

Application for Federal Assistance SF-424

* 1. Type of Submission: <input type="checkbox"/> Preapplication <input checked="" type="checkbox"/> Application <input type="checkbox"/> Changed/Corrected Application	* 2. Type of Application: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision	* If Revision, select appropriate letter(s): <input type="text"/> * Other (Specify): <input type="text"/>
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* 3. Date Received: <input type="text" value="Completed by Grants.gov upon submission."/>	4. Applicant Identifier: <input type="text" value="2021 MO Covered Partnership"/>
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5a. Federal Entity Identifier: <input type="text"/>	5b. Federal Award Identifier: <input type="text" value="NTIA-BIP-2021"/>
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State Use Only:

6. Date Received by State: <input type="text" value="07/16/2021"/>	7. State Application Identifier: <input type="text" value="MO"/>
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8. APPLICANT INFORMATION:

* a. Legal Name:

* b. Employer/Taxpayer Identification Number (EIN/TIN): <input type="text" value="44-6000987"/>	* c. Organizational DUNS: <input type="text" value="7803961560000"/>
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d. Address:

* Street1:
Street2:
* City:
County/Parish:
* State:
Province:
* Country:
* Zip / Postal Code:

e. Organizational Unit:

Department Name: <input type="text"/>	Division Name: <input type="text" value="Strategy & Performance"/>
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f. Name and contact information of person to be contacted on matters involving this application:

Prefix: * First Name:
Middle Name:
* Last Name:
Suffix:

Title:

Organizational Affiliation:

* Telephone Number: Fax Number:

* Email:

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

A: State Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

National Telecommunications and Information Admini

11. Catalog of Federal Domestic Assistance Number:

11.031

CFDA Title:

Broadband Infrastructure Program

*** 12. Funding Opportunity Number:**

NTIA-BROADBAND-INFRASTRUCTURE-PROGRAM-21

* Title:

BROADBAND INFRASTRUCTURE PROGRAM

13. Competition Identification Number:

NTIA-BROADBAND-INFRASTRUCTURE-PROGRAM-21

Title:

Broadband Infrastructure Program

14. Areas Affected by Project (Cities, Counties, States, etc.):

선택 항목

Add Attachment

Delete Attachment

View Attachment

*** 15. Descriptive Title of Applicant's Project:**

2021 Missouri's NTIA Covered Partnership

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant

* b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:

* a. Start Date:

* b. End Date:

18. Estimated Funding (\$):

* a. Federal	<input type="text" value="42,241,491.12"/>
* b. Applicant	<input type="text"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="25,105,503.35"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="67,346,994.47"/>

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

a. This application was made available to the State under the Executive Order 12372 Process for review on

b. Program is subject to E.O. 12372 but has not been selected by the State for review.

c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

Yes No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title:

* Telephone Number: Fax Number:

* Email:

* Signature of Authorized Representative: * Date Signed:

This Workspace form is one of the forms you need to complete prior to submitting your Application Package. This form can be completed in its entirety offline using Adobe Reader. You can save your form by clicking the "Save" button and see any errors by clicking the "Check For Errors" button. In-progress and completed forms can be uploaded at any time to Grants.gov using the Workspace feature.

When you open a form, required fields are highlighted in yellow with a red border. Optional fields and completed fields are displayed in white. If you enter invalid or incomplete information in a field, you will receive an error message. Additional instructions and FAQs about the Application Package can be found in the Grants.gov Applicants tab.

OPPORTUNITY & PACKAGE DETAILS:

Opportunity Number:	NTIA-BROADBAND-INFRASTRUCTURE-PROGRAM-21
Opportunity Title:	BROADBAND INFRASTRUCTURE PROGRAM
Opportunity Package ID:	PKG00267256
CFDA Number:	11.031
CFDA Description:	Broadband Infrastructure Program
Competition ID:	NTIA-BROADBAND-INFRASTRUCTURE-PROGRAM-21
Competition Title:	Broadband Infrastructure Program
Opening Date:	05/19/2021
Closing Date:	08/17/2021
Agency:	National Telecommunications and Information Admini
Contact Information:	Jennifer Duane Senior Broadband Program Specialist E-mail: jduane@ntia.gov Phone: 202.482.2048

APPLICANT & WORKSPACE DETAILS:

Workspace ID:	WS00772342
Application Filing Name:	Missouri Covered Partnership
DUNS:	7803961560000
Organization:	ECONOMIC DEVELOPMENT, MISSOURI DEPARTMENT OF
Form Name:	Budget Information for Construction Programs (SF-424C)
Form Version:	2.0
Requirement:	Mandatory
Download Date/Time:	Sep 16, 2021 02:44:53 PM EDT
Form State:	No Errors

FORM ACTIONS:[CHECK FOR ERRORS](#)[SAVE](#)[PRINT](#)

BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	\$ 1,256,884.33	\$ 0.00	\$ 1,256,884.33
2. Land, structures, rights-of-way, appraisals, etc.	\$ 210,921.80	\$ 0.00	\$ 210,921.80
3. Relocation expenses and payments	\$ 375,000.00	\$ 0.00	\$ 375,000.00
4. Architectural and engineering fees	\$ 2,980,122.53	\$ 0.00	\$ 2,980,122.53
5. Other architectural and engineering fees	\$ 134,864.85	\$ 0.00	\$ 134,864.85
6. Project inspection fees	\$ 20,088.00	\$ 0.00	\$ 20,088.00
7. Site work	\$ 1,026,887.73	\$ 0.00	\$ 1,026,887.73
8. Demolition and removal	\$ 5,400.00	\$ 0.00	\$ 5,400.00
9. Construction	\$ 51,238,890.07	\$ 0.00	\$ 51,238,890.07
10. Equipment	\$ 9,001,101.10	\$ 0.00	\$ 9,001,101.10
11. Miscellaneous	\$ 115,626.41	\$ 0.00	\$ 115,626.41
12. SUBTOTAL (sum of lines 1-11)	\$ 66,365,786.81	\$ 0.00	\$ 66,365,786.81
13. Contingencies	\$ 509,533.29	\$ 0.00	\$ 509,533.29
14. SUBTOTAL	\$ 66,875,320.10	\$ 0.00	\$ 66,875,320.10
15. Project (program) income	\$ 0.00	\$ 0.00	\$ 0.00
16. TOTAL PROJECT COSTS (subtract #15 from #14)	\$ 66,875,320.10	\$ 0.00	\$ 66,875,320.10
FEDERAL FUNDING			
17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter eligible costs from line 16c Multiply X 63 % Enter the resulting Federal share.			\$ 42,241,491.12

ASSURANCES - CONSTRUCTION PROGRAMS

OMB Number: 4040-0009
Expiration Date: 02/28/2022

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0042), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progressive reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards of merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.
14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq).
18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.
20. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL Stacey D Hirst	TITLE Financial Systems Manager
APPLICANT ORGANIZATION Missouri Department of Economic Development	DATE SUBMITTED 08/17/2021

SF-424D (Rev. 7-97) Back

Missouri Covered Partnership, NTIA BIP – Project Narrative

The Missouri Department of Economic Development (DED) has identified nine companies representing a total of NTIA grant requests of \$42,230,250.58 million to construct high speed internet to 13,544 households, 320 businesses, and 33 community anchor institutions. The State of Missouri received a total of 44 applications totaling over \$104 million. The following companies are deemed qualified by Missouri’s Covered Partnership evaluation process. Each of the projects received the superior ranking, presents a strong application, has an eligible project area, and cleared DED’s due diligence process. Analyzing what projects would be included in Missouri’s Covered Partnership the department set the projects at the distinctive level (receiving 90 points above in Missouri’s review). The department commissioned a team of professional reviewers to evaluate all the applications submitted to DED utilizing the rubric of point values outlined in the NOFO. In addition, the geographic diversity with projects in 5 of the 6 state economic regions as follows: Southeast Region (1), Southwest Region (2), Central Region (2), St. Louis Region (3), and the North Region (11). The department submits for NTIA’s consideration an application request far exceeding the \$30 million dollar threshold recommended in the NOFO and we request a special consideration be given due to the amount of superior grade projects and achieving a very geographically diverse proposed projects. The State of Missouri will ensure all project conform to the required permitting and environmental reviews.

The projects listed below are now submitted for NTIA evaluation. Due to the number of projects being submitted, these following tables are excerpts of all the requested narrative items to be within the application. Missouri has provided project specific supplemental items for each company’s project and available to the merit reviewers. The files are labeled by the narrative sections requested within the NTIA NOFO:

Boycom Cablevision	
Executive Summary	BOYCOM Cablevision, Inc., with this application for funding under the Missouri NTIA Broadband Infrastructure Program process, will perform new build to Stringtown in rural western Butler County. This area is in an unserved/underserved census blocks. This community is made up of a very high volume of low to moderate income homes and is also a farming community. Our goal is to have FFTH service to 142 homes over the next five years, which is a 60% penetration rate with atotal of 230 homes passed. Currently being served by spotty cellular service and satellite. The finished new build will host FTTH at speeds of 1 Gbps downstream/100 Mbps upstream. Boycom Cablevision, Inc., believes that we will be able to get the maximum value of the dollarsinvested versus performance for the number of underserved homes.
Description of Broadband Project	FFTH service to 142 homes over the next five years, which is a 60% penetration rate with a total of 230 homes passed. Currently being served by spotty cellular service and satellite. The finished new build will host FTTH at speeds of 1 Gbps downstream/100 Mbps upstream, 60ms latency. 72ct armored loose tube low water peak single mode fiber will be used in the upgrade. 50 Mbps–1,000 GB (\$69.95), 1QOM-1,000 GB (\$99.95), 300 Mbps-1,500 GB (\$129.95), and 1 GB to 2,000 GB (\$159.95). This community needs help and Boycom Cablevision, Inc. would like to stand in the "gap" and relieve the stress and concern these folks have for their future, homes, business, churches and community. Technical details provided within Missouri’s application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	BOYCOM Cablevision, Inc. will perform a new build to Stringtown in ruralwestern Butler County. This area is in an unserved/underserved census blocks and list of CB’s presented in a summary Excel sheet within the Missouri application packet. This community is made up of a very high volume of low to moderate income homes and is also a farming community. Projected 230 households, 18 businesses and 2 community anchor institutions.
Statutory Funding Priority(ies)	1-5 Priorities
Description of how project addresses the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, this application received a total of 90 out of 100 points and therefore distinctly addressed the evaluation criteria.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.

Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	Stringtown is an unincorporated community in western Butler County that is currently a combination of unserved/ underserved areas located in close proximity to Boycom's Poplar Bluff, MO system's fiber backbone.
Any additional support provided?	None.
Labor standards	Not applicable.

Chariton Valley Communications – Clarence Zone 1 & 2	
Executive Summary	Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We want to extend our vision to 75 unserved locations in Census Blocks located in Shelby County, Missouri. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high-speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. We have used the same Fiber-to-the-Home (FTTH) model and construction process for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA, providing 1 Gig symmetrical broadband service to this unserved area.
Description of Broadband Project	Fiber-to-the-Home (FTTH) project in Clarence, Missouri located in Shelby County. All locations within the project area are underserved and will receive symmetrical 1 Gbps fiber with less than 100 ms latency after the build. Residential Broadband pricing is 100 Mbps (\$47), 500 Mbps (\$67), 1 Gig (\$97). Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA. Technical details provided within Missouri's application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	The Proposed Service Area is in Clarence, Missouri located in Shelby County in two zones for a total of 75 locations: 73 households and 2 businesses. All locations (100%) within the project area are unserved. List of CB's presented in a summary Excel sheet within the Missouri Covered Partnership application packet.
Statutory Funding Priority(ies)	1-4 Priorities.
Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, these two zones were evaluated as separate applications and each received 92.67 out of 100 points.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.
Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	Phase 1 (Order Materials & Permitting) will begin upon grant award with Chariton ordering materials (current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation), Phase 3 (Customer Installations), and Phase 4 (Project Finalization) will be completed in succession, with the project being completed within the 1-year requirement. See Attachment H – DED Detailed Work Plan. Photos and aerials supplied in supplemental in Missouri's application file labeled #1 Project Narratives.
Any additional support provided?	None.

Labor standards	Chariton’s contractors hire local employees that live and spend in the Proposed Service Area (PSA). Chariton works hand in hand with local leaders, public utilities and community stakeholders to keep all parties informed PSA project updates. All Chariton construction begins from the Central Office (CO) which allows businesses and anchor institutions quicker connectivity to the network allowing for enhanced services to the community.
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Chariton Valley Communications – Hannibal Zones 1 & 3

Executive Summary	Chariton Valley Communications Corporation’s (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. The Proposed Service Area is in Hannibal Missouri located in Marion County, with plans to extend service to 532 unserved locations across two zones in Census Blocks across the area. The Proposed Service Areas (PSAs) is near one of Chariton’s existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.
Description of Broadband Project	Fiber-to-the-Home (FTTH) project in Hannibal, Missouri located in Marion County. All locations within the project area are unserved and will receive symmetrical 1 Gbps fiber with less than 100 ms latency after the build. Residential Broadband pricing is 100 Mbps (\$47), 500 Mbps (\$67), 1 Gig (\$97). Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA. Technical details provided within Missouri’s application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	The Proposed Service Area is in Hannibal, Missouri located in Marion County in two zones for a total of 532 locations: 518 households, 12 businesses, and 2 community anchor institutions. All locations (100%) within the project area are unserved. List of CB’s presented in a summary Excel sheet within the Missouri Covered Partnership application packet.
Statutory Funding Priority(ies)	1-4 Priorities.
Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, Hannibal Zone 1 received 94 and Zone 3 received 92.67 out of 100 points.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.
Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	Chariton currently works with multiply contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is 42.59 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin upon grant award with Chariton ordering materials (current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation), Phase 3 (Customer Installations), and Phase 4 (Project Finalization) will be completed in succession, with the project being completed within the 1-year requirement. See Attachment H – DED Detailed Work Plan. Photos and aerials supplied in supplemental in Missouri’s application file labeled #1 Project Narratives.
Any additional support provided?	None.
Labor standards	Chariton’s contractors hire local employees that live and spend in the Proposed Service Area (PSA). Chariton works hand in hand with local leaders, public utilities and community

	stakeholders to keep all parties informed PSA project updates. All Chariton construction begins from the Central Office (CO) which allows businesses and anchor institutions quicker connectivity to the network allowing for enhanced services to the community.
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Chariton Valley Communications – Monroe City Project	
Executive Summary	Chariton Valley Communications Corporation’s (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We want to extend our vision to 50unserved locations in Census Blocks located in Shelby County, Missouri. The Proposed Service Area (PSA) is near one of Chariton’s existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.
Description of Broadband Project	Fiber-to-the-Home (FTTH) project in and around Monroe City located in Monroe County. All locations within the project area are underserved and will receive symmetrical 1 Gbps fiber with less than 100 ms latency after the build. Residential Broadband pricing is 100 Mbps (\$47), 500 Mbps (\$67), 1 Gig (\$97). Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA. Technical details provided within Missouri’s application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	50 unserved locations: 45 Households and 5 Businesses. All locations (100%) within the project area are unserved. List of CB’s presented in a summary Excel sheet within the Missouri Covered Partnership application packet.
Statutory Funding Priority(ies)	1-4 Priorities.
Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, Monroe City received 92.67 out of 100 points.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.
Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	Chariton currently works with multiple contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is a total 10.62 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin upon grant award with Chariton ordering materials (current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation), Phase 3 (Customer Installations), and Phase 4 (Project Finalization) will be completed in succession, with the project being completed within the 1-year requirement. See Attachment H – DED Detailed Work Plan. Photos and aerials supplied in supplemental in Missouri’s application file labeled #1 Project Narratives.
Any additional support provided?	None.
Labor standards	Chariton’s contractors hire local employees that live and spend in the Proposed Service Area (PSA). Chariton works hand in hand with local leaders, public utilities and community stakeholders to keep all parties informed PSA project updates. All Chariton construction begins

	from the Central Office (CO) which allows businesses and anchor institutions quicker connectivity to the network allowing for enhanced services to the community.
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Chariton Valley Communications – Palmyra Zones 1-4	
Executive Summary	Chariton Valley Communications Corporation’s (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. The Proposed Service Area is in Palmyra Missouri located in Marion County and will extend services to 188 locations in census blocks across four zones. The Proposed Service Areas (PSAs) is near one of Chariton’s existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.
Description of Broadband Project	Fiber-to-the-Home (FTTH) project in Palmyra, Missouri located in Marion County. All locations within the project area are unserved and will receive symmetrical 1 Gbps fiber with less than 100 ms latency after the build. Residential Broadband pricing is 100 Mbps (\$47), 500 Mbps (\$67), 1 Gig (\$97). Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA. Technical details provided within Missouri’s application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	The Proposed Service Area is in Palmyra, Missouri located in Marion County in four zones for a total of 188 locations: 176 households, 10 businesses and 2 community anchor institution. All locations (100%) within the project area are unserved. List of CB’s presented in a summary Excel sheet within the Missouri Covered Partnership application packet.
Statutory Funding Priority(ies)	1-4 Priorities.
Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, Zone 1 & 2 received 93.33, Zone 3 received 90.67 and Zone 4 received 92.67 out of 100 points.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.
Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	Chariton currently works with multiple contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is a total 38.08 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin upon grant award with Chariton ordering materials (current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation), Phase 3 (Customer Installations), and Phase 4 (Project Finalization) will be completed in succession, with the project being completed within the 1-year requirement. See Attachment H – DED Detailed Work Plan. Photos and aerials supplied in supplemental in Missouri’s application file labeled #1 Project Narratives.
Any additional support provided?	None.
Labor standards	Chariton’s contractors hire local employees that live and spend in the Proposed Service Area (PSA). Chariton works hand in hand with local leaders, public utilities and community stakeholders to keep all parties informed PSA project updates. All Chariton construction begins from the Central Office (CO) which allows businesses and anchor institutions quicker connectivity to the network allowing for enhanced services to the community.

