

1.0 Background

➤ **Overview: Capital Funding Programs to Advance Statewide Broadband Expansion**

The federal Infrastructure Investment and Jobs Act commits over \$45 billion to broadband deployment via the National Telecommunications and Information Administration, including through creation of the \$1 billion Enabling Middle Mile Broadband Infrastructure Program – established for the “construction, improvement or acquisition of middle mile infrastructure.” Although program detail and guidance will be forthcoming, the agency notes that:

The purpose of the grant program is to expand and extend middle mile infrastructure to reduce the cost of connecting unserved and underserved areas to the internet backbone. Eligible applicants include States, political subdivisions of a State, tribal governments, technology companies, electric utilities, utility cooperatives, public utility districts, telecommunications companies, telecommunications cooperatives, nonprofit foundations, nonprofit corporations, nonprofit institutions, nonprofit associations, regional planning councils, Native entities, or economic development authorities.

Since 2020, the Illinois Department of Commerce & Economic Opportunity (DCEO) and its Illinois Office of Broadband (IOB) administer the Connect Illinois program, the state’s capital fund to expand broadband access across Illinois. Currently appropriated with \$400 million, the program provides grants to Internet service providers to foster the deployment of last-mile networks across unserved and underserved communities in Illinois. Connect Illinois was included in the historic 2019 Rebuild Illinois program.

➤ **Middle-Mile Expansion Program**

The State of Illinois recognizes that many unserved and underserved communities lack availability of high-speed middle-mile networks. To support the current Connect Illinois program and all last-mile broadband expansion to Illinois households, business, and community anchor institutions, IOB is investigating middle-mile infrastructure build out across the State (“Illinois Middle Mile Network”).

➤ **Purpose of the RFI**

A key objective for DCEO is to extend middle-mile fiber networks to unserved and underserved communities. Staff aim to apply an evidence-based, analytical approach toward planning this expansion. To help achieve these objectives, this RFI serves to invite public comments on several planning considerations. These include matters related to: network and technical specifications; geographical and location prioritization; and other suggestions to serve the public interest.

➤ **Structure of Document**

The specific questions follow below. They are prefaced by preliminary factors regarding the Illinois Middle Mile Network. The final section discusses the administration process to file comments.

Section 1:	Background
Section 2:	Preliminary strategy for the Illinois Middle Mile Network
Section 4:	Key questions for public input
Section 5:	Administrative considerations for filing comments

2.0 Illinois Middle Mile Network: Strategic Overview

➤ Purpose of the Illinois Middle Mile Network for Last-Mile Expansion

The primary objective of the Illinois Middle Mile Network involves the deployment of open-access, middle-mile to facilitate the deployment of last-mile networks. Open access refers to the lease of both dark fiber and lit service to service providers. The middle-mile network will help the State of Illinois aim to achieve universal availability of fixed-line broadband. Several rural communities lack access to basic broadband that delivers at least 25/3 Mbps, or advanced networks above 100/20 Mbps. The Connect Illinois program labels these areas as “unserved” (below 25/3 Mbps) and “underserved” (between 25/3 and 100/20 Mbps), respectively.

An underlying consideration for middle-mile expansion often involves the challenging economics that prevent an ISP from achieving a viable return on investment for certain last-mile deployments. 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 premise passed. Therefore, the upfront cost per each customer is further elevated. Also, several rural communities across Illinois 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. Thus, the Illinois Middle Mile Network can then serve as a catalyst to last-mile deployment across such communities.

The Illinois Middle Mile 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”.

➤ Technical Specifications

The following table highlights key technical specifications for the Illinois Middle Mile Network.

Topic	Details
Fiber Count	<ul style="list-style-type: none">• 144 strands
Fiber Placement	<ul style="list-style-type: none">• 100% underground; placed within conduit
Handhold Splice Cases	<ul style="list-style-type: none">• Locations: Placed at road intersections and other relevant locations• Frequency: Splice points spaced every .5 to 3 miles
Community Access Points (CAPs)	<ul style="list-style-type: none">• Placement: These CAP’s involve lit access points that enable interconnection with last-mile service operators. They will be established along the route.

➤ Placement

The fiber and conduit will be laid along select roadways, including state routes, county and local roads.

➤ **Prioritization Framework on Locations Served by the Illinois Middle Mile Network**

The following framework illustrates several consideration factors to help prioritize the potential communities where the Illinois Middle Mile Network may traverse. This is not an inclusive list.

- 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 available, fiber-based middle-mile.
- Low Population Density: A low population density for an unserved (or underserved) community limits the opportunity for a privately-financed network.
- Consideration of Planned Last-Mile Deployments: The Illinois Middle Mile Network/DCEO will consider planned middle-mile deployments in the route planning analysis.

