.
Community Access Points (CAPs)	• Placement: These CAPs involve lit access points that enable interconnection with last-mile service operators. They will be established along the route.
Microwave Backhaul	• Use of microwave networks when the deployment of wireline is not technically feasible or cost excessive
Service Offerings and Pricing	• The public interest is best advanced by offering the array of lit fiber, dark fiber and colocation services. The pricing should reflect rates commensurate with middle-mile service offerings across the nation's most competitive markets.

3.0 Potential Funding Sources

Robust statewide middle mile broadband capacity will require complementary investment from the public and private sectors. Among public sector sources, the federal Infrastructure Investment and Jobs Act and American Rescue Plan Act offer attractive direct and indirect sources. Some of these funds are available now; others will be available on a competitive or formula basis within the coming year.

3.1 NTIA Middle Mile Program

The federal Infrastructure Investment and Jobs Act (IIJA) commits over $45 billion to broadband deployment via the National Telecommunications and Information Administration (NTIA), including through creation of the $1 billion Enabling Middle Mile Broadband Infrastructure Program – established for the "construction, improvement or acquisition of middle mile infrastructure." This program aims to encourage the expansion and extension of middle mile infrastructure to reduce the cost of connecting unserved and underserved areas to the backbone of the internet (commonly referred to as the "last mile"); and to promote broadband connection resiliency through the creation of alternative network connection paths that can be designed to prevent single points of failure on a broadband network.

The NTIA Notice of Funding Opportunity (NOFO) for the grant is expected to be released in the coming weeks. Other funding sources are also being investigated for the implementation of an open access middle mile network. Responses to this RFI will help inform the Office on how to assemble an application for NTIA funding that best serves the interests of New Mexico residents, communities, providers, and state agencies alike.

3.2 American Rescue Plan Act

Governor Michelle Lujan Grisham and the New Mexico Legislature appropriated $123,066,812 for expenditure by the Department of Information Technology ("DOIT") in fiscal years 2022 through 2025 to plan, design, construct, renovate and equip alternative broadband infrastructure statewide.[2] These funds come from the American Rescue Plan Act ("ARPA") Coronavirus Capital Projects Fund ("CPF"), which is administered by the U.S. Department of Treasury ("Treasury").

In addition, ARPA State and Local Fiscal Recovery Funds available directly to local governments and the state are flexible in permissible use and, where still available, are ideal sources for middle mile broadband expansion.

4.0 Questions for Submission

The Office issues the following series of questions and welcomes responses by interested parties to any of these questions. The Office is particularly interested in hearing from last-mile service providers that would like to interconnect to the Network.

A. Level of Need

Topic	Question Number	Input Sought
Benefits	A1	• How can the Network be beneficial to New Mexico and specifically to the state's goals of universal broadband for all residents, businesses and community anchor institutions?
	A2	• What other beneficial socioeconomic outcomes and impacts would the Network bring to New Mexico and its residents, businesses and institutions?
Backhaul to Public Safety	A3	• How can the Network be designed and deployed to meet the current and future backhaul needs of public safety networks?
Backhaul to Mobile Networks	A4	• How can the Network be designed and deployed to meet the current and future backhaul needs of mobile network operators?

[2] See House Bill 2, December 21, 2021, https://www.nmlegis.gov/Sessions/21%20Special2/final/HB0002.pdf

B. Middle Mile Routes

Topic	Question Number	Input Sought
Route Locations	B1	• What are the specific routes where the Network should be implemented, and the underlying drivers?
	B2	• What methodology should be used in prioritizing the routes for the Network? Should we prioritize the routes where the most unserved locations are situated within five miles of the middle mile infrastructure? Are there additional factors to consider.
Communities	B3	• Are there specific communities that have a strong, immediate need for middle mile infrastructure? Please provide a list of such communities and the underlying reasons.
Adjacent States	B4	• Should the middle mile network be extended to neighboring states? If so, please explain the key drivers.
End User Locations	B5	• Are there specific types of end-user locations the Network should connect to?
	B6	• Are there specific end-user locations that should be passed? If so, please explain the justifying factors. • How close should the interconnect point be to the location? (e.g., located less than 1000 feet from the location through a handhold facilitating dark fiber interconnect).