Columbus Telephone Company	
Executive Summary	Columbus Telephone Company, operating as Optic Communications within the state of Missouri, proposes to bring 1 Gbps download / 1 Gbps upload fiber Internet to 3,105 residential households, 99 businesses, and 16 anchor institutions within the rural community of Carl Junction, Missouri. These numbers represent 93% of the Carl Junction community who remain unserved according to an in-depth market survey and cross-tabulated competitive analysis conducted by Columbus Telephone Company and the City of Carl Junction for the National Telecommunications and Information Administration's (NTIA) Broadband Infrastructure Program. According to the study data, and certified testimonials provided by the City of Carl Junction, these residences, businesses, and community anchor institutions do not have access to Internet over 20 Mbps download / 3 Mbps Upload, despite service claims within the FCC's 477 Data. The City of Carl Junction has pledged their support to Columbus Telephone Company, in conjunction with the State of Missouri, to acquire the grant funds necessary to complete this project as it will ensure the much needed cost-effective, high-speed Internet access to every home, business, and anchor institution within the community as to improve quality of life, expand opportunity, and improve the local economy.
Description of Broadband Project	The construction will include forty-one mainline miles of fiber, OSP construction, electronics, install, cutover, and fiber drops. 1 Gbps download / 1 Gbps upload fiber Internet with less than 4 ms in latency. Service tiers and pricing [REDACTED] 100 Mbps symmetrical (\$65), 500 Mbps symmetrical (\$70) and 1 Gbps symmetrical (\$84). Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials. Columbus Telephone Company has been in contact with the City of Carl Junction since 2013, with the city's goal of serving the unserved with high-speed Internet. However, grant funds are necessary to make this project financially feasible for Columbus Telephone Company. Technical details provided within Missouri's application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	This project aims to reach every unserved household (3,105), business (99), and community anchor institution (16) in Carl Junction, Missouri. These numbers represent the 93% of the total population of 8,072 that do not currently have access to Internet. Carl Junction is a city with a small population of 8,072, located 9 miles from Joplin, Missouri, which has a population of 47,354 inhabitants. List of CB's presented in a summary Excel sheet within the Missouri Covered Partnership application packet.
Statutory Funding Priority(ies)	1-5 Priorities. Description of priorities addressed in company supplemental materials on pages 2 & 3 located with Missouri's application, file named #1 MO Project Narratives.
Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, this application received a total of 98 out of 100 points and therefore distinctly addressed the evaluation criteria.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.
Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	Environmental studies have been conducted by the City of Carl Junction and the proposed build site does not assume impact on any natural resources, landmarks, or protected lands. The general site area is underlain at depth with Mississippian Age Limestone. The upper surface of this limestone is often irregular because of differential vertical weathering and solution activities. Carl Junction is in the Tri-State Lead Belt and superficial soils consist primarily of silt loam and gavel silt loam. Due to the geographical constructs of the build site, the preliminary network design was estimated at 25% rock bore and 10% rock trench. Columbus Telephone Company has worked closely with the City of Carl Junction, Finley Engineering, and the IPaC to ensure that the project has been designed in such a way to minimize the potential for adverse impacts on the environment and will cooperate with NTIA in identifying feasible measures to reduce or avoid any identified adverse environmental impacts of our proposed project. Columbus Telephone Company intends to comply with the environmental and historic

	preservation requirements, if awarded, including the National Environmental Policy Act and the National Historic Preservation Act, and other related Acts. Photos and aerials supplied in supplemental in Missouri’s application file labeled #1 Project Narratives.
Any additional support provided?	None.
Labor standards	Columbus Telephone Company has always been committed to upholding the highest labor standards, both for internal employees and contractors to ensure wages that are designed to meet, and often exceed the standard of living in all local markets. We hold our contracting companies and vendors to the highest standards of labor practices, including ensuring equal opportunity and fair wages. As part of this CJ Fiber Broadband project, we are focused on providing benefit for the community of Carl Junction, not only by providing high-speed broadband, but by hiring local positions, customer service representatives, installers, administrative staff, technicians, etc. within the Carl Junction expansion of the central office.

Gascosage Electric Cooperative	
Executive Summary	Gascosage Electric Cooperative is seeking funding to complete a Fiber-To-The-Home project south of Dixon, MO, in an area with homes and businesses in desperate need of sufficient broadband services. The Dixon South project will bring 1 Gb/s symmetrical Internet and voice services to 719 homes and 35 businesses along and near highways 28 and D. Dixon, MO connects to Interstate I-44 via Highway 28 and to Jerome, MO via Highway D. The project area is flanked to the south by the Gasconade River with lush forests and rolling hills defining a majority of the project landscape. The homes in the Dixon South project area report little to no service options and what is available does not meet their needs nor the currently accepted definition of broadband. As an experienced broadband provider, Gascosage will build a sustainable fiber network and install the latest electronics which will provide industry leading services to homes and businesses for many years to come. A poll of Gascosage members in the project area revealed an overstatement of service availability based on FCC form 477 data. Gascosage will improve on the pre-existing services by building to all members in the project area using fiber optics and providing 1 Gb/s symmetrical service over a Gigabit Passive Optical Network (GPON). As COVID continues to affect American’s daily lives, sufficient broadband services for all families has become a need and no longer a luxury. Gascosage looks forward to partnering with the State and the NTIA to make this project a reality.
Description of Broadband Project	Gascosage Electric Cooperative is seeking funding to complete a Fiber-To-The-Home project south of Dixon, MO will bring 1 Gb/s symmetrical fiber internet utilizing Gigabit Passive Optical Network (GPON) with 6 ms of latency and voice services to 719 homes and 35 businesses along and near highways 28 and D. Gascosage will be offering subscribers 100 Mb/s (\$59.99), 250 Mb/s (\$79.99), and 1 Gb/s (\$99.99) service tiers. Technical details provided within Missouri’s application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	Dixon South PSA is approximately 23.68 square miles with 719 households and 35 businesses. This equates to approximately 30 households per square mile which is very low compared to the non-formal definition of an urban area at over 1,000 households per square mile. This PSA contains several farms and households performing some type of farming activity. All of the locations (100%) in the PSA are considered unserved or underserved based on their inability to receive reliable broadband Internet with speeds at or above 25 Mb/s download and 3 Mb/s upload. List of CB’s presented in a summary Excel sheet within the Missouri Covered Partnership application packet.
Statutory Funding Priority(ies)	1-5 Priorities. Description of priorities addressed in company supplemental materials on pages 1 & 2 located with Missouri’s application, file named #1 MO Project Narratives.
Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, this application received a total of 91 out of 100 points and therefore distinctly addressed the evaluation criteria.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.

Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	Gascosage is familiar with the environmental requirements associated with federal grant standards and has the required relationships developed to complete these processes in a timely manner. Photos and aerials supplied in supplemental in Missouri's application file labeled #1 Project Narratives.
Any additional support provided?	None.
Labor standards	Gascosage will follow all labor practices per the grant.

Gateway Infrastructure	
Executive Summary	<p>Include exact amounts. [REDACTED]</p> <p>[REDACTED] Existing providers are not upgrading their networks based on Gateway Fiber's discussions with municipal representatives. The Serving Areas require a prohibitively expensive network build [REDACTED]. Industry experts categorize this build cost as "Significantly More Costly" to "Rural and Complex." The requested funds make this project financially feasible, providing these communities with reliable, future-proof internet. Gateway Fiber is uniquely qualified to deliver this project. [REDACTED] are near the Serving Areas, providing network, operational, and customer benefits. Gateway Fiber's service plans start at \$59.99 (qualified for the Emergency Broadband Benefit) and include a 1 Gig option. Gateway engages customers with local community involvement and attentive customer service. Gateway maintains a Customer Net Promotor Score of 83, compared to the industry average of 1 for internet providers.</p>
Description of Broadband Project	<p>[REDACTED] Industry experts categorize this build cost as "Significantly More Costly" to "Rural and Complex." The requested funds make this project financially feasible, providing these communities with reliable, future-proof internet. [REDACTED]</p>
Description of Area to be Served	<p>[REDACTED]</p> <p>List of CB's presented in a summary Excel sheet within the Missouri Covered Partnership application packet.</p>
Statutory Funding Priority(ies)	1-5 Priorities
Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, [REDACTED]
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.
Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.

Physical Project Area Description	The proposed Serving Areas for the grant are all existing communities in rural areas and do not include future greenfield developments. There are no protected wetlands; however, we expect to cross the Cuivre River in Josephville and St. Paul serving areas. All proposed locations are similar in soil type and typography to our existing serving areas in Missouri, giving Gateway Fiber an immediate understanding of the effort needed for construction efforts. Photos and arials supplied in supplemental in Missouri's application file labeled #1 Project Narratives.
Any additional support provided?	None.
Labor standards	Gateway Fiber has always been committed to upholding the highest labor standards, both for internal employees and contractors to ensure wages that are designed to meet, and often exceed the standard of living in all local markets. We hold our contracting companies and vendors to the highest standards of labor practices, including ensuring equal opportunity and fair wages. [REDACTED] not only by providing high-speed broadband, but by hiring local positions, customer service representatives, installers, administrative staff, and technicians.

Green Hills Telephone Company	
Executive Summary	Since 1952, Green Hills Telephone Corporation (GHTC) has been providing leading telecommunications services to North Central Missouri. Headquartered in Breckenridge, Missouri, the Green Hills network extends across ten counties and covers over 1,000 square miles. GHTC provides high-speed broadband, local phone and long-distance service, video (IPTV and cable television), and IT consulting services to over 5,000 residential, business, and wholesale customers. Since 2010, Green Hills has been building fiber optic networks to serve its rural customer base and provides up to 1 Gbps symmetrical speeds in all fiber-to-the-premise (FTTP) locations. The project is designed to serve eligible areas east of Chillicothe, Missouri. These locations are east of Highway 65 and both north and south of Highway 36. There are 302 locations within the Proposed Service Area (PSA), which includes 6 businesses and 1 anchor institutions. All locations will be serviced with FTTP, with 1 Gbps symmetrical speeds available at every location. The business plan includes an anticipated 75% take rate, resulting in 227 projected customers. This project is desperately needed as these locations have limited to no broadband access today. In some locations, an up to 18 Mbps by 1 Mbps connection is available from the incumbent telephone company, but there are no true 25 Mbps by 3 Mbps broadband options available for this community.
Description of Broadband Project	FTTP with 1 Gbps symmetrical speeds and 20 ms of latency available to every location - 302 locations within the Proposed Service Area (PSA), which includes 6 businesses and 1 anchor institution. [REDACTED] Technical details provided within Missouri's application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	The locations included in this application do not have access to 25 Mbps download and 3 Mbps upload speeds at this time. 295 homes, 6 businesses, and 1 anchor institution. The anchor institutions include a public water district and a wastewater location for the City of Chillicothe. The fiber optic cable will be 100% buried in state, county, or city public right-of-way. List of CB's presented in a summary Excel sheet within the Missouri Covered Partnership application packet.
Statutory Funding Priority(ies)	1-5 Priorities. The PSA in this project is designed to meet the five statutory funding priorities described in Section 905(d)(4) of the Act. This project will deliver broadband services to 100% of the locations in the PSA. The locations in this PSA are very rural and lack broadband connectivity that is much needed in today's economy. The PSA is not in a county, city, or town that has a population of more than 50,000 inhabitants. Also, the PSA is no in an urbanized area contiguous and adjacent to a city or town of more than 50,000 inhabitants. The project proposes a FTTP design, which will ensure these locations always have broadband connectivity for the foreseeable future. Fiber is the best future-proof technology offered today, which makes FTTP the most cost-effective solution available for this PSA. Finally, all locations within the PSA will have access to symmetrical 1Gbps speeds.

Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, this application received a total of 91 out of 100 points and therefore distinctly addressed the evaluation criteria.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.
Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	GHTC is prepared to work with NTIA and comply with all environmental and NEPA requirements. GHTC was recently awarded a USDA ReConnect Grant, which included an area just north of the PSA included in this project and worked with the State Historical Preservation Office (SHPO), Missouri Department of Natural Resources, Tribal Nations, and environmental consultants to ensure the project adhered to all NEPA regulations. All construction methods utilized for the project are by general design intended to be the lowest environmentally impacting methods. Photos and aerials supplied in supplemental in Missouri's application file labeled #1 Project Narratives.
Any additional support provided?	None.
Labor standards	The construction and installation of fiber to the premises for this project will be completed by North Missouri Construction, Inc. They are members of the Power and Communication Contractors Association, which holds them accountable for employee labor relations. Green Hills Telephone corporation has contracted multiple projects to North Missouri Construction with an excellent satisfactory rating. Green Hills Telephone will be performing ongoing maintenance on the project and has a rigorous process in place to ensure employee safety and competitive wages, at or above the industry and local hire provisions.

Le-Ru Telephone Company	
Executive Summary	Le-Ru Telephone Company's proposed project will provide much needed Broadband service to 221 underserved and unfunded locations, located in the southeastern part of McDonald County close to the Missouri state line. The project area is in the Ozarks and spans rough terrain with customer locations in remote rural areas that are situated far from the Le-Ru serving wire centers. The proposed project will deliver Fiber to the Premise (FTTP) over buried fiber facilities and the FTTP technology can offer speeds of 1Gbps/1Gbps simultaneously to all 221 locations. Offering 1 Gbps speeds to this area would greatly improve the ability of these locations to be able to keep up with the growing demand of working from home, rising technology advances (Examples: IOT, streaming devices, security cameras), and telehealth services. Le-Ru provides service to some of these locations over copper facilities with internet services today, but the services are limited to speeds of 10/1 Mbps due to distance from the serving remotes and the rough terrain that is typical of the Ozarks.
Description of Broadband Project	Le-Ru Telephone Company's proposed project will provide much needed Broadband service to 221 underserved and unfunded locations, located in the southeastern part of McDonald County close to the Missouri state line. The FTTP technology can offer speeds of 1Gbps/1Gbps simultaneously to all locations within the PSA. Service tiers and pricing are as follows: 50Mbps/50Mbps (\$50), 100 Mbps/100 Mbps (\$100), 500 Mbps/500 Mbps (\$70), 1 Gbps/1 Gbps (\$84). Technical details provided within Missouri's application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	The proposed last-mile FTTP project will connect 221 locations, consisting of 215 households, 6 businesses, to FTTP broadband service capable of serving all locations simultaneously with symmetrical speeds of 1Gbps. The proposed project area is located at the furthest edge of the county and does not contain any community anchor institutions. The total number of unserved locations in the proposed service area meeting the definition of unserved and no broadband provider has been selected to receive federal funding with an enforceable build-out commitment is 221, while Le-Ru is an ACAM elector the locations for the proposed project are not fully funded ACAM locations. The entire proposed last-mile FTTP project location subscriber base of 221 will receive FTTP broadband service with speeds provided at symmetrical 1Gbps which is greater than the qualifying broadband service required minimum. The proposed project

	<p>area lacks availability to qualified as the only other options are satellite or fixed wireless services. The NTIA Broadband Need map depicts the Ookla median speed at 10.18Mbps download and 32.70% of households lacking Internet access.</p> <p>List of CB's presented in a summary Excel sheet within the Missouri Covered Partnership application packet.</p>
Statutory Funding Priority(ies)	<p>1-5 Priorities. The proposed eastern McDonald County FTTP project aligns with the priorities as identified in Section 905(d)(4) of the Act. Specifically; 1) the proposed covered broadband project is designed to provide services to the greatest number of households in the eastern McDonald County service area as the project was engineered to pass all locations, 2) the proposed eligible service area located in McDonald County, Missouri population as of the 2010 U.S. Census data was 23,083, and is in a rural area not contiguous or adjacent to a city or town of more than 50,000 inhabitants, 3) the proposed project area is located in the extremely rural region of eastern McDonald County near the Missouri state line, 4) the proposed FTTP project will deliver 1Gbps symmetrical download and upload speed exceeding the minimum covered project speed of 100Mbps/20Mbps, and 5) the proposed covered FTTP broadband project meets the requirements of the NOFO by delivering a FTTP product that will meet current needs as well as creating a network that has the ability to evolve, sustain, and scale for future advanced services.</p>
Description of how project address the evaluation criteria	<p>Missouri evaluated all projects utilizing similar scoring categories published by NTIA, this application received a total of 91 out of 100 points and therefore distinctly addressed the evaluation criteria.</p>
Scalability	<p>The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.</p>
Project Plan w/ Activities	<p>Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.</p>
Physical Project Area Description	<p>The physical project area is in rural Missouri where the land is sparsely developed to the extent that copper facilities already exist and currently provide voice and non-qualifying broadband service to the locations. The project as engineered is not adjacent to protected lands or resources. The FTTP project consists of burying fiber in existing right-of-way and current paths for remote areas. Additionally, the project locations have been submitted to the FEMA National Flood Hazard NFHL web service and have been identified as area of minimal flood hazard potential. Photos and aerials supplied in supplemental in Missouri's application file labeled #1 Project Narratives.</p>
Any additional support provided?	<p>None.</p>
Labor standards	<p>Le-Ru understands the importance of and supports NTIA's efforts in promoting workforce development and encouraging grant recipients to ensure that covered broadband projects comply with strong labor standards. Le-Ru is and has been locally owned and operated for many years and intends to continue its practice of hiring, training, and promoting a local and diverse workforce with ties to the region. While formal Department of Labor wage and agreement standards are not 'granular' enough to properly capture the cost of living and prevailing wages for the region, Le-Ru offers competitive wages as demonstrated by the many employees with over ten years of service with Le-Ru. Le-Ru's local hire provisions are not formally enforced with any qualitative quotas, but Le-Ru strives to promote the effective and efficient delivery of high-quality infrastructure projects in addition to economic recovery through strong employment opportunities for workers. Le-Ru recognizes from experience that adhering to these practices in construction projects helps to ensure a reliable supply of skilled labor that minimizes disruptions associated with labor. Le-Ru looks forward to working to continue to achieve its goals of investing in communities while maintaining fair and competitive local wages.</p>

Socket Telecom LLC	
Executive Summary	<p>Socket Telecom, LLC ("Socket") is applying for a grant to aid in the construction of a Fiber to the Premise(FTTP) network in the Northwest Boone County area. Our proposal will serve 2,941 premises determined to be Unserved using NTIA's definition. Once the network is constructed,</p>