➤ **Public Posting of Route Map**

DCEO will post an initial route map after all feedback is received and evaluated. This information can help last-mile service operators during their design and planning processes.

3.0 Request for Public Comment

DCEO staff will be developing the detailed strategy in the near-term. This strategy includes technical specifications, build-out strategy (e.g., markets being passed) and overall services strategy. Agency staff invites public comment to help ensure that this expansion meets the broader needs of communities lacking access to high-speed, reliable and affordable broadband. This input will help DCEO make an informed decision.

A. Technical Specifications

Topic	Question Number	Input Sought
Fiber Strand Count	A1	• How many fiber strands should be installed?
	A2	• Should the count vary depending on the location of the network (e.g., community laterals vs. long-stretch backhaul)? If so, please explain.
Splice Points	A3	• How frequently should the splice points be deployed?
Community Access Points	A4	• How frequently should community access points be spaced?
	A5	• What are key considerations on where the point of interconnection should be placed?
Conduit	A6	• Should extra conduit beside the fiber lines be installed?
	A7	• If so, how many sets of conduit should be deployed?
Best Practices + Other Technical Considerations	A8	• What other best practices can be referenced to ensure the technical design can best serve current and future backhaul needs of ISPs?
	A9	• Are there other technical specifications that should be addressed – especially those technical considerations that will aid in interconnecting ISPs?

B. Geographical Coverage

Topic	Question Number	Input Sought
Prioritization Framework	B1	<ul style="list-style-type: none"> What additional factors should be considered in prioritizing the communities to be passed?
Communities with High Need for Middle-Mile	B2	<ul style="list-style-type: none"> Are there specific communities that have a strong, immediate need for middle-mile? Please provide a list of such communities and the underlying reasons.
	B3	<ul style="list-style-type: none"> What specific middle mile route(s) would benefit the communities in B2. Please show the specific route(s), including the required interconnect locations and the type of interconnect. Note: The response to this question in KMZ/KML format or shape file format is preferred.
	B4	<ul style="list-style-type: none"> DCEO 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. <ul style="list-style-type: none"> 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.
Foster Advanced Mobile Wireless	B5	<ul style="list-style-type: none"> How can the Illinois Middle Mile Network be designed and deployed to meet the current and future backhaul needs of mobile network operators?
Fostering Public Safety	B6	<ul style="list-style-type: none"> How can the Illinois Middle Mile Network be designed and deployed to meet the current and future backhaul needs of public safety networks?
Other	B7	<ul style="list-style-type: none"> What other factors should be considered in determining where to place the fiber?

C. Service Offerings

Topic	Question Number	Input Sought
Lit Fiber	C1	<ul style="list-style-type: none"> What types of service packages, for backhaul, are requested by network operators? Please speak to capacity, contract terms, etc.
Dark Fiber	C2	<ul style="list-style-type: none"> What percentage of the fiber strands should be reserved for dark fiber leases?

D. Expression of Interest

Topic	Question Number	Input Sought
Expression of Interest by Last Mile Operators	D1	<ul style="list-style-type: none"> As stated in the federal Infrastructure Investment and Jobs Act, priority will be given to grant applications where last mile operators have expressed written interest in interconnecting with the middle mile network. If a last mile operator is interested in connecting to an Illinois Middle Mile Network, please provide a written expression of interest.

E. Other Information

Topic	Question Number	Input Sought
Other	E1	<ul style="list-style-type: none">Is there anything else, not mentioned in this RFI, that you would like to share?

4.0 Administrative Considerations

➤ Submission of RFI to DCEO

The intent and goal of this RFI is to obtain input regarding several technical and strategic factors involved with the creation of the Illinois Middle Mile Network. This RFI is for information and planning purposes only.

➤ Responses

Parties are requested to respond to this RFI by submitting an email response to broadband@illinois.gov by 5pm on May 13, 2022. Please send any questions regarding the RFI to this email address.

➤ Response and Format

DCEO appreciates and welcomes all ideas. Please ensure that your response includes:

- Name of organization
- Representative or contact name, title and/or affiliation
- Contact information, including address, phone, and email
- Signature of representative or contact

➤ Confidentiality

All information received through this request is subject to the Freedom of Information Act (FOIA). However, if you include proprietary information, please mark it “confidential” to ensure it remains such.

➤ Information in RFI

The information provided in the RFI is subject to change and is not binding on DCEO. DCEO have not made a commitment to move forward with the Illinois Middle Mile Network or any other courses of action stated in this RFI. All submissions become DCEO property and will not be returned. DCEO reserves the right to cancel this RFI at any time with or without notice to respondents and without liability.

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