C. Technology and Network Design

Topic	Question Number	Input Sought
Technology	C1	• The majority of middle mile networks in existence utilize fiber technology, with interconnect. Should the Office focus on fiber technology only for middle mile segments or are there other suitable technologies to support a middle mile network?
	C2	• For the construction of middle mile fiber segments, what best practices can be referenced to ensure the technical design can best serve current and future backhaul needs of last-mile service operators?
	C3	• What factors should drive the consideration of microwave networks?
Fiber Design	C3	• For construction of middle-mile dark fiber segments, how many strands of fiber should be installed?

		• Should the count vary depending on the location of the network (e.g., community laterals vs. long-stretch backhaul)? If so, please provide the reasons.
	C4	• Should fiber with certain physical characteristics be purchased?
Conduit	C5	• Should additional empty conduit be deployed? If so, how many sets of conduit?
	C6	• Should conduit with certain physical characteristics be purchased? For example, should micro duct be used for conduit? • What diameter (and quantity) of conduit should be used.
Best Practices	C7	• What other best practices can be referenced to ensure the technical design can best serve current and future backhaul needs of ISPs?

D. Middle Mile Network Services and Characteristics

Topic	Question Number	Input Sought
Services	D1	• What services should the Network offer?
	D2	• Should the Network offer one or more of dark fiber indefeasible right of use (IRU), dark fiber lease, point to point lit service, dedicated Internet access, colocation.

E. Leveraging Existing Assets

Topic	Question Number	Input Sought
Existing Resources	E1	• What existing rights-of-way, assets and infrastructure is available to be used by the Network? (Assets could include dark fiber, colocation facilities etc.) Note: The IIJA for awarding middle mile grants states that priority should be given to "projects that leverage existing rights-of-way, assets, and infrastructure to minimize financial, regulatory and permitting challenges."
Existing Open-Access Middle-Mile Networks	E2	• What other open access middle mile network exists in New Mexico?
	E3	• What existing fiber networks can be utilized through the purchase of a dark fiber IRU?

Planned Middle-Mile Routes	E4	• The Office invites operators to share the locations of fiber routes that provide open access backhaul with capacity expected to meet market demand for the foreseeable future. • Please specify whether the route is existing or planned. • If existing, please state the available capacity, service offerings, and any conditions that would prevent last-mile service providers from purchasing capacity. • If planned, please state the estimated completion date, capacity, service offerings, and any conditions that would prevent last-mile service providers from purchasing capacity.

F. Interconnection

Topic	Question Number	Input Sought
Interconnection Methods	F1	• What methods of interconnect should be available to a Last Mile Provider (LMP) in connecting to the Network? For example, a fiber-to-fiber interconnect via a splice at a hand hole to connect to dark fiber; a cross connect within a colocation facility for lit service interconnect. Are there other interconnect approaches the Office should consider?
Hand Holes	F2	• What methodology should be used to locate hand holes for interconnection? • For example, how often should hand holes be on deployed dark fiber?
Splice Points	F3	• How frequently should the splice points be deployed?
Colocation Facilities	F4	• Where should colocation facilities be (colocation facilities include amplification locations; points of presence, internet exchange points)?

	F5	• What type of colocation facility should be established on the Network? Possible colocation facilities include:
		  ○ Inline amplification – to house regeneration equipment for lit traffic
		  ○ Points of presence – to house regeneration and interconnect equipment
		  ○ Internet exchange – to house routers/cache servers enabling traffic to be kept local
		• Each of the facility types mentioned in question 12 could be used for lit service interconnect. Where should these facilities be located? i.e., where is it required to have lit service interconnect.

Technical Specifications	F6	• Are there technical specifications that should be addressed that will aid in interconnecting last-mile service providers?
Community Institutions	F7	• Should there be direct interconnection to certain community anchor institutions? For the provision of service, should this be provided by the Network? Or should there be an interconnect point within 1000 feet of the anchor institution, and a LMP provide the service directly to the anchor institution?
External Networks	F8	• What interconnection should exist with external networks. For example, should there be a fiber-to-fiber interconnect with external networks or middle mile networks in neighboring states?