	<p>Socket will provide reliable, low latency, synchronous 1Gbps Internet which; is over 100 times faster than some of the internet service speeds available in Socket’s proposed service area. This grant is necessary in order to make it economically viable to construct this network and provide these high-speed internet services. The total cost of the project will be \$12,009,797.02. Of that Socket is requesting a grant of \$5,005,418.03 with Socket funding the remaining \$7,004,378.99. That breaks the funding request down to a grant request of 42% with Socket funding the remaining 58%. Socket’s project meets the goal of the NTIA’s program, which is to provide an affordable, reliable Qualifying Broadband Service to a large number of households with an effective use of the NTIA’s grant funds.</p>
Description of Broadband Project	<p>349 mile fiber to the premise (“FTTP”) network in the northwest Boone County, Missouri area. Providing reliable, low latency (less than 100 ms), synchronous 1Gbps Internet. Our proposal will pass 2,957 premises determined to be unserved. Socket commits to providing 1Gbps service in Socket’s proposed ESA for at least three years for a discounted rate of \$60 per month upon completing construction. Socket’s standard rate for 1Gbps Internet in other markets is \$125 per month. These rates include all taxes, fees, and surcharges. While Socket has wanted to build a fiber-optic network in the ESA for some time, it just has not been able to make a business case for doing so. That is largely due to the rural nature and the rugged terrain of the ESA. By sharing the construction costs with the State as the Covered Partner, Socket will be able to make that business case and be able to construct and operate a network capable of providing a Qualifying Broadband Service to each of the Premises with symmetric 1Gbps Qualifying Broadband Service exceeding the NTIA’s latency requirements. Technical details provided within Missouri’s application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.</p>
Description of Area to be Served	<p>There is a total of 3,943 premises in the ESA, the project will pass 2,941 premises determined to be unserved (75%) using NTIA’s definition. In addition, 6 businesses and 10 community anchor institutions will be beneficiaries of the project. List of CB’s presented in a summary Excel sheet within the Missouri Covered Partnership application packet.</p>
Statutory Funding Priority(ies)	<p>1, 2, 4 & 5 Priorities. Socket’s project clearly meets the object of the first priority as it has a larger portion of Unserved premises within its ESA. Northern Boone County is very different. It is rural, not contiguous with the City of Columbia, and is geographically and demographically very different than other parts of Boone County. Socket meets the 3rd priority by contributing 58% of the total cost of the project, the cost per house passed using NTIA grant funds is \$1,680. Socket meets the 4th priority since it is providing a Symmetric 1Gbps, low latency service exceeding the criteria of the definition of Qualifying Broadband Service.</p>
Description of how project address the evaluation criteria	<p>Missouri evaluated all projects utilizing similar scoring categories published by NTIA, this application received a total of 95 out of 100 points and therefore distinctly addressed the evaluation criteria.</p>
Scalability	<p>The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.</p>
Project Plan w/ Activities	<p>Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.</p>
Physical Project Area Description	<p>The FTTH network is being constructed in rural, unincorporated portions of Boone County. The project covers a variety of terrain types including forest land and open land used primarily for agricultural purposes. Based upon an extensive review, this project will not be delayed by environmental review requirements. To avoid an environmental review in the first place, Socket has experience in designing and constructing networks so they have no environmental impact. In the event any type of environmental review should be required, Socket will be able to address that quickly. Socket has experience in getting through the review process and is familiar with the entities that need to be contacted and what needs to be explained. By being located in Columbia, MO and near Jefferson City, MO, we are close to many of the offices that need to be contacted and can actually meet with the necessary people or hand-deliver any documents that may be required. Further, the environmental reviewers Socket will work with will be generally familiar with the Socket’s proposed ESA. While that may be seen only as a minor advantage, that does seriously speed up the process when there are questions or documents need to be</p>

	explained or modified. Photos and arials supplied in supplemental in Missouri’s application file labeled #1 Project Narratives.
Any additional support provided?	None.
Labor standards	Socket uses contractors located in the Central Missouri area that hire local employees. These contractors follow all safety standards and pay wages at or above the current market rates for qualified labor.
Spectrum Mid-America LLC – Grayhawk, Orchard, and Portage Projects	
Executive Summary	Spectrum Mid-America, LLC by its manager Charter Communications Inc. Charter ("Spectrum" or "Charter") is requesting a grant to construct a fiber-to-the-premises, Ethernet passive optical network ("FTTP EPON") network to provide service to unserved households in three locations in St. Charles County, MO and St. Louis County, MO. The project includes building 57.82 miles of fiber optic network to reach an estimated 496 unserved homes. Charter's FTTP EPON architecture, a standardized and mature model that is operated by Charter across the country, engineered and managed to meet up to 1 Gbps downstream speeds, 500 Mbps upstream speeds, and latency of well below 100 milliseconds. New customers in the grant areas will have access to several Internet speed options, including our Spectrum Internet with our minimum speed of up to 200/10 Mbps to our Spectrum Internet Gig service at up to 1000/500 Mbps. Additional services that will be available to Charter Internet customers include, but are not limited to, anti-virus security protection and in-home Wi-Fi. As an added benefit of its FTTP network, Charter will also be in a position to offer competitive video and voice services in the grant area.
Description of Broadband Project	Fiber-to-the-premises, Ethernet passive optical network ("FTTP EPON") network, 57.82 miles of fiber optics to reach an estimated 491 unserved homes with meet up to 1 Gbps downstream speeds, 500 Mbps upstream speeds, and latency of well below 100 milliseconds. Service and pricing plans are as follows 30 Mbps/4 Mbps (\$17.99), 200 Mbps/10 Mbps (\$74.99), 400 Mbps/20 Mbps (\$94.99), and 1,000 Mbps/500 Mbps (\$134.99). Technical details provided within Missouri’s application file labeled #1 Project Narratives. Project revenues and expenses, including pro forma included with Covered Partnership supplemental materials within file #5 MO Provider Financials.
Description of Area to be Served	All 491 residential households will have the ability to receive broadband service at speeds greater than qualifying broadband service, currently 100% are unserved. List of CB’s presented in a summary Excel sheet within the Missouri Covered Partnership application packet.
Statutory Funding Priority(ies)	1, 3 & 4 Priorities. Project will provide service to 100% of the identified households in the project area, encompassing 491 households that lack access to qualifying broadband service today. The proposed Project will extend broadband service to a high-cost area that would face challenges receiving private investment in the absence of public support. Here, the proposed Project represents an opportunity for NTIA to increase the cost-effectiveness of public funds through Charter's commitment to pledge a significant voluntary cost-share to offset the costs of the Project. The Project will offer broadband speeds of up to 1,000 megabits per second download and 500 megabits per second upload, substantially in excess of NTIA's requirements for this priority.
Description of how project address the evaluation criteria	Missouri evaluated all projects utilizing similar scoring categories published by NTIA, this application received a total of 91 out of 100 points and therefore distinctly addressed the evaluation criteria.
Scalability	The project is a fiber deployment and can be scalable to higher upload and download speeds by the company.
Project Plan w/ Activities	Qualified company submitted an Excel sheet work plan template, the document was included within the supplemental materials submitted by Missouri labeled #7 Missouri MO Provider Work Plans in Grants.gov.
Physical Project Area Description	The project locations are a combination of developed land and open space. The Portage Des Sioux area is along the Mississippi River. Otherwise, no other portion of the project area appears to be adjacent to any natural resources or adjacent to any protected lands or resources. The project will be able to leverage existing Charter headend, backbone, and interconnection facilities, and will not require the construction of new buildings, towers, or other structures. Charter anticipates that the construction necessary to complete the project will consist of (1)

	<p>the attachment of fiber optic cable, OLTs, and associated equipment (such as power supplies) onto existing utility poles; (2) the replacement of existing utility poles in any instances in which the existing utility pole cannot accommodate Charter's attachments; (3) where pole attachments are not practical, the burying of fiber optic cable in trenches within the existing rights-of-way; and (4) where the attachment of OLTs and associated power supplies on utility poles is not practical, the placement of roadside cabinets, within the right-of-way, to house OLTs and power supplies installed in connection with the project. Charter's completion of a specific network design setting out the specific utility poles to which its cables will be attached (and identifying any locations within the right-of-way where trenching or cabinet placement will be needed). However, each of these activities falls within the Department of Commerce's recognized department-wide categorical exceptions A-6 ("Adding fiber optic cable to transmission structures or burying fiber optic cable in existing transmission line rights-of-way") or A-7 ("Acquisition, installation, operation, and removal of communications systems, data processing equipment, and similar electronic equipment.").³ The Department of Commerce has already determined that these categories of actions do not individually or cumulatively have a significant effect on the human environment and further evaluation under the National Environmental Policy Act (NEPA) is not required. It is therefore Charter's expectation that, irrespective of the specific details of the forthcoming project design, the project will raise no significant environmental concerns requiring heightened review. Because all construction activities will occur within existing transmission line rights-of-way, the risks of any adverse impacts to historical properties is also minimized. Notwithstanding these minimal risks, Charter will work cooperatively with NTIA to engage in any consultation that may be required under the National Historic Preservation Act. Charter also commits to cooperate with NTIA to identify measures to minimize any potential adverse effects on the environmental and/or any historical properties. Charter will obtain all necessary federal, state and/or local governmental permits and approvals necessary for the Project. Photos and aerials supplied in supplemental in Missouri's application file labeled #1 Project Narratives.</p>
Any additional support provided?	None.
Labor standards	The service partner(s) used for this project will be determined after the grant is awarded and an Agreement is signed with the state of Missouri. The service partner(s) constructing the network will be selected from a stable of contractors who perform construction work for Charter Communications in the state of Missouri.



Missouri NTIA Broadband Infrastructure Program

Boycom Cablevision, Inc.
Poplar Bluff, Butler County

Rural Western Butler County Missouri
(Stringtown)

EXECUTIVE SUMMARY

Missouri NTIA Broadband Infrastructure Program

Boycom Cablevision, Inc. – Rural Western Butler County Missouri (Stringtown)

Executive Summary

BOYCOM Cablevision, Inc., with this application for funding under the Missouri NTIA Broadband Infrastructure Program process, will perform new build to Stringtown in rural western Butler County.

This area is in an unserved/underserved census blocks. This community is made up of a very high volume of low to moderate income homes and is also a farming community. Our goal is to have FFTH service to 142 homes over the next five years, which is a 60% penetration rate with a total of 230 homes passed. Currently being served by spotty cellular service and satellite.

The finished new build will host FTTH at speeds of 1 Gbps downstream/100 Mbps upstream.

Boycom Cablevision, Inc., believes that we will be able to get the maximum value of the dollars invested versus performance for the number of underserved homes passed.

Missouri's NTIA Broadband Infrastructure Program

Boycom Cablevision Inc. – Western Butler County, MO

Stringtown FTTH

Project Description

Boycom Cablevision Inc. currently owns, runs and maintains video and broadband networks in 5 different communities in southeast rural Missouri. The 5 communities include the Butler County area in and around Poplar Bluff, Doniphan, Piedmont, Van Buren and Wappapello. Services offered are broadband internet, voice and video.

Stringtown is an unincorporated community in western Butler County that is currently a combination of unserved / underserved areas located in close proximity to Boycom's Poplar Bluff, MO system's fiber backbone.

With this application for funding to the Missouri NTIA Broadband Infrastructure Program, if successful, Boycom Cablevision Inc. proposes to build a fiber to the home network to serve the existing residents and capacity to expand to vacant lots when new homes are built. There are currently 230 homes and numerous vacant lots and acreage for new home expansion. The network will be fed from the existing backbone fiber.

Once construction is complete, Boycom will begin offering broadband data and voice services with internet speeds of up to 1 Gbps downstream and 100 Mbps upstream.

This project will consist of the following elements;

1. Walkout, design and BOM production
2. Ordering and receiving material for the construction of the project including outside plant construction items and install equipment.
3. Notification to the local power cooperative for new pole contacts and acquiring make ready costs.
4. The construction of an estimated 30 miles of new build fiber optic plant that will include approximately 146,000 feet of aerial support strand and fiber cable, and 15,000 feet of underground 1 ¼" duct and fiber cable placement.
5. Splicing in all required fiber splices and passive optical equipment into the network. The network will include optical access for every current passing and access every 600 to a 1,000 feet for potential new home or business construction. Splice network into Boycom's existing fiber backbone for delivery of bulk internet data to OLT.
6. Installing remote equipment cabinet and installing new OLT with 48vdc power with standby capability.
7. Activating network and verifying operational status and capacity.
8. Installation of fiber connection to the homes within the network.

The outside plant build will consist of 161,000 ft. of new aerial and underground construction.

Technology – OLT and ONT

Boycom will be using the Dasan Zhone Solutions MXK-F219 OLT along with Dasan's ZNID-GPON-xxx series of indoor and outdoor ONTs. A description of the Dasan Zhone MXK-F Family of OLT's is included below. Boycom will also employ Dasan's ZMS-VA-5000 software suite to manage all OLT and ONT operations

Technology – Fiber

72ct armored loose tube low water peak single mode fiber will be used in the upgrade.

Technology – Optical Taps & Enclosures

Boycom will be using a combination of Commscope FOSC450A enclosures and optical tap tray kits for optical fiber network access for customer drops. The new network will have approximately 270 tap access locations. This network will use a 64 split per OLT GPON port design.

Missouri Department of Economic Development - Office of Broadband Development

Applicant Name:
Project Name:

Boycorn Cablevision Inc.
Western Butler County Missouri - Stringtown

Instructions: please list all major project activities that align with your proposed project. This must include deployment milestones but may also include design work, preconstruction activities, project implementation, marketing, and other activities. **PLEASE NOTE:** For your planning purposes NTIA is projecting the earliest start date for awards to be **November 29, 2021**.

Major Project Activities	Start Date	End Date	Explanatory Notes (optional)
Award of project funds	11/29/2021	11/29/2021	
Walkout and Design Process	12/6/2021	3/16/2022	Specification review with design contractor, walkout scheduled and performed, design work done and construction maps completed.
Request for power pole attachment and make ready process by power company	12/8/2021	2/28/2022	Request to power for new pole attachments and supply pole ID list of effected poles for their review and determine make ready cost
Project material procurement process	12/6/2021	4/15/2022	Start orders for major predetermined items - bulk fiber, Duct, Strand, OLT & ONU, Telco Cabinet etc.. On completion of BOM final orders completed. All equipment & material received.
Construction of outside plant	3/1/2022	6/30/2022	Telco cabinet install, Strand construction, duct placement, lashing of fiber, underground fiber placement, fiber splicing connections and taps.
marketing and out reach	4/4/2022	9/16/2022	Newspaper & Radio ads, door hangers placed, door to door contacts. Early sign-up.
Network Activation	5/9/2022	7/15/2022	Activation of OLT and verification of proper light levels to tap locations
Operational Verification	7/18/2022	8/1/2022	Verify connectivity and operational speeds and latency.
Installation Process	7/18/2022	12/9/2022	Install Scheduling, Installs performed.
Close out of project	12/12/2022	12/30/2022	Closing out of project.

Project labor narrative (if applicable): Please describe in narrative format to what extent the Fixed Broadband Provider will be incorporating strong labor standards, including project labor agreements and community benefit agreements that offer wages at or above the prevailing rate and include local hire provisions.

Boycorn Cablevision Inc.

Western Butler Co MO - Stringtown Project

Legend

 Stringtown Area



Google Earth

Missouri NTIA Broadband Infrastructure Program

Boycom Cablevision, Inc.
Poplar Bluff, Butler County
Rural Western Butler County Missouri
(Stringtown)

Census Blocks

290239502011052	290239502021008	290239502021039
290239502011116	290239502021009	290239502021040
290239502011128	290239502021010	290239502021047
290239502011131	290239502021011	290239502021049
290239502011134	290239502021012	290239502021050
290239502011135	290239502021015	290239502023065
290239502011137	290239502021016	290239502023067
290239502011138	290239502021020	290239502023175
290239502021000	290239502021021	290239502023177
290239502021003	290239502021022	290239502023194
290239502021004	290239502021031	290239502023195
290239502021005	290239502021032	
290239502021006	290239502021033	

Missouri's NTIA Broadband Infrastructure Program

Boycom Cablevision Inc. – Western Butler County, MO

Stringtown FTTH

Budget Detail Description

The estimated cost of the project will be \$1,219,100.00 dollars. Boycom Cablevision will be contributing 10% non-federal matching funds from its own resources. Boycom Cablevision is requesting \$1,097,190.00 of grant funding and Boycom Cablevision will contribute \$121,910.00 for the project.

Cost classification totals for this project are;

1. Architectural and engineering fees - \$26,000.00. Expense to walkout, design and produce construction maps and fiber splicing matrix map and to print maps for management and contractors.
2. Site Work - \$147,000. Expense for the local power cooperative, Ozark Border Electric Coop., to replace approximately 42 power poles to in ability to maintain clearances from power facilities and over roads and property, insufficient structural integrity to handle additional loading of new FTTH construction.
3. Equipment - \$395,600.00. Expense for all the hardware, mainline fiber, passive optical devices and material, electronics and install material such as premise ONU, drop fiber and demarc enclosure. Also includes a 15% of equipment cost expense for tax and freight.
4. Construction - \$571,000. Contract labor expense for all aerial and underground main line FTTH plant build, Connection of new FTTH plant to the Boycom fiber backhaul for internet data access to the OLT, installation of telecommunications cabinet and facilities, contract labor for installs and drop buries.
5. Project inspection fees - \$5,500.00. Expense for operational verification from engineering firm.
6. Miscellaneous - \$10,000.00. This is for additional unknown small equipment expense needed to complete construction such as odd hardware, unusual pole attachment equipment, electrical power material ect.
7. Land, structures, rights-of-way, appraisals, etc. – \$30,000.00. Expense for the lease of approximately the 600 Ozark Border Electric Coop. poles that the new FTTH outside plant and customer drops will be located on. Boycom Cablevision's current pole rental is \$10.00 per attachment per year. The amount requested will be to cover 5 years of pole rental for the new plant construction area to allow Boycom to build a reasonable subscriber base and profit margin to maintain pole rental rates in this low homes-passed-per-mile plant after the five year period.

8. Contingencies - \$34,000.00. This is a 10% of cost of equipment for additional unknown equipment expense due to additional delivery costs, price increases, changes of equipment to other models of GPON electronics due to availability, COVID induced additional costs, etc.

Missouri NTIA Broadband Infrastructure Program

Boycom Cablevision, Inc. – Rural Western Butler County Missouri (Stringtown)

Community Impact

The FFTH new build proposed in this grant application is located in rural western Butler County and will be connected to our Poplar Bluff, Missouri system.

The community impact of providing Fiber to the Home to approximately 142 homes over the next five years, which is a 60% penetration rate with a total of 230 homes passed. This is a very rural area of Butler County, a small bedroom community. The definition of the word “RURAL” truly applies to the folks in this area. They find themselves relying on services that are spotty at best, or with unreliable and limited cellular plans. Which are all inadequate! We as a nation find ourselves facing daily increases in Covid cases, AGAIN! These folks along with the rest of the nation were asked to “shelter in place”. Is it possible we may be called to make such a sacrifice again? How does a community compiled with very low to moderate income homes endure such a crisis again? How do the farmers in the community, who need broadband just as much as the urban folks do, make such a sacrifice again? It is paramount that companies such as Boycom Cablevision, Inc. receive these 90/10 matching fund grants to be able to accomplish getting help to rural communities such as Stringtown. Poor community, “YES”! But in this small western part of Butler County, MO you will find students, telehealth workers, farmers, teachers, businessmen, businesswomen and a rich heritage of elderly folks who make up this community. A community who deserves to have access to the same broadband services as the more populated areas of our country. This community needs HELP and Boycom Cablevision, Inc. would like to stand in the “gap” and relieve the stress and concern these folks have for their future, homes, business, churches and community.

Once completed the new FTTH service area will serve these residents well into the future. It will enhance the abilities of these households to reach out for educational, employment and healthcare assistance services as we all deal with our “New Normal.”



Rural West Butler County Missouri (Stringtown)

Price Sheet

Internet

50M Data Plan 1000GB	\$69.95
100M Data Plan 1000GB	\$99.95
300M Data Plan 1500GB	\$129.95
1GIG Data Plan 2000GB	\$159.95

Internet + Phone

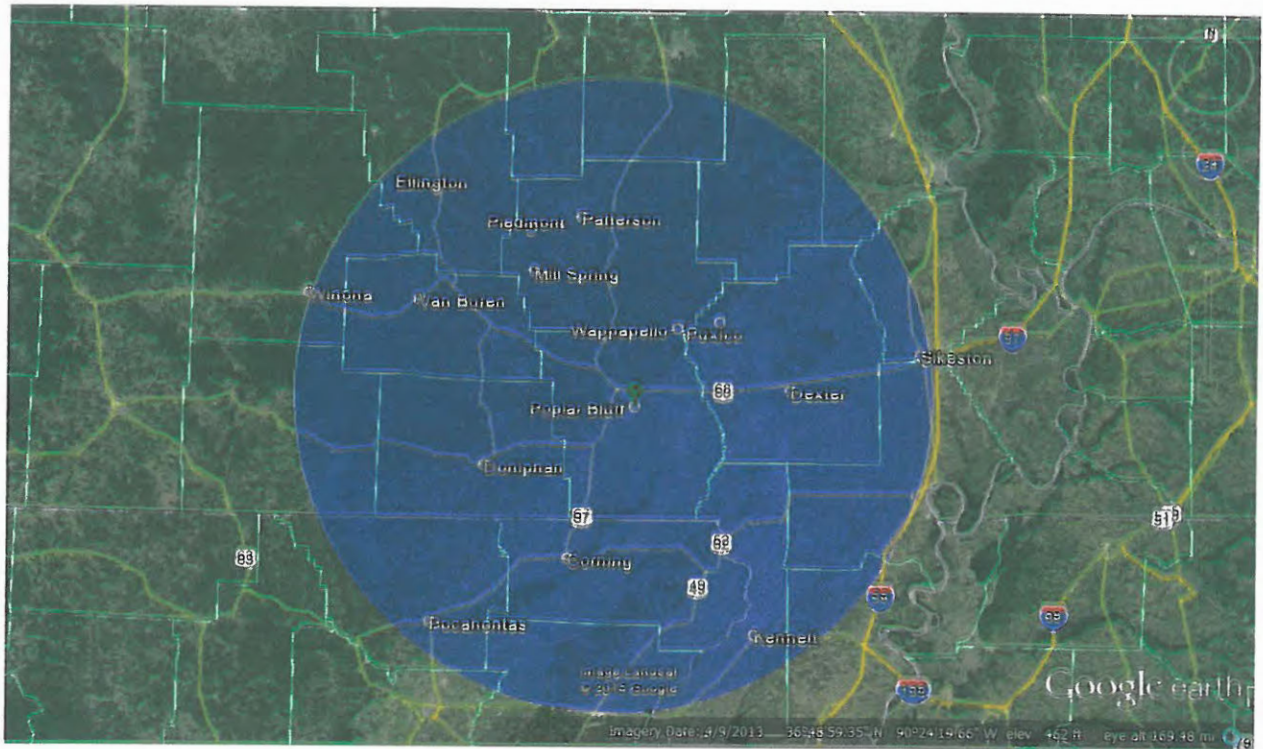
50M Package	\$85.00
100M Package	\$110.00
300M Package	\$140.00
1GIG Package	\$170.00

Standard Installation Fee FTTH \$69.95

Rates do not include additional taxes and fees.

TRADING AREA

As geographic areas become less certain, one's trading area becomes equally endomorphic. The map below represents the company's primary trading area, which encompasses a radius of approximately 50 miles from Poplar Bluff, Missouri.



The company recognizes that the trading area it serves currently will continue to migrate based on market forces and relevant technological advances.

Narrative

Executive Summary

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 311 locations in all or portions of Census Block Groups (CBG) 292054503001 and 292054503002 that includes 73 unserved Census Blocks located in Attachment A – Census Block Groups & Census Blocks in and around Clarence Missouri located in Shelby County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B - Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 311 unserved locations: 245 households, 1 Education & Health Care, 22 businesses, and 43 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area. See Attachment C – PSA Shapefile.

Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

Affordability of Services Offered:

Chariton has 3 tiers of pricing and offers Lifeline & Emergency Broadband Benefit Program (EBBP) discounts, making Broadband service available and affordable to an economically distressed area that is currently 100% unserved. Residential Broadband pricing is 100 Mbps \$47, 500 Mbps \$67, 1 Gig \$97. Chariton's rates are below the relevant reasonable comparability benchmark as published by the Wireline Competition Bureau on November 30, 2020 (\$102.80, \$119.63, and \$120.26 respectively) and are competitive with the pricing offered by other broadband providers in the market.

Chariton actively educates and promotes the Lifeline and EBBP discounts for Broadband services. Both Lifeline and EBBP cost Chariton nothing, but can greatly benefit the customer, making broadband affordable, and sometimes free, for low-income households. We are proud to offer the programs to those in need of assistance. Pricing information can be found on our website, via web chat, or by speaking directly to a Service Consultant by calling our toll-free telephone number. Pricing comparisons, education and customer collateral, and our service brochures can be found in Attachment E – Pricing Comparisons & Adoption Assistance.

Project Viability

Technical Approach and Related Network Capacity and Performance:

Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential

network issues. The redundancy throughout our network design along with a complete network description detailed above guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the PSA.

Applicant's Organizational Capability:

For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

Chariton has been a CAF Phase II Auction support recipient since June 2019. As of December 2020, Chariton had built FTTH to 64% of its CAF areas, exceeding the 40% deployment obligation. In 2020, Chariton was awarded \$257,025 in Missouri Broadband Grant funds and \$405,178 of CARES Act Broadband Grants funds for FTTH deployment. The federal and state support received made it possible to increase speeds to rural north Missouri residents and businesses. With the rise in work-from-home employees and virtual classrooms, it became essential to have fast, affordable internet access. The CAF and grant funds made it feasible for Chariton to meet the urgency of the increased broadband demand in several communities.

Chariton and Chariton Valley Telephone Corporation, its parent company, has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved locations. Throughout the construction period Chariton will provide updates to customers on progress through collateral and notices. During the project, our Sales Team will contact all qualifying broadband service locations in the PSA to inform customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical surroundings are the same and the project is “shovel ready” to bring high-speed fiber broadband to needed rural Missourians.

Project Work Plan

Chariton currently works with multiply contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is 46.54 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton's fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$4,367, which is typical for a fiber build to an area with a high number of rural customers. Chariton's experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton's background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

Financial Statements are in attachments J1 - [2018 Audited Financial Statements-Confidential], J2 - [2019 Audited Financial Statements-Confidential], J3 - [2020 Audited Financial Statements-Confidential], and J4 - [033121 Financial Statements-Confidential]. Chariton deems its financial statements to be confidential and exempt from disclosure under FOIA.

Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, and quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. Chariton will include the PSA in any service-wide promotions and offerings. A sampling of Chariton's ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

Chariton has submitted letter of commitment for the PSA. See Attachment L - Chariton Valley Letter of Commitment.

Attachments

- ✓ A - Census Block Group & Census Blocks
- ✓ B - Speed Test Data
- ✓ C – PSA Shapefile
- ✓ D - Letters of Support
- ✓ E – Pricing Comparisons & Adoption Assistance
- ✓ F – Network Diagram
- ✓ G – Resumes of Key Personnel
- ✓ H – DED Detailed Work Plan
- ✓ I – DED Detailed Budget Justification
- ✓ J1 - [2018 Audited Financial Statements-Confidential]
- ✓ J2 - [2019 Audited Financial Statements-Confidential]
- ✓ J3 - [2020 Audited Financial Statements-Confidential]
- ✓ J4 - [033121 Financial Statements-Confidential]
- ✓ K – Marketing Materials
- ✓ L – Chariton Valley Letter of Commitment
- ✓ M – 285.530 RSMo Affidavit & E-Verify MOU
- ✓ N - Articles of Incorporation
- ✓ O – Certificate of Tax Clearance
- ✓ P - Certification Regarding Debarment and Suspension

Narrative

Executive Summary

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 239 locations in all or portions of Census Block Groups (CBG) 292054503001 and 292054503002 that includes 58 unserved Census Blocks located in Attachment A – Census Block Group & Census Blocks in and around Clarence Missouri located in Shelby County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B - Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 239 unserved locations: 209 households, 6 businesses, and 24 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area. See Attachment C – PSA Shapefile.

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Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

Affordability of Services Offered:

Chariton has 3 tiers of pricing and offers Lifeline & Emergency Broadband Benefit Program (EBBP) discounts, making Broadband service available and affordable to an economically distressed area that is currently 100% unserved. Residential Broadband pricing is 100 Mbps \$47, 500 Mbps \$67, 1 Gig \$97. Chariton's rates are below the relevant reasonable comparability benchmark as published by the Wireline Competition Bureau on November 30, 2020 (\$102.80, \$119.63, and \$120.26 respectively) and are competitive with the pricing offered by other broadband providers in the market.

Chariton actively educates and promotes the Lifeline and EBBP discounts for Broadband services. Both Lifeline and EBBP cost Chariton nothing, but can greatly benefit the customer, making broadband affordable, and sometimes free, for low-income households. We are proud to offer the programs to those in need of assistance. Pricing information can be found on our website, via web chat, or by speaking directly to a Service Consultant by calling our toll-free telephone number. Pricing comparisons, education and customer collateral, and our service brochures can be found in Attachment E – Pricing Comparisons & Adoption Assistance.

Project Viability

Technical Approach and Related Network Capacity and Performance:

Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential

network issues. The redundancy throughout our network design along with a complete network description detailed above guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the PSA.

Applicant's Organizational Capability:

For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

Chariton has been a CAF Phase II Auction support recipient since June 2019. As of December 2020, Chariton had built FTTH to 64% of its CAF areas, exceeding the 40% deployment obligation. In 2020, Chariton was awarded \$257,025 in Missouri Broadband Grant funds and \$405,178 of CARES Act Broadband Grants funds for FTTH deployment. The federal and state support received made it possible to increase speeds to rural north Missouri residents and businesses. With the rise in work-from-home employees and virtual classrooms, it became essential to have fast, affordable internet access. The CAF and grant funds made it feasible for Chariton to meet the urgency of the increased broadband demand in several communities.

Chariton and Chariton Valley Telephone Corporation, its parent company, has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved locations. Throughout the construction period Chariton will provide updates to customers on progress through collateral and notices. During the project, our Sales Team will contact all qualifying broadband service locations in the PSA to inform customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical

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surroundings are the same and the project is “shovel ready” to bring high-speed fiber broadband to needed rural Missourians.

Project Work Plan

Chariton currently has (4) four contractors under contract allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is a total 25.71 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (Current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton’s fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$3,728, which is typical for a fiber build to an area with a high number of rural customers. Chariton’s experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton’s background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

Financial Statements are in attachments J1 - [2018 Audited Financial Statements-Confidential], J2 - [2019 Audited Financial Statements-Confidential], J3 - [2020 Audited Financial Statements-Confidential], and J4 - [033121 Financial Statements-Confidential]. Chariton deems its financial statements to be confidential and exempt from disclosure under FOIA.

Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, and quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. Chariton will include the PSA in any service-wide promotions and offerings. A sampling of Chariton's ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

Chariton has submitted letter of commitment for the PSA. See Attachment L - Chariton Valley Letter of Commitment.

Attachments

- ✓ A - Census Block Group & Census Blocks
- ✓ B - Speed Test Data
- ✓ C – PSA Shapefile
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Narrative

Executive Summary

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 157 locations in all or portions of Census Block Groups (CBG) 291279601002 and 291279601003 that includes 17 unserved Census Blocks located in Attachment A – Census Block Group & Census Blocks in and around Hannibal Missouri located in Marion County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B - Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 157 unserved locations: 120 households and 32 businesses, and 5 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area. See Attachment C – PSA Shapefile.

Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

Affordability of Services Offered:

Chariton has 3 tiers of pricing and offers Lifeline & Emergency Broadband Benefit Program (EBBP) discounts, making Broadband service available and affordable to an economically distressed area that is currently 100% unserved. Residential Broadband pricing is 100 Mbps \$47, 500 Mbps \$67, 1 Gig \$97. Chariton's rates are below the relevant reasonable comparability benchmark as published by the Wireline Competition Bureau on November 30, 2020 (\$102.80, \$119.63, and \$120.26 respectively) and are competitive with the pricing offered by other broadband providers in the market.

Chariton actively educates and promotes the Lifeline and EBBP discounts for Broadband services. Both Lifeline and EBBP cost Chariton nothing, but can greatly benefit the customer, making broadband affordable, and sometimes free, for low-income households. We are proud to offer the programs to those in need of assistance. Pricing information can be found on our website, via web chat, or by speaking directly to a Service Consultant by calling our toll-free telephone number. Pricing comparisons, education and customer collateral, and our service brochures can be found in Attachment E – Pricing Comparisons & Adoption Assistance.

Project Viability

Technical Approach and Related Network Capacity and Performance:

Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential

network issues. The redundancy throughout our network design along with a complete network description detailed above guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the PSA.

Applicant's Organizational Capability:

For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

Chariton has been a CAF Phase II Auction support recipient since June 2019. As of December 2020, Chariton had built FTTH to 64% of its CAF areas, exceeding the 40% deployment obligation. In 2020, Chariton was awarded \$257,025 in Missouri Broadband Grant funds and \$405,178 of CARES Act Broadband Grants funds for FTTH deployment. The federal and state support received made it possible to increase speeds to rural north Missouri residents and businesses. With the rise in work-from-home employees and virtual classrooms, it became essential to have fast, affordable internet access. The CAF and grant funds made it feasible for Chariton to meet the urgency of the increased broadband demand in several communities.

Chariton and Chariton Valley Telephone Corporation, its parent company, has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved locations. Throughout the construction period Chariton will provide updates to customers on progress through collateral and notices. During the project, our Sales Team will contact all qualifying broadband service locations in the PSA to inform customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical surroundings are the same and the project is "shovel ready" to bring high-speed fiber broadband

to needed rural Missourians.

Project Work Plan

Chariton currently works with multiply contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is 34.01 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton's fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$7,364, which is typical for a fiber build to an area with a high number of rural customers. Chariton's experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton's background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

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Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. Chariton will include the PSA in any service-wide promotions and offerings. A sampling of Chariton's ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

Chariton has submitted letter of commitment for the PSA. See Attachment L - Chariton Valley Letter of Commitment.

Attachments

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- ✓ N - Articles of Incorporation
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Narrative

Executive Summary

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 534 locations in all or portions of Census Block Groups (CBG) 291279601003 that includes 53 unserved Census Blocks located in Attachment A – Census Block Group & Census Blocks in and around Hannibal Missouri located in Marion County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B - Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 534 unserved locations: 458 households, 13 Education & Health Care, 50 businesses, and 13 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area. See Attachment C – PSA Shapefile.

Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

Affordability of Services Offered:

Chariton has 3 tiers of pricing and offers Lifeline & Emergency Broadband Benefit Program (EBBP) discounts, making Broadband service available and affordable to an economically distressed area that is currently 100% unserved. Residential Broadband pricing is 100 Mbps \$47, 500 Mbps \$67, 1 Gig \$97. Chariton's rates are below the relevant reasonable comparability benchmark as published by the Wireline Competition Bureau on November 30, 2020 (\$102.80, \$119.63, and \$120.26 respectively) and are competitive with the pricing offered by other broadband providers in the market.

Chariton actively educates and promotes the Lifeline and EBBP discounts for Broadband services. Both Lifeline and EBBP cost Chariton nothing, but can greatly benefit the customer, making broadband affordable, and sometimes free, for low-income households. We are proud to offer the programs to those in need of assistance. Pricing information can be found on our website, via web chat, or by speaking directly to a Service Consultant by calling our toll-free telephone number. Pricing comparisons, education and customer collateral, and our service brochures can be found in Attachment E – Pricing Comparisons & Adoption Assistance.

Project Viability

Technical Approach and Related Network Capacity and Performance:

Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential network issues. The redundancy throughout our network design along with a complete network

description detailed above guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the PSA.

Applicant's Organizational Capability:

For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

Chariton has been a CAF Phase II Auction support recipient since June 2019. As of December 2020, Chariton had built FTTH to 64% of its CAF areas, exceeding the 40% deployment obligation. In 2020, Chariton was awarded \$257,025 in Missouri Broadband Grant funds and \$405,178 of CARES Act Broadband Grants funds for FTTH deployment. The federal and state support received made it possible to increase speeds to rural north Missouri residents and businesses. With the rise in work-from-home employees and virtual classrooms, it became essential to have fast, affordable internet access. The CAF and grant funds made it feasible for Chariton to meet the urgency of the increased broadband demand in several communities.

Chariton and Chariton Valley Telephone Corporation, its parent company, has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved locations. Throughout the construction period Chariton will provide updates to customers on progress through collateral and notices. During the project, our Sales Team will contact all qualifying broadband service locations in the PSA to inform customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical surroundings are the same and the project is "shovel ready" to bring high-speed fiber broadband to needed rural Missourians.

Project Work Plan

Chariton currently works with multiple contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is 49.88 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (Current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton's fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$1,936, which is typical for a fiber build to an area with a high number of rural customers. Chariton's experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton's background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

Financial Statements are in attachments J1 - [2018 Audited Financial Statements-Confidential], J2 - [2019 Audited Financial Statements-Confidential], J3 - [2020 Audited Financial Statements-Confidential], and J4 - [033121 Financial Statements-Confidential]. Chariton deems its financial statements to be confidential and exempt from disclosure under FOIA.

Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, and quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. Chariton will include the PSA in any service-wide promotions and offerings. A sampling Chariton ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

Chariton has submitted letter of commitment for the PSA. See Attachment L - Chariton Valley Letter of Commitment.