G. Ownership and Operating Model of the OAMMN

Topic	Question Number	Input Sought
Ownership Model	F1	• What are the various examples of ownership models, and the benefits and challenges of each model? • Which of these ownership models best suits the objectives and needs of the state?
Operating Model	F2	• What are the various examples of operating models, and the benefits and challenges of each model? • Which of these operating models best suits the objectives and needs of the state? • How should the Network be operated and maintained – and by what entities?
Public-Private Partnerships	F3	• Please describe viable public private partnerships covering the ownership, operation and maintenance of the Network while complying with New Mexico law.

H. Expression of Interest

Topic	Question Number	Input Sought
Expression of Interest by Last-Mile Operators	H1	• As stated in the IIJA, priority will be given to grant applications where LMP's have expressed written interest in interconnecting with the Network. If an LMP is interested in connecting to a future New Mexico Open Access Middle Mile Network, per IIJA guidance, please provide a written expression of interest.

I. Other Information

Topic	Question Number	Input Sought
Other	I1	• Is there anything else, not mentioned in this RFI, that you would like to share?

5.0 Submission Instructions

➢ **Deadline**

All responses are due by 5:00 PM Mountain Time on May 16, 2022.

➢ **Format**

Please submit a typed response for any of the aforementioned questions or solicited input. Please associate each response with the relevant questions number. RFI responses shall be submitted in pdf format. Please designate your response with the email subject line "Response to Network RFI."

➢ **Email Address**

Please email the PDF to broadband@state.nm.us. Other supporting materials/documentation shall be submitted via email in an appropriate format. Please contact the Point of Contact if other supporting materials are too large to submit via email.

➢ **Identification of Submitter**

Please state the following:

- Name of your entity
- Point of contact for this response (name, title)
- Communication information (email and phone number)

Please feel free to share this RFI with other potential respondents.

6.0 Agency Support

6.1 Agency Points of Contact

The Office has designated the following Points of Contact who are responsible for the conduct of this RFI whose names, addresses and telephone numbers are listed below:

Point of Contact	**Rand Tilton**
Office address:	Office of Broadband Access and Expansion Department of Information Technology 715 Alta Vista Santa Fe, NM 87502-2550
Email Address:	rand.tilton@state.nm.us

To support outreach for this RFI, the Office will be holding the following sessions:

- A public webinar to provide further information about this RFI and to answer any questions
- A private "office hour" session for potential RFI responders

Information about the Statewide Open Access Middle Mile Network including presentation materials and recordings of these sessions will be available at:
https://www.doit.state.nm.us/broadband/index.shtml

7.0 Conditions Governing the RFI

7.1 Sequence of Events

The primary RFI Point of Contact will make every effort to adhere to the following schedule:

Action	Responsible Party	Due Dates
1. Issue RFI	**Office**	**4/18/22**
2. Submission of Response	**Respondents**	**5/16/22**

7.2 General Requirements

Submission of a response constitutes acceptance of, and consent to, the following General Requirements:

- **No Obligation**

This RFI in no manner obligates the Office, the State of New Mexico, or any of its agencies to the issuance of an RFP or other solicitation or to the eventual provision of any services or equipment that may be described, implied, or proposed.

- **Governing Law**

This RFI and any subsequent RFP that the Office may issue, or any agency of the State of New Mexico, shall be governed by the laws of the State of New Mexico.

- **Clarifications**

All requests for clarifications must be directed to the RFI Point of Contact identified in Section 3.

- **Response Preparation Cost**

Any cost incurred by the respondent in the preparation, transmittal, or presentation of any response or material submitted in response to this RFI will be borne solely by the respondent.

- **Use of Information**

The State of New Mexico reserves all rights available to it by law. Respondents to this RFI are hereby notified that all information, documentation, and any specific content or approaches included in RFI responses will be analyzed, may appear in various reports, and may be used in any solicitation that may result from this RFI. Therefore, do not submit any proprietary or confidential information. The State of New Mexico cannot and does not guarantee the confidentiality of information submitted.

- **Eligibility to Participate in Subsequent Procurement**

If the State of New Mexico decides to issue an RFP or other form of solicitation, those parties who choose to respond to this RFI, as well as those parties who choose not to respond to this RFI, will be eligible to participate in that solicitation.

- **Ownership of Materials**

Ownership of all data, material, and documentation originated and submitted to the State of New Mexico, pursuant to the RFI, shall belong exclusively to the State of New Mexico and be subject to public inspection in accordance with the New Mexico Inspection of Public Records Act. No documents will be returned once submitted to the State.

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