Attachments

- ✓ A - Census Block Group & Census Blocks
- ✓ B - Speed Test Data
- ✓ C – PSA Shapefile
- ✓ D - Letters of Support
- ✓ E – Pricing Comparisons & Adoption Assistance
- ✓ F – Network Diagram
- ✓ G – Resumes of Key Personnel
- ✓ H – DED Detailed Work Plan
- ✓ I – DED Detailed Budget Justification
- ✓ J1 - [2018 Audited Financial Statements-Confidential]
- ✓ J2 - [2019 Audited Financial Statements-Confidential]
- ✓ J3 - [2020 Audited Financial Statements-Confidential]
- ✓ J4 - [033121 Financial Statements-Confidential]
- ✓ K – Marketing Materials
- ✓ L – Chariton Valley Letter of Commitment
- ✓ M – 285.530 RSMo Affidavit & E-Verify MOU
- ✓ N - Articles of Incorporation
- ✓ O – Certificate of Tax Clearance
- ✓ P - Certification Regarding Debarment and Suspension

Narrative

Executive Summary

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 318 locations in all or portions of Census Block Groups (CBG) 291279602003, 291279602004 and 291734703002 that includes 45 unserved Census Blocks located in Attachment A – Census Block Group & Census Blocks in and around Monroe City Missouri located in Monroe County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved or and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B - Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 318 unserved locations: 244 households, 3 Education & Health Care, 47 businesses, and 24 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area. See Attachment C – PSA Shapefile.

Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

Affordability of Services Offered:

Chariton has 3 tiers of pricing and offers Lifeline & Emergency Broadband Benefit Program (EBBP) discounts, making Broadband service available and affordable to an economically distressed area that is currently 100% unserved. Residential Broadband pricing is 100 Mbps \$47, 500 Mbps \$67, 1 Gig \$97. Chariton's rates are below the relevant reasonable comparability benchmark as published by the Wireline Competition Bureau on November 30, 2020 (\$102.80, \$119.63, and \$120.26 respectively) and are competitive with the pricing offered by other broadband providers in the market.

Chariton actively educates and promotes the Lifeline and EBBP discounts for Broadband services. Both Lifeline and EBBP cost Chariton nothing, but can greatly benefit the customer, making broadband affordable, and sometimes free, for low-income households. We are proud to offer the programs to those in need of assistance. Pricing information can be found on our website, via web chat, or by speaking directly to a Service Consultant by calling our toll-free telephone number. Pricing comparisons, education and customer collateral, and our service brochures can be found in Attachment E – Pricing Comparisons & Adoption Assistance.

Project Viability

Technical Approach and Related Network Capacity and Performance:

Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential network issues. The redundancy throughout our network design along with a complete network

description detailed above guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the PSA.

Applicant's Organizational Capability:

For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

Chariton has been a CAF Phase II Auction support recipient since June 2019. As of December 2020, Chariton had built FTTH to 64% of its CAF areas, exceeding the 40% deployment obligation. In 2020, Chariton was awarded \$257,025 in Missouri Broadband Grant funds and \$405,178 of CARES Act Broadband Grants funds for FTTH deployment. The federal and state support received made it possible to increase speeds to rural north Missouri residents and businesses. With the rise in work-from-home employees and virtual classrooms, it became essential to have fast, affordable internet access. The CAF and grant funds made it feasible for Chariton to meet the urgency of the increased broadband demand in several communities.

Chariton has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved and underserved locations. Throughout the construction period Chariton will provide updates to customers on progress not only through our website but will provide collateral and notices. During our covered broadband project, our Sales Team will contact all qualifying broadband service locations in the PSA to sign up customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical surroundings are the same and the project is "shovel ready" to bring high-speed fiber broadband

to needed rural Missourians.

Project Work Plan

Chariton currently works with multiple contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is a total 29.41 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (Current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton's fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$4,603, which is typical for a fiber build to an area with a high number of rural customers. Chariton's experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton's background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

Financial Statements are in attachments J1 - [2018 Audited Financial Statements-Confidential], J2 - [2019 Audited Financial Statements-Confidential], J3 - [2020 Audited Financial Statements-Confidential], and J4 - [033121 Financial Statements-Confidential]. Chariton deems its financial statements to be confidential and exempt from disclosure under FOIA.

Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. A sampling of Chariton's ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

Chariton has submitted letter of commitment for the PSA. See Attachment L - Chariton Valley Letter of Commitment.

Attachments

- ✓ A - Census Block Group & Census Blocks
- ✓ B - Speed Test Data
- ✓ C – PSA Shapefile
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- ✓ J3 - [2020 Audited Financial Statements-Confidential]
- ✓ J4 - [033121 Financial Statements-Confidential]
- ✓ K – Marketing Materials
- ✓ L – Chariton Valley Letter of Commitment
- ✓ M – 285.530 RSMo Affidavit & E-Verify MOU
- ✓ N - Articles of Incorporation
- ✓ O – Certificate of Tax Clearance
- ✓ P - Certification Regarding Debarment and Suspension

Narrative**Executive Summary**

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 81 locations in all or portions of Census Block Group (CBG) 291279601001 that includes 19 unserved Census Blocks located in Attachment A – Census Block Group & Census Blocks in and around Palmyra Missouri located in Marion County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B- Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 81 unserved locations: 38 households, 3 businesses, and 40 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area. See Attachment C – PSA Shapefile.

Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

Affordability of Services Offered:

Chariton has 3 tiers of pricing and offers Lifeline & Emergency Broadband Benefit Program (EBBP) discounts, making Broadband service available and affordable to an economically distressed area that is currently 100% unserved. Residential Broadband pricing is 100 Mbps \$47, 500 Mbps \$67, 1 Gig \$97. Chariton's rates are below the relevant reasonable comparability benchmark as published by the Wireline Competition Bureau on November 30, 2020 (\$102.80, \$119.63, and \$120.26 respectively) and are competitive with the pricing offered by other broadband providers in the market.

Chariton actively educates and promotes the Lifeline and EBBP discounts for Broadband services. Both Lifeline and EBBP cost Chariton nothing, but can greatly benefit the customer, making broadband affordable, and sometimes free, for low-income households. We are proud to offer the programs to those in need of assistance. Pricing information can be found on our website, via web chat, or by speaking directly to a Service Consultant by calling our toll-free telephone number. Pricing comparisons, education and customer collateral, and our service brochures can be found in Attachment E – Pricing Comparisons & Adoption Assistance.

Project Viability

Technical Approach and Related Network Capacity and Performance:

Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential network issues. The redundancy throughout our network design along with a complete network

description detailed above guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the PSA.

Applicant's Organizational Capability:

For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

Chariton has been a CAF Phase II Auction support recipient since June 2019. As of December 2020, Chariton had built FTTH to 64% of its CAF areas, exceeding the 40% deployment obligation. In 2020, Chariton was awarded \$257,025 in Missouri Broadband Grant funds and \$405,178 of CARES Act Broadband Grants funds for FTTH deployment. The federal and state support received made it possible to increase speeds to rural north Missouri residents and businesses. With the rise in work-from-home employees and virtual classrooms, it became essential to have fast, affordable internet access. The CAF and grant funds made it feasible for Chariton to meet the urgency of the increased broadband demand in several communities.

Chariton and Chariton Valley Telephone Corporation, its parent company, has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved locations. Throughout the construction period Chariton will provide updates to customers on progress through collateral and notices. During the project, our Sales Team will contact all qualifying broadband service locations in the PSA to inform customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical surroundings are the same and the project is "shovel ready" to bring high-speed fiber broadband to needed rural Missourians.

Project Work Plan

Chariton currently works with multiple contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is a total 19.66 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (Current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton's fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$5,418, which is typical for a fiber build to an area with a high number of rural customers. Chariton's experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton's background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

Financial Statements are in attachments J1 - [2018 Audited Financial Statements-Confidential], J2 - [2019 Audited Financial Statements-Confidential], J3 - [2020 Audited Financial Statements-Confidential], and J4 - [033121 Financial Statements-Confidential]. Chariton deems its financial statements to be confidential and exempt from disclosure under FOIA.

Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. Chariton will include the PSA in any service-wide promotions and offerings. A sampling of Chariton's ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

Chariton has submitted letter of commitment for the PSA. See Attachment L - Chariton Valley Letter of Commitment.

Attachments

- ✓ A - Census Block Group & Census Blocks
- ✓ B - Speed Test Data
- ✓ C – PSA Shapefile
- ✓ D - Letters of Support
- ✓ E – Pricing Comparisons & Adoption Assistance
- ✓ F – Network Diagram
- ✓ G – Resumes of Key Personnel
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- ✓ N - Articles of Incorporation
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- ✓ P - Certification Regarding Debarment and Suspension

Narrative

Executive Summary

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 66 locations in all or portions of Census Block Groups (CBG) 291279601002, 291279603002 and 291279603003 that includes 9 unserved Census Blocks located in Attachment A – Census Block Group & Census Blocks in and around Palmyra Missouri located in Marion County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B - Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 66 unserved locations: 34 households, 1 critical infrastructure, 9 businesses, and 22 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area. See Attachment C – PSA Shapefile.

Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

Affordability of Services Offered:

Chariton has 3 tiers of pricing and offers Lifeline & Emergency Broadband Benefit Program (EBBP) discounts, making Broadband service available and affordable to an economically distressed area that is currently 100% unserved. Residential Broadband pricing is 100 Mbps \$47, 500 Mbps \$67, 1 Gig \$97. Chariton's rates are below the relevant reasonable comparability benchmark as published by the Wireline Competition Bureau on November 30, 2020 (\$102.80, \$119.63, and \$120.26 respectively) and are competitive with the pricing offered by other broadband providers in the market.

Chariton actively educates and promotes the Lifeline and EBBP discounts for Broadband services. Both Lifeline and EBBP cost Chariton nothing, but can greatly benefit the customer, making broadband affordable, and sometimes free, for low-income households. We are proud to offer the programs to those in need of assistance. Pricing information can be found on our website, via web chat, or by speaking directly to a Service Consultant by calling our toll-free telephone number. Pricing comparisons, education and customer collateral, and our service brochures can be found in Attachment E – Pricing Comparisons & Adoption Assistance.

Project Viability

Technical Approach and Related Network Capacity and Performance:

Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential network issues. The redundancy throughout our network design along with a complete network

description detailed above guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the PSA.

Applicant's Organizational Capability:

For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

Chariton has been a CAF Phase II Auction support recipient since June 2019. As of December 2020, Chariton had built FTTH to 64% of its CAF areas, exceeding the 40% deployment obligation. In 2020, Chariton was awarded \$257,025 in Missouri Broadband Grant funds and \$405,178 of CARES Act Broadband Grants funds for FTTH deployment. The federal and state support received made it possible to increase speeds to rural north Missouri residents and businesses. With the rise in work-from-home employees and virtual classrooms, it became essential to have fast, affordable internet access. The CAF and grant funds made it feasible for Chariton to meet the urgency of the increased broadband demand in several communities.

Chariton and Chariton Valley Telephone Corporation, its parent company, has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved locations. Throughout the construction period Chariton will provide updates to customers on progress through collateral and notices. During the project, our Sales Team will contact all qualifying broadband service locations in the PSA to inform customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical surroundings are the same and the project is "shovel ready" to bring high-speed fiber broadband to needed rural Missourians.

Project Work Plan

Chariton currently works with multiple contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is 14.19 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (Current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton's fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$8,402, which is typical for a fiber build to an area with a high number of rural customers. Chariton's experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton's background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

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Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. A sampling of Chariton's ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

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Attachments

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Narrative

Executive Summary

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 64 locations in all or portions of Census Block Groups (CBG) 291279601002 and 291279603003 that includes 16 unserved Census Blocks located in Attachment A – Census Block Group & Census Blocks in and around Palmyra Missouri located in Marion County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B - Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 64 unserved locations: 41 households, 11 Education & Health Care, 4 businesses, and 8 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area. See Attachment C – PSA Shapefile.

Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

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Project Viability

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Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential network issues. The redundancy throughout our network design along with a complete network

description detailed above guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the PSA.

Applicant's Organizational Capability:

For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

Chariton has been a CAF Phase II Auction support recipient since June 2019. As of December 2020, Chariton had built FTTH to 64% of its CAF areas, exceeding the 40% deployment obligation. In 2020, Chariton was awarded \$257,025 in Missouri Broadband Grant funds and \$405,178 of CARES Act Broadband Grants funds for FTTH deployment. The federal and state support received made it possible to increase speeds to rural north Missouri residents and businesses. With the rise in work-from-home employees and virtual classrooms, it became essential to have fast, affordable internet access. The CAF and grant funds made it feasible for Chariton to meet the urgency of the increased broadband demand in several communities.

Chariton and Chariton Valley Telephone Corporation, its parent company, has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved locations. Throughout the construction period Chariton will provide updates to customers on progress through collateral and notices. During the project, our Sales Team will contact all qualifying broadband service locations in the PSA to inform customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical surroundings are the same and the project is "shovel ready" to bring high-speed fiber broadband to needed rural Missourians.

Project Work Plan

Chariton currently works with multiple contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is 10.37 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (Current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton's fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$7,307, which is typical for a fiber build to an area with a high number of rural customers. Chariton's experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton's background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

Financial Statements are in attachments J1 - [2018 Audited Financial Statements-Confidential], J2 - [2019 Audited Financial Statements-Confidential], J3 - [2020 Audited Financial Statements-Confidential], and J4 - [033121 Financial Statements-Confidential]. Chariton deems its financial statements to be confidential and exempt from disclosure under FOIA.

Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. Chariton will include the PSA in any service-wide promotions and offerings. A sampling of Chariton's ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

Chariton has submitted letter of commitment for the PSA. See Attachment L - Chariton Valley Letter of Commitment.

Attachments

- ✓ A - Census Block Group & Census Blocks
- ✓ B - Speed Test Data
- ✓ C – PSA Shapefile
- ✓ D - Letters of Support
- ✓ E – Pricing Comparisons & Adoption Assistance
- ✓ F – Network Diagram
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- ✓ O – Certificate of Tax Clearance
- ✓ P - Certification Regarding Debarment and Suspension

Narrative**Executive Summary**

Chariton Valley Communications Corporation's (Chariton) vision is to provide premier communication services to enhance opportunities for rural communities. Chariton currently provides Broadband in 10 counties in North Missouri. We would like to extend our vision to 107 locations in all or portions of Census Block Groups (CBG) 291279601001, 291279601002, 291279603001 and 291279603002 that includes 18 unserved Census Blocks located in Attachment A – Census Block Group & Census Blocks in and around Palmyra Missouri located in Marion County. The Proposed Service Area (PSA) is near one of Chariton's existing fiber routes where we deploy high speed fiber optics to extend Broadband to students, families, farmers, businesses, medical facilities, and communities every day. Using the same Fiber-to-the-Home (FTTH) model and construction process we have used for the last 16 years; Chariton is dedicated to improving the quality of life and increasing access to a global economy at an affordable price over a reliable network in the PSA. Chariton will deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this unserved area.

Project Purpose and Benefits

Project's Statement of Need

Level of Impact in the Proposed Service Area:

ALL locations are unserved and will receive symmetrical 1 Gbps Last Mile fiber after the build. No other federal or state support has been, nor will be, received to deploy broadband service in the PSA.

The locations identified in the PSA display as Unserved according to the Indicators of Need map provided by NTIA on their website using the Median Speed Test source data from Ookla; broadbandusa.ntia.doc.gov/resources/data-and-mapping. Furthermore, you will find documented random location speed test data in Attachment B - Speed Test Data. These sources both show the PSA is unserved and in need of Chariton Valley's fiber to the home broadband service. Lastly, neither CAF nor RDOF was awarded for any of the locations in this PSA.

The PSA contains 107 unserved locations: 73 households, 22 businesses, and 12 farms. The PSA does not have access to the necessary Broadband speeds for their Economic Stability, Public School System, E-Learning, Telemedicine, Precision Farming, or Safety. Due to the cost to build in rural areas, a successful business case has not presented itself in the past. Being awarded an NTIA Grant would make it economically feasible to deploy our fiber optic broadband facilities to the Last Mile of each location in the PSA providing 1 Gig symmetrical broadband service to this

unserved area. See Attachment C – PSA Shapefile.

Letters of Support are provided in Attachment D - Letters of Support. The Letters of Support focus on the need for broadband in the PSA. Chariton's broadband service is offered over a FTTH facilities-based network and is Gig capable. It affords our rural subscribers the convenience of a robust and reliable broadband network that meets the exploding demand for bandwidth. Reliability is ensured over an existing middle-mile ring topology to a pair of geographically redundant core router locations. This creates a network that can withstand fiber cuts and single points of failure to provide the "always on" service necessary in today's world. Chariton provides the infrastructure to level the playing field and close the urban-rural technology gap. Existing businesses can access the internet with the speeds and reliability needed to expand e-commerce. Economic development organizations have an easier time attracting new businesses and help established businesses grow. Fiber networks expand patient access to specialists via telemedicine programs and widen their access to medical care. Educational opportunities for students, once only found in large schools, can now be delivered to rural classrooms via online education. Evidence from Neighborhood Access to Fiber and United States Housing Prices show that homes can see an increase of 3% on property value with access to fiber services. The PSA would have Gig capable service available immediately upon installation. Our service is also symmetrical as we feel upload speeds in precision farming, e-learning and telemedicine are just as important as download speeds.

Affordability of Services Offered:

Chariton has 3 tiers of pricing and offers Lifeline & Emergency Broadband Benefit Program (EBBP) discounts, making Broadband service available and affordable to an economically distressed area that is currently 100% unserved. Residential Broadband pricing is 100 Mbps \$47, 500 Mbps \$67, 1 Gig \$97. Chariton's rates are below the relevant reasonable comparability benchmark as published by the Wireline Competition Bureau on November 30, 2020 (\$102.80, \$119.63, and \$120.26 respectively) and are competitive with the pricing offered by other broadband providers in the market.

Chariton actively educates and promotes the Lifeline and EBBP discounts for Broadband services. Both Lifeline and EBBP cost Chariton nothing, but can greatly benefit the customer, making broadband affordable, and sometimes free, for low-income households. We are proud to offer the programs to those in need of assistance. Pricing information can be found on our website, via web chat, or by speaking directly to a Service Consultant by calling our toll-free telephone number. Pricing comparisons, education and customer collateral, and our service brochures can be found in Attachment E – Pricing Comparisons & Adoption Assistance.

Project Viability

Technical Approach and Related Network Capacity and Performance:

Chariton deploys a buried fiber-to-the-home network using XGS-PON (The “X” in XGS represents the number 10, and the letter “S” stands for symmetrical, PON is Passive Optical Network, XGS-PON = 10 Gigabit Symmetrical Passive Optical Network). via a Calix Ethernet Service Access Platform. XGS-PON enables us to deliver 1Gbps down/1Gbps up in bandwidth to the customer premise scalable to symmetrical 10Gbps service. This network and technology offer a low latency network and meets Voice Mean Opinion Score (MOS) requirements. Chariton identifies peak transitions for increasing capacity as new customers are acquired and supports our proposed performance tier and latency during peak periods. Chariton Valley’s Network Operations Center (NOC) monitors current bandwidth utilization compared to available bandwidth. The network, including backhaul for interconnection, is fully redundant. At present, Chariton is connected to the Global Internet Backbone via Cogent and Hurricane Electric giving Chariton dual paths to the Global Internet Backbone.

The redundancy throughout our design guarantees feasibility, reliability, and the ability to meet the required performance obligations during periods of peak usage throughout the deployment of buried fiber-to-the-home in the PSA. Evident from our past and current operations, Chariton has a network diagram that fully supports the scalability and delivery of broadband service, Attachment F – Network Diagram. Future scalability is ensured throughout the network from the core routed network, through the middle mile transport network, to the last mile FTTH network. Chariton’s core routed network is capable of multiple 100 Gbps interfaces from Provider Edge routers all the way to direct Border Gateway Protocol (BGP) handoffs to redundant tier 1 global network providers and routes traffic to caching servers maintained in our own facilities to major content providers. Our middle mile transport equipment provides 96 Reconfigurable Optical Add-Drop Multiplexer (ROADM) channels, each capable of 10 Gbps to 100 Gbps transport. Chariton’s last mile FTTH network uses the latest technology of XGS-PON, which provides scalability of up to 10 Gbps to subscribers.

As a growing Broadband Internet Provider, we have years of experience providing, monitoring, and increasing internet bandwidth capacity to meet growing demands. We assume all subscribers will use 1 Gbps of capacity and have engineered the network to provide this speed. Chariton identifies peak transitions for increasing capacity as new customers are acquired. This supports our proposed performance tier and latency during peak periods. Chariton’s NOC monitors current bandwidth utilization compared to available bandwidth to proactively identify potential network issues. The redundancy throughout our network design along with a complete network

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For over 16 years, Chariton has provided affordable and reliable fiber broadband internet service to Missouri residential and business locations. Currently, Chariton serves customers in and around Brookfield, Brunswick, Cairo, Clarence, Columbia, Hallsville, Hannibal, Keytesville, Macon, Marceline, Moberly, Monroe City, Palmyra, Renick, and Shelbina. Chariton's technical expertise and skilled support staff has made it possible to meet or exceed all buildout deadlines and successfully complete aggressive deployment schedules. The PSA is adjacent to Chariton's current network and will receive the same high level of service as its existing customers. Merging the construction with Chariton's existing construction schedule is very efficient and economical. The key personnel for the project are Ryan Johnson, COO, Tina Jordan, CFO, Stephanie Chrisman, Finance Manager, Steve Basler, Operations Manager, and Kevin Lybrand, Construction & Engineering Manager. This team has over 100 years of combined experience in telecommunications and broadband internet and is well versed in various high-cost support mechanisms. Resumes are in Attachment G-Resumes of Key Personnel.

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Chariton has spent over \$61,000,000 towards fiber placement in North Central Missouri since 2017. Chariton feels well positioned to expand our existing fiber network to provide fiber connectivity to unserved and underserved locations. Throughout the construction period Chariton will provide updates to customers on progress not only through our website but will provide collateral and notices. During our covered broadband project, our Sales Team will contact all qualifying broadband service locations in the PSA to sign up customers and schedule installation.

As a growing Broadband Internet Provider, Chariton Valley has a formidable track record of growing and expanding our current network and public interest obligations. The same level of service will be provided to all future connections. All new locations will be an extension of our existing fiber network and service areas. Merging the construction with our existing construction schedule is very efficient and economical. With an existing network near the PSA, the physical

301 W. High Street, Suite 720, PO Box 1157, Jefferson City, MO 65102-1157

surroundings are the same and the project is “shovel ready” to bring high-speed fiber broadband to needed rural Missourians.

Project Work Plan

Chariton currently works with multiple contractors under simultaneously allowing Chariton to respond quickly to all projects with a “shovel ready” approach. Chariton’s contractors hire local employees that live and spend in the PSA. The PSA is a total 21.67 miles of fiber and Chariton stands prepared to start this PSA promptly once awarded. Phase 1 (Order Materials & Permitting) will begin on November 29, 2021 with Chariton ordering materials (Current material lead time on fiber is 40 weeks) and working with local stakeholders to obtain necessary permits. The Letters of Support in Attachment D shows strong support for Chariton from local stakeholders. Phase 2 (Fiber Construction & Access Equipment Installation) will begin on March 1, 2022, ending on October 2, 2022. Phase 3 (Customer Installations) and will begin on June 1, 2022, ending on October 2, 2022. Phase 4 (Project Finalization) will begin on October 3, 2022 and will end November 28, 2022. See Attachment H – DED Detailed Work Plan.

Since this PSA area is adjacent to our existing fiber network the heavy lift for this PSA will be fiber construction. Chariton has a Central Office (CO) that will need minor expense to add additional network access equipment to connect customers in this PSA. Chariton will deploy a team to perform grass roots marketing and sales to all potential customers in the PSA. Chariton’s sales/marketing activities may include tailgate talk where we setup in a high visibility area to talk with as many potential customers as possible as well as sending all marketing material via email or Unites States Postal Service mail.

Project Budget & Sustainability

Detailed Budget Justification and Budget Narrative:

Chariton proposes a self-funded, cash non-federal cost match of 10% for the PSA. Chariton has not applied for, and has not received, funding for the PSA for any State or Federal programs. All costs included in the budget are allowable costs that are consistent with the project scope. Chariton's fiber to the home construction budget for the PSA contains costs for construction permits, fiber materials, network equipment, and installation labor. The estimated cost per passing is \$9,015, which is typical for a fiber build to an area with a high number of rural customers. Chariton's experience with fiber network construction has made it possible to streamline the construction and installation process and eliminate excess costs. Due to Chariton's background in zone construction, the current level of financial commitment from service requests on our web site, and the experience we have seen in penetration rates, the Missouri Broadband Grant will fund the gap making this a financially viable project. The Comprehensive Detailed Budget Justification can be found in Attachment I – DED Detailed Budget Justification.

Financial statements provided:

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Sustainability of the Project:

Chariton has been recognized as a Gig-Certified Smart Rural Community Provider by the National Telecommunications Cooperative Association (NTCA) and was the first in Missouri to provide FTTH services throughout a community, with the implementation of high-speed internet services to all residents of the City of Macon. Staying true to our Vision, we strive to provide premier services to enhance opportunities for rural communities by expanding our network to serve those areas that may otherwise be overlooked due to economic feasibility. Chariton has received substantial Letters of Support for the PSA. See Attachment D - Letters of Support.

Chariton ensures its ability to evolve, sustain, and scale for future advanced services by deploying fiber, a future-proof infrastructure. Chariton has deployed next generation Calix XGS-PON equipment at this PSA Central Office allowing growth of up to 10 Gbps when Chariton deploys new customer equipment. Chariton provides professional installation of services including supplying each customer with a Wi-Fi 6 certified router with training so customers can use the service to its fullest capacity. Chariton provides a 24X7 helpdesk for trouble reporting and resolution with internal escalation processes to ensure any customer issues are resolved.

Chariton reaches out to potential customers with billboards, radio, print advertisements, electronic advertisements, social media, and direct mail. We publish the *Connected* and *Business Connections*, quarterly newsletters, to keep our residential and business subscribers informed. The newsletters are emailed to all our customers and can also be accessed from our website www.cvalley.net. Chariton will include the PSA in any service-wide promotions and offerings. A sampling of Chariton's ads and newsletters are included in Attachment K – Marketing Materials.

Leverage of Non-Federal Resources:

Chariton has submitted letter of commitment for the PSA. See Attachment L - Chariton Valley Letter of Commitment.

Attachments

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COLUMBUS TELEPHONE COMPANY – APPLICATION FOR MISSOURI DED COVERED PARTNERSHIP

Broadband Infrastructure Program (NTIA)

[Application Narrative](#)

Columbus Telephone Company and the City of Carl Junction seek funding to provide fiber Internet to 2,220 unserved Missouri households, businesses, and anchor institutions.

Table of Contents

I. Executive Summary	2
II. Project Purpose and Benefits	2
Level of Impact on Proposed Service Area	2
Affordability of Services Offered	4
III. Project Viability	6
Technical Approach and Related Network Capacity and Performance	6
Applicant’s Organizational Capability	7
IV. Project Work Plan	10
V. Project Budget and Sustainability	11
Project Budget	11
Project Sustainability	12
VI. Conclusion	12

I. Executive Summary

Columbus Telephone Company, operating as Optic Communications within the state of Missouri, proposes to bring 1 Gbps download / 1 Gbps upload fiber Internet to 3,105 residential households, 99 businesses, and 16 anchor institutions within the rural community of Carl Junction, Missouri. These numbers represent 93% of the Carl Junction community who remain unserved according to an in-depth market survey and cross-tabulated competitive analysis conducted by Columbus Telephone Company and the City of Carl Junction for the National Telecommunications and Information Administration’s (NTIA) Broadband Infrastructure Program. According to the study data, and certified testimonials provided by the City of Carl Junction, these residences, businesses, and community anchor institutions do not have access to Internet over 20 Mbps download / 3 Mbps Upload, despite service claims within the FCC’s 477 Data.

The City of Carl Junction has pledged their support to Columbus Telephone Company, in conjunction with the State of Missouri, to acquire the grant funds necessary to complete this project as it will ensure the much needed cost-effective, high-speed Internet access to every home, business, and anchor institution within the community as to improve quality of life, expand opportunity, and improve the local economy.

II. Project Purpose and Benefits

Level of Impact on Proposed Service Area

The Carl Junction Fiber Broadband Project (CJ Fiber Broadband) presented by Columbus Telephone Company prioritizes the following, in order, as listed in the NTIA NOFO.

Priority 1: Covered Broadband projects designed to provide broadband services to the greatest number of households in an eligible service area.

This project aims to reach every unserved household (3,105), business (99), and community anchor institution (16) in Carl Junction, Missouri. These numbers represent the 93% of the total population of 8,072 that do not currently have access to Internet over 20 Mbps download / 3 Mbps Upload according to a market survey and cross-tabulated competitive analysis conducted by Columbus Telephone and the City of Carl Junction.

Because the FCC 477 data lists the census blocks within the proposed funded service area (PFSA) as served, extensive research was done at the request of Carl Junction residents, businesses, and city employees claiming to not have access to high-speed Internet. Columbus Telephone Company and the City of Carl Junction initiated a market survey, telecom feasibility

study, and in-depth competitive analysis to gather data regarding the actual availability and average speeds available within the Carl Junction market.

The Carl Junction market survey received a 31.8% return rate, equating to a 95% confidence level and a 2.5% margin of error within the data regarding speed tests and respondent data. All residential and business addresses were also cross tabulated through an extensive competitive analysis project that cross-checked Carl Junction addresses with competitor availabilities accessible through their websites and by speaking directly with customer service representatives. 93% of addresses were found to not have Internet availability over 20 Mbps download / 3 Mbps upload.

According to the market survey and speed tests, the average residential speed attained within the Carl Junction market is 11.4 Mbps download / 2.7 Mbps upload. The average speed attained by city infrastructure properties is 7 Mbps download / 1 Mbps upload.

Priority 2: Covered broadband projects designed to provide broadband service in an eligible service area that is wholly within any area other than: (i) a county, city, or town that has a population of more than 50,000 inhabitants; and (ii) the urbanized area contiguous and adjacent to a city or town of more than 50,000 inhabitants.

Carl Junction is a city with a small population of 8,072, located 9 miles from Joplin, Missouri, which has a population of 47,354 inhabitants.

Priority 3: Covered broadband projects that are the most cost-effective, prioritizing such projects in areas that are the most rural.

Columbus Telephone Company seeks \$8,414,191.57 under the National Telecommunications and Information Administration's (NTIA) Broadband Infrastructure Program to help fund a \$16,828,393, twelve-month fiber build project; with Columbus Telephone Company contributing a \$8,314,191.57 applicant non-federal cost-share match and the City of Carl Junction contributing \$100,000, for a total of a 50% NTIA grant fund match. The 50% match will be provided with cash-on-hand (see attached financial statements). With the ability of the telco and government entity to fund 50% of the total CJ Fiber Broadband project, it presents the project to the NTIA as extremely cost-effective in its ability to reach 3,220 rural households, businesses, and anchor institutions for half the cost of a full build.

Priority 4: Covered broadband projects designed to provide broadband service with a download speed of not less than 100 megabits per second and an upload speed of not less than 20 megabits per second.

The proposed project is designed to provide broadband service at a minimum speed of [REDACTED] to a maximum speed of 1 Gbps download / 1 Gbps for households and a minimum speed of 100 Mbps download / 100 Mbps upload to a maximum speed of over 1 Gbps download / 1 Gbps upload for businesses. Columbus Telephone Company proposes to use fiber optic technology to ensure that the broadband network has the ability to evolve, sustain, and scale for future advanced services.

The proposed service area has a high level of need for robust and reliable broadband service. As such, Columbus Telephone Company is confident that the proposed project will greatly benefit the community's households, businesses, and community anchor institutions. Delivering broadband infrastructure with the ability to evolve, sustain, and scale for future advanced services will in turn fuel long-term rural economic development and opportunities in the proposed area and rebuild on the devastating effects of the COVID-19 pandemic. Columbus Telephone Company expects the proposed project to offer invaluable opportunities in the following areas:

Telecommuting: Sometimes given to employees as an option in the workplace, telecommuting is vital to those living in rural communities, as it grants them equal employment opportunities to those in urban areas of the U.S. Whether an individual is telecommuting full-time or part-time, high-speed broadband is necessary to support them as they work from home. The COVID-19 pandemic put certain video chatting platforms such as Zoom, FaceTime, and Google Duo on the map when many transitioned to a home setting from a traditional workplace. A sufficient connection to broadband is critical to support these video functions and to allow access to the internet for e-mail, research, and other work-related activity as would be available in a traditional office setting.

E-learning: High speed internet availability at home is vital for success with remote learning, homework, and maximizing e-learning opportunities. To give students residing in the proposed service area equal opportunity as students in urban areas, affordable high-speed internet needs to be provided. Not only will this improve the quality of life for these students, but it will contribute overall to the feeling that they have of well-being, confidence, and hope for future opportunities. Educational opportunities presented by high-speed internet will strengthen this rural economy, now and in the future.

Telemedicine: Advances in telemedicine have not only benefitted patient well-being across the U.S., it has also reduced healthcare costs and increased access to care – all thanks to high-speed internet. 34.6% of the population of the proposed service area is over the age of 65. It is critical for this aging population to have easy access to doctors, hospitals and other healthcare facilities. Telemedicine is vital in increasing the quality of life for elderly populations. Telemedicine provides easy and quick access to healthcare, the opportunity to remain in-home while recovering from illness, doesn't require transportation (especially of benefit to the elderly population where access to transportation can be limited), and reduces the cost of care, which is important in supporting and growing the economy and quality of life within a rural community.

Affordability of Services Offered

The grant funds will allow Columbus Telephone Company to not only execute this project in a way that is also cost-effective for the telco, as Columbus Telephone Company would be unable to fund the entire build without grant funds, but to also offer extremely cost-effective pricing for the residents and businesses of Carl Junction. Columbus Telephone Company proposes pricing estimated at an average of 10% less than most providers currently offer for up to 20 Mbps download / 1.5 Mbps upload to the targeted locations.

Columbus Telephone Company provides every market they serve with high-speed fiber Internet service tiers that are designed to meet the evolving needs of families (pre and post COVID-19) that allows the customer to select a package based on their specific needs, not price. The Customer Service Representatives and Service Technicians are trained on how to advise families on their needs, considering specific factors such as online education, tele-health needs, remote workplace, number of devices, gaming habits, entertainment preferences, etc. All pricing is designed to be most cost-effective and affordable based on market demographics, with options available for low-income families. The prices proposed for the Carl Junction market consider the median household income of \$66,144, the median age of 34.3, and the 8.21% poverty rate. The same dedication to the customer, in quality of products, customer service, and value will be expanded to the Carl Junction market upon the award of project grant funds, to maximize the customer experience and perceived value of all products and services.

To provide low-income broadband service in Missouri, a company must first obtain an ETC designation with the state public utility commission. The requirements for obtaining ETC status and Federal Lifeline support for low-income broadband subscribers is an arduous legal process that could take several years. Columbus Telephone Company believes that all customers in the proposed service area should have access to quality high-speed broadband service, regardless of their economic status.

The proposed full-price services and speeds are highly competitive to services offered in the area and comparable to service offerings available to those in urban areas of the U.S.



The other service providers available in the proposed service area are offering services up to 20 Mbps download / 3 Mbps upload at the minimum monthly price of \$45 and a maximum monthly price of \$249.99. The difference in prices between Columbus Telephone Company's broadband services and the broadband service of competitors promotes needed competition in the proposed area.

The rurality of the proposed project results in costs too high to recover solely through customer revenues. Without federal assistance, customers in the area would pay a minimum of \$250 - \$300

per month to fully recover the project cost. Therefore, federal financial assistance is instrumental to make a financially sustainable business case for providing affordable quality high speed broadband to the proposed service area.

III. Project Viability

Technical Approach and Related Network Capacity and Performance

The costs estimated, based on the Preliminary Network Design (attached) and the Detailed Budget Justification (attached), include all construction and equipment necessary to provide 1 Gbps download / 1 Gbps upload fiber internet to each unserved location at a latency of less than 4 milliseconds, measured at peak period. The construction will include forty-one mainline miles of fiber, OSP construction, electronics, install, cutover, and fiber drops. Therefore, once the build is completed, the unserved portion of the Carl Junction market will have access to up to 1 Gigabit symmetrical service (more if requested, with pricing based on individualized proposals) at a latency well below the maximums as set by the NTIA NOFO.

Industry experts agree that fiber technology is the most sustainable of all broadband technology available. For this reason, Columbus Telephone Company believes in providing Fiber-to-the-Home (FTTH) to all current and future markets to set the organization and the markets they serve up for success. Fiber technology allows Columbus Telephone Company to protect these markets against threats such as competing and evolving technology, changing consumer needs, and evolving equipment compatibility to stabilize and future-proof (as much possible) the market and protect investment to gain ROI. At a 50% match, this project presents a long-term investment to Columbus Telephone Company, projections indicate a positive margin on the Carl Junction market after five years and begins to present ROI after ten years.

Although NTIA funding is requested to serve the 93% of the Carl Junction market, those residences, businesses, and anchor institutions deemed unserved, Columbus Telephone Company will further fund and seek to serve the remaining 7% of the population as, although they have access to 25 Mbps download / 3 Mbps upload, they do not currently have access to fiber Internet up to 1 Gbps download / 1 Gbps upload, and Columbus Telephone Company believes in the equality of availability for all within a serviced market. Gaining market share of the remaining 7% (not included in this grant application) is however included in the Carl Junction marketing strategy 2022-2027, conducted as part of the market feasibility study. The marketing strategy is designed to gain market share and reach a minimum of a 70% total penetration over five years.

Environmental studies have been conducted by the City of Carl Junction and the proposed build site does not assume impact on any natural resources, landmarks, or protected lands. The general site area is underlain at depth with Mississippian Age Limestone. The upper surface of this limestone is often irregular because of differential vertical weathering and solution activities. Carl Junction is in the Tri-State Lead Belt and superficial soils consist primarily of silt loam and

gavel silt loam. Due to the geographical constructs of the build site, the preliminary network design was estimated at 25% rock bore and 10% rock trench.

Columbus Telephone Company has worked closely with the City of Carl Junction, Finley Engineering, and the IPaC to ensure that the project has been designed in such a way to minimize the potential for adverse impacts on the environment and will cooperate with NTIA in identifying feasible measures to reduce or avoid any identified adverse environmental impacts of our proposed project.

Columbus Telephone Company intends to comply with the environmental and historic preservation requirements, if awarded, including the National Environmental Policy Act and the National Historic Preservation Act, and other related Acts.

Columbus Telephone Company has been in contact with the City of Carl Junction since 2013, with the city's goal of serving the unserved with high-speed Internet. However, grant funds are necessary to make this project financially feasible for Columbus Telephone Company. With all the studies that have been conducted on the area; including market surveys, competitive analysis, feasibility studies, environmental studies, and extensive discussions with engineering teams, the project is deemed shovel-ready; pending only the final network design, approvals, permitting and material/equipment procurement. Finley Engineering is standing by to complete final network design upon the award of grant funds and the City of Carl Junction has committed to expedite all approvals and permitting necessary to begin construction. Assuming material can be procured within the timeline as outlined in the Project Work Plan (attached), the Carl Junction project is projected to be finished within the one-year award period.

Applicant's Organizational Capability

Columbus Telephone Company has been in operation since 1905 and currently provides 100% fiber-optic networks to 1,778 rural residences and businesses in the rural communities of Columbus, Pittsburg, Riverton, and Galena (all located in Kansas), as well as in Loma Linda, Missouri.

Columbus Telephone Company's team of project managers is fully capable of constructing and running a robust and sustainable broadband operation. Their broadband network management and support team includes the following individuals who will be engaged in activities related to the construction and operations of the proposed broadband deployment project (resumes attached):

Dave Soper, General Manager (33 years' experience – resume attached)

- Oversee daily business operations, ensure that all team members adhere to all company policies and procedures uniformly and without exception

- Communication with departments each morning to plan daily activities regarding Carl Junction build, aid if needed to the team members in the execution of their work duties
- Analyze on-going accounting and financial data for CTC, CDI, CCS, and Optic Communications in terms of adhering to Carl Junction budget
- Provide leadership and vision to the organization by developing long range and annual plans regarding Carl Junction. Oversee new hiring of Carl Junction team
- Implementation of 5-year budget for equipment updates and new expenditures in all markets, including Carl Junction build as necessary
- Schedule, arrange, and prepare Board meeting agendas and reports as they pertain to the Carl Junction build
- Oversee and assist with the Marketing and Sales department as they execute marketing and sales strategy within Carl Junction
- Employee relations: oversee performance management and improvement systems to ensure streamlining of systems within the Carl Junction Market

Nichole Walker, Corporate Accountant (11 years' experience – resume attached)

- Provide HR support, process payroll, onboard new employees, and administer benefits within the Carl Junction market
- Analyze Monthly financials to monitor adherence to Carl Junction budget
- Calculate Sales Tax, Use Tax, Franchise Tax, Payroll Tax, State Employment Tax and upload and manage 401K as necessary as it relates to the Carl Junction project
- Perform general office duties and admin tasks as it relates to the Carl Junction project such as billing, deposits, purchase orders, inventory, oversee credit cards, accounts payable and receivable
- Prepare monthly financial reporting accurately and timely including reconciling and auditing trial balances
- Prepare Month End Closings, Review Trial Balance and Operating Statements, adjust entries as needed

Gene Hamilton, Plant Manager (18 years' experience – resume attached)

- Manage Carl Junction Fiber Broadband project throughout each phase
- Approve orders and manage equipment required for Carl Junction fiber build
- Install Managed Wi-Fi systems as applicable
- Manage office expansion to Carl Junction market, including the moving and inventorying of all equipment and fibers as applicable

- Cisco and Juniper programming as applicable
- IT, subnetting as applicable
- Oversee all technicians and contractors throughout Carl Junction fiber build
- Perform OSHA-10 training as required for new and on-going employees
- Heavy Equipment Operator as needed

Rodney Oels, Technician & Fiber Optic Foreman (23 years' experience – resume attached)

- Monitor priorities and liaise between the City of Carl Junction, engineering, construction, maintenance, and management teams, delegate tasks to complete on time
- Contribute to the development, implementation, and execution of management programs in Carl Junction
- Manage equipment inventories, optimize work readiness, and align supplies with specifications
- Boost system performance as needed
- Optimize supply levels to keep stock within ideal parameters for expected needs
- Plan, implement, and manage solutions to technical feats such as the installation of Fiber Optic in Carl Junction and hard wiring devices

Kristi Saporito, Technician (30 years' experience – resume attached)

- Organize teams, internal and contracted, to meet demanding install goals
- Execute diagnostics, troubleshooting, and evaluations on equipment needed for FTTH build in Carl Junction
- Maintain quality assurance and customer satisfaction objectives
- Complete job reports and work logs
- Build services as applicable
- Install drops
- Assist in the ordering of equipment
- Program routers
- Troubleshoot equipment issues

Kate Young, Marketing Strategist (16 years' experience – resume attached)

- Finalize and implement the Carl Junction 2021-2027 marketing strategy upon award of grant funds
- Write and distribute press releases at mutually agreed upon milestones during the Carl Junction build

- Facilitate marketing materials throughout build to sign pre-subscribers and activate subscribers; to include direct mail, door-to-door communications, city hall meeting participation, city council membership and participation, partnership with City of Carl Junction to engage with local business ownerships and leadership at community anchor institutions, as well as partnerships with local media outlets
- Design and distribute marketing materials such as flyers, postcards, door hangers, etc.
- Update and maintain website to include Carl Junction market
- Manage and facilitate omnichannel digital marketing strategies

The team has executed challenging broadband infrastructure projects in some of the most rural communities and has ensured each of its projects have been completed in accordance with project timelines and budgets and achieved intended results. The most recent project completed by Columbus Telephone Company completed was the following:

Project Location: Loma Linda, Missouri

Project Size: 16.54 Miles of Main Line and drops to 405 households

Project Cost: \$2,000,000

Results of the Project: 80% penetration rate, connecting 325 households out of 405 in the last year. This project allowed Columbus Telephone Company to provide another unserved area with FTTH. Project is expected to reach 90% penetration by 2022.

IV. Project Work Plan

The Project Work Plan (attached) includes a list of project milestones and completion tasks by start and end dates.

Columbus Telephone Company has always been committed to upholding the highest labor standards, both for internal employees and contractors to ensure wages that are designed to meet, and often exceed the standard of living in all local markets. We hold our contracting companies and vendors to the highest standards of labor practices, including ensuring equal opportunity and fair wages. As part of this CJ Fiber Broadband project, we are focused on providing benefit for the community of Carl Junction, not only by providing high-speed broadband, but by hiring local positions, customer service representatives, installers, administrative staff, technicians, etc., within the Carl Junction expansion of the central office.

Columbus Telephone Company is an equal opportunity employer that complies with federal and state laws and has a handbook which addresses all workforce practices and will be handling all contract and employment agreements for the project. Except where there is a business necessity or

bona fide occupational qualification, the Company will make employment decisions without regard to race, color, national origin, religion, disability, age, gender, sexual orientation, veteran status, military service or marital status, or any other basis prohibited by law. Sexual orientation includes a person's orientation toward heterosexuality, homosexuality, bisexuality, or transgender status or another person's perception of your sexual orientation. Race includes hair texture or type, and hairstyles commonly or historically associated with race.

Columbus Telephone Company strives to maintain a nondiscriminatory environment free from prejudice, intimidation or harassment based on any of these grounds. To provide equal employment and advancement opportunities to every applicant and employee, the Company bases employment decisions on merit, qualifications, experience, and abilities. In addition, the Company makes reasonable accommodations for qualified candidates and employees who have known disabilities in every aspect of employment.

Columbus Telephone Company may use certain professionals on a contract basis. In such cases, the relationship between the contract professionals and the Company will be governed by separate agreements, and the contract professionals will not receive benefits or compensation under the policies described in the Company's Handbook. Contract labor safety is of the utmost importance to Columbus Telephone Company. Individuals are expected to obey safety rules and to exercise caution in all work activities and immediately report any unsafe condition to their supervisor or company management. Any accident that results in injury must also be reported, regardless of how insignificant the injury may appear. Reports and concerns about workplace safety issues can be made without fear of reprisal.

V. Project Budget and Sustainability

Project Budget

The sources of funds for the proposed project, if awarded, include the NTIA Grant Program and a non-federal cost share of 50 percent from the partnership between Columbus Telephone Company and the City of Carl Junction. The preliminary budget has been estimated by Finley Engineering and represents a realistic estimate of the construction cost for the proposed broadband network.

The budget includes the following project costs to construct the proposed broadband network: Mainline Site Engineering (Land, Structures, Rights-of-way, appraisals, etc., estimated at \$779,431.02), Fiber Mainline Construction (Construction, estimated at \$7,997,747.00), Electronics & Installation (Equipment, estimated at \$222,046.00), FO Termination (Site Work, estimated at \$252,046.00), OSP Construction (Construction, estimated at \$3,461,332.00), Drop Electronics & Install & Cutover (Equipment, estimated at \$3,042,357.00), FO Pigtail and Splitters (Site Work, estimated at \$226,386.82), Engineering of Fiber Drops (Other Architectural and Engineering Fees, estimated at \$346,400.00), Network Design Fees (Architectural and

Engineering Fees, estimated at \$100,000), Grant Application Prep (Administrative and Legal, estimated at \$20,000.00), removal of concrete (Demolition and Removal, estimated at \$5,400.00), and the procurement of a Carl Junction Plant (Relocation Expenses and Payments, estimated at \$375,000.00).

Project Sustainability

Columbus Telephone Company seeks \$8,414,191 for the proposed broadband infrastructure project. Based on a detailed financial forecast which has been prepared for the proposed project (see attached Pro Forma), total revenues are anticipated to grow from \$443,511 in Year 1 to \$2,186,940 in Year 5. The total estimated project capitalized cost is estimated at \$16,828,383. The capitalized costs include the following major project costs: fiber, materials, labor, electronics, engineering, construction, permitting, contracts, CPE, etc. In addition, projected annual expenses range from \$1,050,032 in Year 1 to \$2,134,834 by Year 5. The projected expenses include the following essential costs: salaries, depreciation expense, repairs and maintenance, insurance, marketing, accounting, management systems, and general operating expenses. The company does not plan to seek loan funding for any unfunded capital investment. The project is expected to achieve positive net income by Year 5 and positive annual cash flow by Year 3.

Columbus Telephone Company has not received any funds for the proposed project area from the State of Missouri, USDA Broadband Programs, the Federal Communications Commission Programs, Economic Development Administration, the Delta Regional Authority, or any other state or federal programs.

A strategic marketing plan has been constructed and will be finalized and implemented for the Carl Junction market upon award of grant funds. This marketing strategy includes market projections (included on the Pro Forma attached) and is designed to gain a minimum of over 70% penetration by year 5. Included in the marketing strategy is the strategic distribution of press releases as well as vital customer education campaigns pertaining to the fiber build. This is instrumental in not only gaining pre-subscribers but to educate the community on what they can expect during the construction phase of the project, what it means to have fiber internet available to them, and when they can expect to be eligible for service. Once the build is complete, on-going marketing is budgeted for and will be implemented as part of the five-year strategy to maximize penetration. This will include a continued partnership with the City of Carl Junction, launching a continual omnichannel digital marketing campaign, as well as utilizing advertising mediums such as direct mail, door-to-door communication, and traditional media ads.

VI. Conclusion

The proposed project will impact Carl Junction, Missouri where 93% percent of the total population is unserved, and connect a total of 3,220 unserved households, businesses, and community anchor institutions. The coronavirus pandemic affected the lives of millions of Americans and underscored the serious need for robust and reliable broadband service. Millions across the U.S. shifted from traditional ways of working, learning, and receiving health care services and transitioned to remote work, e-learning, and health care via telehealth services. Today,

we propose with confidence a project that will provide the necessary broadband services to align with this shift. The U.S. is in first place to offer the best and fastest services in the world. However, in rural America, an integral part of the U.S., consumers like the ones in Carl Junction, still lack sufficient access to broadband service. It is now or never for these people. And we choose now. We refuse to let rural America fall behind when we are racing on the same team. Even the most rural areas of the U.S. must cross the finish line, because when rural America wins, we all win.

NTIA has long recognized that robust and reliable broadband service is a necessity for all Americans, despite the region of the U.S. in which they reside. Our proposed project will expand broadband service and ultimately enhance the socioeconomic, educational, and workforce development opportunities for 3,220 households, businesses, and community anchor institutions in the proposed service area. This project is for the people of today, tomorrow, and the future. We look forward to being a part of the Missouri DED's NTIA grant application!

For additional information, access Columbus Telephone Company's website at:

<https://columbus-telephone.com/>

or contact:

Kate Young
(216) 544 – 8009
kyoung@tcatel.com

Gascosage Electric Cooperative Project Narrative

Executive Summary

Gascosage Electric Cooperative is seeking funding to complete a Fiber-To-The-Home project south of Dixon, MO, in an area with homes and businesses in desperate need of sufficient broadband services. The Dixon South project will bring 1 Gb/s symmetrical Internet and voice services to 719 homes along and near highways 28 and D. Dixon, MO connects to Interstate I-44 via Highway 28 and to Jerome, MO via Highway D. The project area is flanked to the south by the Gasconade river with lush forests and rolling hills defining a majority of the project landscape.

The homes in the Dixon South project area report little to no service options and what is available does not meet their needs nor the currently accepted definition of broadband. As an experienced broadband provider, Gascosage will build a sustainable fiber network and install the latest electronics which will provide industry leading services to homes and businesses for many years to come. A poll of Gascosage members in the project area revealed an overstatement of service availability based on FCC form 477 data. Gascosage will improve on the pre-existing services by building to all members in the project area using fiber optics and providing 1 Gb/s symmetrical service over a Gigabit Passive Optical Network (GPON).

As COVID continues to affect American's daily lives, sufficient broadband services for all families has become a need and no longer a luxury. Gascosage looks forward to partnering with the State and the NTIA to make this project a reality.

Project Purpose and Benefits

The Dixon South Proposed Service Area (PSA) was chosen for this grant application due to its' ability to meet the Section 905(d)(4) statutory funding priorities and the need for Gascosage Electric Cooperative's members to have access to a reliable high-speed broadband service. Each of the statutory funding priorities will be addressed individually.

Covered broadband projects designed to provide broadband service to the greatest number of households in an eligible service area.

Gascosage personnel contacted as many of the households in the PSA as were available and used that data to determine service availability, level, and reliability. This information allowed the proposed project to be engineered to serve as many eligible households as possible while avoiding areas that would be considered served. A per census block evaluation was completed to meet the Broadband Infrastructure Program's Notice of Funding Opportunity eligible service area requirements. While several of the census blocks included in the PSA are served by a FCC 477 provider, in many cases the area and/or service tiers are heavily overstated. The 719 subscribers included in the Dixon South PSA do not have access to a reliable high-speed broadband Internet connection of 25 Mb/s download and 3 Mb/s upload.

Covered broadband projects designed to provide broadband service in an eligible service area that is wholly within any area other than—

- a. A county, city, or town that has a population of more than 50,000 inhabitants; and*
- b. The urbanized area contiguous and adjacent to a city or town described in clause (a).*

Gascosage Electric Cooperative is a rural utility providing electrification to approximately 10,000 member's households and businesses in and around the towns of Brumley, Iberia, Crocker, Dixon, and Doolittle, MO covering 672 square miles. The largest of these towns is Dixon, MO, with a population of 1,130 based on a 2019 survey. The Dixon South PSA is well below the maximum inhabitant criterion.

Covered broadband projects that are the most cost-effective, prioritizing such projects in areas that are the most rural.

Dixon South PSA is approximately 23.68 square miles with 719 households. This equates to approximately 30 households per square mile which is very low compared to the non-formal definition of an urban area at over 1,000 households per square mile. This PSA contains several farms and households performing some type of farming activity.

Covered broadband projects designed to provide broadband service with a download speed of not less than 100 megabits per second and an upload speed of not less than 20 megabits per second.

Gascosage will make available a 1 Gb/s symmetrical service to all households in the Dixon PSA. Using fiber optics and Gigabit Passive Optical Network (GPON) technology, Gascosage will extend Internet directly from the upstream provider to inside the household or business. All offered services will operate at 1 Gb/s but will be rate limited based on the service tier purchased. Gascosage will be offering subscribers 100 Mb/s, 250 Mb/s, and 1 Gb/s service tiers. Gascosage has experience designing and implementing these services in their existing network.

The Dixon South PSA will serve 719 locations with an estimated 5% or 36 being businesses. All of the locations in the PSA are considered unserved or underserved based on their inability to receive reliable broadband Internet with speeds at or above 25 Mb/s download and 3 Mb/s upload. The proposed project will bring all of these locations the ability to receive 1 Gb/s symmetrical service. Gascosage will serve as the last mile provider and will build the middle mile fiber backbone to the nearby upstream Internet provider.

Gascosage has studied the available services and cost of each in the area and found a wide variety of combinations based on the specific location. The speed tier offerings and associated costs to the subscriber are extremely competitive and will allow all subscribers in the PSA to purchase a significantly better service for a cheaper price. Supporting documentation of the competing services are attached. Gascosage will be providing the following service tiers and prices for residential services:

- 100 Mb/s symmetrical Internet service for \$59.99 a month with no contract
- 250 Mb/s symmetrical Internet service for \$79.99 a month with no contract
- 1 Gb/s symmetrical Internet service for \$99.99 a month with no contract
- 1 basic voice line for \$19.99 a month with no contract

Gascosage is currently in the process of becoming an Eligible Telecommunications Carrier (ETC) in Missouri so they can participate in the lifeline program. It is important that customers with disabilities or living in a low-income situation still have access to the services offered. Gascosage is dedicated to providing reliable high-speed Internet and voice to as many members as possible. When approved as an ETC, Gascosage will pass along the appropriate discounts to qualified low-income and disabled households.

Project Viability

Technical Approach and Related Network Capacity and Performance

Gascosage Electric Cooperative will deploy a fiber optic plant to support ITU G.984 compliant Gigabit Passive Optical Network (GPON) technology. Fiber optics is an industry leading data transmission medium that is currently only limited by the electronics transmitting over it. The Optical Line Termination (OLT) equipment deployed will provide 2.5 Gigabits per second (Gb/s) download and 1.25 Gb/s upload speeds per fiber that can be passively split to serve up to 32 subscribers. The OLT equipment deployed will be optimized for easy upgrading to either 10 Gb/s Passive Optical Network (XG-PON) or Next Generation Passive Optical Network (NG-PON). The Optical Network Termination (ONT) equipment to be installed at the premise will have the capability to provide up to a 1 Gb/s service to each subscriber. Gascosage will make available to subscribers a Wi-Fi 6 capable router providing broadband service to multiple devices at the home or business. To ensure sufficient broadband speeds across the entire Dixon South Proposed Service Area (PSA), Gascosage will transmit to an upstream provider at no less than 10 Gb/s with the seamless ability to upgrade to higher bandwidths. The OLT equipment will be housed in a temperature controlled Gravel Fiber Reinforced Concrete (GFRC) building with battery and generator backup systems. The ability to maintain equipment uptime during electrical outages coupled with a battery backup system at the subscriber site is critical for Wi-Fi enable voice services that may be used for contacting lifesaving 911 services.

The proposed project area is a combination of forested areas and agricultural lands and is flanked to the south by the Gasconade River. The fiber plant will be installed aurally along a currently deployed and maintained electrical footprint. The electrical footprint is regularly maintained by the Cooperative to provide reliable service to the members it serves. Installation of the fiber plant will produce minimal disturbance to the area.

Applicant's Organizational Capability

Gascosage Electric Cooperative has been installing and maintaining fiber optic plant for more than 15 years and recently began deploying and managing a Fiber-To-The-Home (FTTH) network that is bridging the digital divide in their membership area. Gascosage understands the desperate need of their members' to have access to high-speed broadband services and is dedicated to providing a low cost yet reliable and sustainable system. Carmen Hartwell, Melinda Stormes, and Shawn Lipscomb make up the key personnel dedicated to maintaining and implementing this project. General Manager Carmen Hartwell's career expands over 30 years of rural electric cooperative distribution experience. She accepted the General Manager position in 2013 after being in senior staff since 2001. Mrs. Hartwell's 13 years of managerial experience has helped her develop strong leadership and communication skills, which she has used to build positive relationships with the board of directors, employees and many members of the cooperative. Mrs. Hartwell has been involved in all areas of development and strategic thinking within the cooperative including, but not limited to, contract negotiations, rate development, electrical load forecasting, annual budget, policy creation, employee benefit structuring, construction work plans, FEMA grant applications, RUS loan applications, cooperative investments with CFC and CoBank, and analysis of monthly financial reports. She is committed to teamwork and fostering relationships within the cooperative to achieve the common goals as outlined in the cooperatives "Statement of Objectives". Mrs. Hartwell started her career

in an entry-level position, and with education and hands-on experience now leads the cooperative into the future using innovating technology advancement to offer the local communities the most trusted source of electricity at low rates.

Under the direction of the General Manager, Melinda Stormes is responsible for developing, auditing and evaluating all office and management programs, policies, methods and procedures to effectively manage the resources of the cooperative in conjunction with department heads, supervisors, and employees. Mrs. Stormes has been involved in all areas of development and strategic thinking within the cooperative including, but not limited to, annual budget, policy creation, employee benefit structuring, RUS loan applications and regulatory reporting, cooperative investments with CFC and CoBank, and analysis of monthly financial reports. During the past 6 years in managerial experience, Mrs. Stormes has developed strong leadership and communication skills which she has used to build positive relationships with the board of directors, employees and many members of the cooperative. Also under the direction of the General Manager, Shawn Lipscomb, the Operations Manager is responsible for managing the system operations, physical equipment and plant involved in distributing electricity to each member consumer. This includes construction and maintenance of electric distribution equipment & facilities, resolving emergency/hazardous conditions, resolving consumer trouble calls, and developing system upgrades. Mr. Lipscomb maintains a good rapport with contacts such as the power supplier, consulting engineers, contractors, vendors and many other professionals involved in the utility business. He is also responsible for developing, auditing and evaluating all operations management programs, policies, methods and procedures to effectively manage the resources of the cooperative in conjunction with department heads, supervisors, and employees.

Gascosage Electric Cooperative headquarters is located just north of the proposed project area and after contacting as many members as possible to evaluate current broadband needs all personnel are intimately familiar with the proposed project and the potential impact it would have. Gascosage is poised to begin ordering materials and beginning the initial phases of the project immediately after approval. Gascosage recently completed a project in conjunction with the State of Missouri to serve members in need of broadband services, this project had similar timeline requirements, giving Gascosage the experience needed to efficiently complete this project on time. Gascosage is familiar with the environmental requirements associated with federal grant standards and has the required relationships developed to complete these processes in a timely manner.

Project Budget and Sustainability

Gascosage Electric Cooperative has a long standing relationship with CoBank for the funding of projects on their electrical plant and broadband network. This partnership allows Gascosage to reasonably obtain low interest loans for the purpose of installing a broadband network to offer high-speed Internet and associated services to members.

Gascosage has partnered with multiple engineering firms to study and develop reasonable cost estimates for the deployment of Fiber-To-The-Home (FTTH) networks within their service territory. Gascosage has also completed a project with the State of Missouri to install a FTTH system and is very familiar with the real costs associated with the proposed project. The equipment itemized for the budget is sufficient for completing the proposed project and providing the service level identified in the proposal. A realistic cost for equipment was developed based on previous project experience but due to market and cost

fluctuations a fair bidding process will be employed with an understanding of how multiple technologies could affect operational costs.

A Gravel Fiber Reinforced Concrete (GFRC) building is included in this project to provide a safe environment for the network equipment. Some of the proposed equipment will see performance degradation or failure if not properly cared for. The proposed building will offer the proper protection and house necessary battery backup equipment to maintain the network during electrical outage periods.

Installation of the fiber optic plant is the most costly expense within the project. It is important for the safety of the crews and the longevity of the plant to have experienced and certified contractors perform the installation. Gascosage has experience in hiring and working with these crews and what the realistic cost for their services will be.

All line items of the budget for the Dixon South Proposed Service Area (PSA) project are based on well-known costs experienced through similar fiber network deployments completed recently.

Gascosage is already providing broadband service to subscribers in their area and all marketing materials have been developed. The adoption of new services in the proposed area is conservatively estimated to be around 58%. As an electric cooperative, Gascosage has an impeccable reputation for providing reliable electrification and those principles have been adopted for the broadband business.

Leverage of Non-Federal Resources

Gascosage Electric Cooperative commits to providing a 10% cash match for the funding of the Dixon South Proposed Service Area project. Through their partnership with CoBank, Gascosage will obtain financing for the 10% match of \$316,796.25. Gascosage expects to expend the entirety of this match prior to accessing the grant funds and understands that any overruns required to fully complete the project will be their responsibility.



Broadband Infrastructure Program Grant Proposal

July 26, 2021





Date: 07/26/2021

Executive Summary

Gateway Infrastructure, LLC (d/b/a Gateway Fiber), is proposing to deploy its fiber-to-the-home broadband service to Argentville, Josephville, Redemption Ranch, St. Paul, and Sunrise Park (the "Serving Areas"). [REDACTED]

Gateway estimates 80% of residents in the Serving Areas currently receive service under 25Mbps/3Mbps. Existing providers are not upgrading their networks based on Gateway Fiber's discussions with municipal representatives. [REDACTED]

[REDACTED] Industry experts categorize this build cost as "Significantly More Costly" to "Rural and Complex."¹ The requested funds make this project financially feasible, providing these communities with reliable, future-proof internet.

Gateway Fiber is uniquely qualified to deliver this project. [REDACTED]

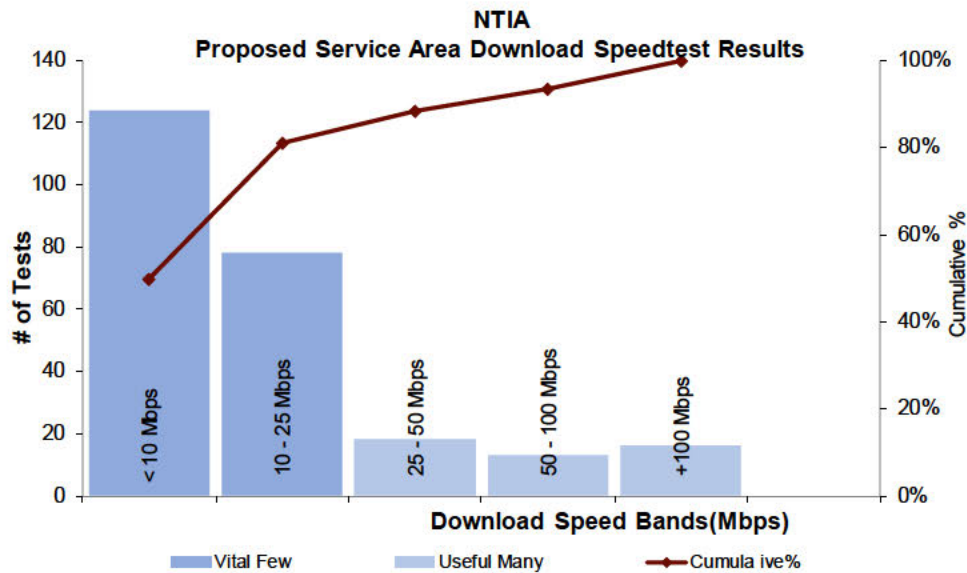
[REDACTED] Gateway Fiber's service plans start at \$59.99 (qualified for the Emergency Broadband Benefit) and include a 1 Gig option. Gateway engages customers with local community involvement and attentive customer service. Gateway maintains a Customer Net Promoter Score of 83, compared to the industry average of 1 for internet providers.²

¹ Cartesian Research.

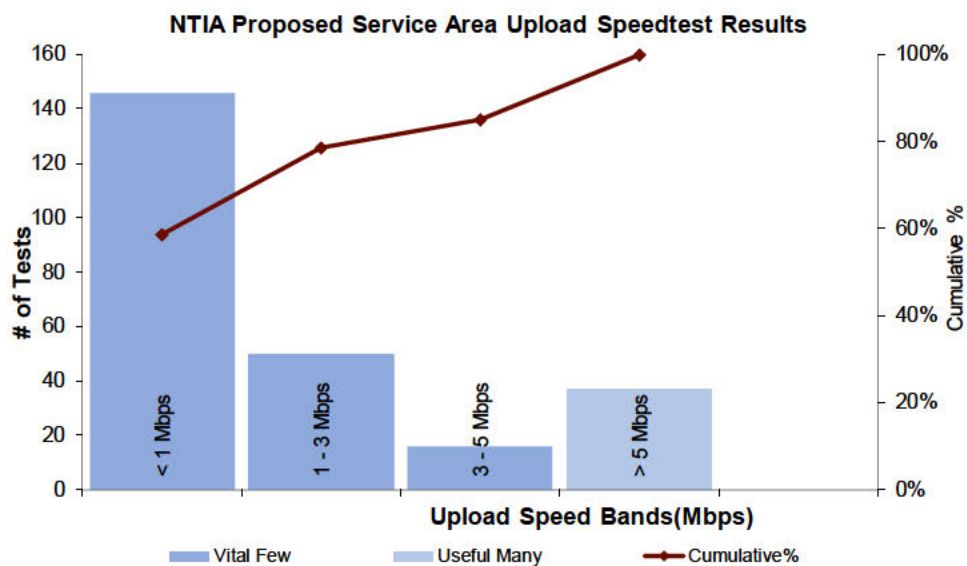
² Source: NICE Satmetrix U.S. Consumer 2020 Net Promoter Score Benchmarks.

Project Purpose and Benefits

The purpose of this project is to ensure residents in these currently underserved or unserved Serving Areas gain access to best-in-class high-speed internet equivalent to service available in densely populated areas. Typical service to the Serving Areas' residents comes through outdated copper connections via either DSL or cable, resulting in speeds below qualifying broadband service levels. Gateway Fiber collected 249 speed tests within the Serving Areas. Of the 249 tests, 81% resulted in download speeds less than 25 Mbps and 79% of the tests resulted in upload speeds less than 3 Mbps.



The first 2 Download Speed Bands(Mbps) cover 81.12% of the Total # of Tests



The first 2 Upload Speed Bands(Mbps) cover 78.71% of the Total # of Tests

Current internet providers for the Serving Areas include CenturyLink and Spectrum. Gateway Fiber estimates that CenturyLink covers more than 90% of households and businesses while Spectrum covers less than 5% of homes and businesses. Local government has expressed to Gateway Fiber that there are no current plans for Spectrum to expand coverage within the Serving Areas. Customers are currently offered a lower level of service than Gateway Fiber is proposing for approximately the same cost. (See the “Per Mbps Customer Cost Comparison” chart below for itemized price details.) Residents in the Serving Areas have reported less than adequate service, especially during peak hours when the system is used by a large portion of the area.

Gateway Fiber’s 100% fiber-optic network regularly provides upload and download symmetrical speeds starting at 250 MBPS and ranging up to 1 Gbps (1,000 Mbps) independent of system load or the number of users online at one time.

Residents in these underserved areas have already expressed their interest on social media:



The Serving Areas are geographically spread out, necessitating long cable runs to reach the areas with relatively few potential residents compared to an urban or suburban area with a higher population density. Construction costs to provide these residents with the necessary internet infrastructure can be cost-prohibitive with an extended return on investment cycle.

A recent fiber deployment study conducted by Cartesian, a leading telecommunications consulting firm, referred to project costs in the range of \$2,187 - \$3,656 per passing and qualified them as “Significantly More Costly” and “Rural & Complex Deployments” (see column C and D1 in the Cartesian chart). The deployment of the new network in the Serving Areas can be accomplished with the help of federal grant funding. If funding is awarded, Gateway Fiber’s development of last-mile fiber-to-the-home in the Serving Areas will address all the NTIA’s statutory priorities.

Estimated FTTH Investment Required

Cartesian estimates 90% of US HHs can be passed with fiber for an estimated amount of \$70B

Investment Required by Deployment Type						Comments	
FTTH Network Deployment Costs per HH	A	B	C	D1	D2		
	Dense Urban/Suburban Deployments	More Costly	Significantly More Costly	Rural & Complex Deployments	Most Expensive		
# 2025 HHs Not Already Covered by FTTH (M)	33.9	9.8	7.3	5.1	13.5	<ul style="list-style-type: none"> HHs passed or planned to be passed with fiber by 2025 have been allocated across all groups, based on past FTTH deployment density profiles At the end of 2018 there were 39.2 million US HHs with FTTH availability, plus an additional 25.9 million forecasted by 2025 To pass 80% of the HHs (as in the 2009 study) it will require today an investment of \$51.5B vs. \$70.9B in 2009 Based on current FTTH build investment requirements, Cartesian estimates that the average cost to pass all but the 10% most expensive remaining non-FTTH HHs in 2025 is ~\$1,250 per HH Penetration rates across groups A, B, C and D1 expected to average 50.1% in 2025 	
Cutoff HHs per Sq. Mile ¹	1,525	767	302	63	NA		
Percentiles Covered	0-54%	55-69%	70-80%	81-90%	91-100%		
Modeled Cost to Pass per HH ²	\$668	\$1,313	\$2,187	\$3,656	NA		
Incremental Cost to Connect per Sub	\$550	\$550	\$550	\$550	NA		
Assumed Penetration	45%	50%	60%	70%	NA		
Cost to Pass (\$B)	\$22.6B	\$12.9B	\$16.0B	\$18.6B	NA		Totals
Cost to Connect (\$B)	\$8.4B	\$2.7B	\$2.4B	\$2.0B	NA		\$70.1B
Total Investment Requirement (\$B)	\$31.0B	\$15.6B	\$18.4B	\$20.6B	NA		\$85.6B

¹HH density estimated using Census block groups as opposed to FCC wire center data in the past study
²Based on logarithmic regression model estimating effect of HH density on cost to pass a home across multiple real-world fiber deployments
 Source: Cartesian, FCC Form 477, US Census, American Community Survey, Company Presentations
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Level of Impact on Proposed Service Areas

The Service Areas, which cover 79 census blocks across eastern Lincoln County and western St. Charles County, that will benefit from the expansion of services under the NTIA grant are:

Proposed Serving Areas

	Population	# of Passings
Argentville	1,984	1,175
Redemption Ranch	2,432	1,119
Sunrise Park	874	664
Josephville & St. Paul	2,982	1,894
Total	8,272	4,852

Gateway Fiber will provide access to connect approximately 5,000 households, businesses, and community anchor institutions in the Serving Areas with broadband service speeds exceeding qualified broadband service levels. Gateway Fiber estimates the proposed service area contains 3,800+ under or unserved households, of which 100% will have access to connect.

Affordability of Services Offered

Gateway Fiber offers simple, flat-rate residential and business pricing with no hidden fees, data caps, contracts, or installation fees. Residential speed tiers include 250 Mbps, 500 Mbps, or 1,000 Mbps for the monthly price of \$65, \$75, or \$90, respectively. Business speed tiers include 250 Mbps or 1,000 Mbps for the monthly cost of \$150 or \$250, respectively. Speed tiers and pricing are designed for a variety of income levels and data capacity needs.

Gateway Fiber Service Plans and Pricing

Speed Tiers	Residential Pricing	Business Pricing
250 Mbps	\$ 65	\$ 150
500 Mbps	\$ 75	-
1000 Mbps	\$ 90	\$ 150

Additionally, Gateway Fiber participates in the FCC's Emergency Broadband Benefit (EBB) Program to assist families and households connect to jobs, critical healthcare services, virtual classrooms, and more during the COVID-19 pandemic. Pricing for this program is \$59 for 250 Mbps and \$90 for 1,000 Mbps – of which \$50 is subsidized, resulting in \$9/month or \$40/month, respectively.

Gateway Fiber's current plans are priced competitively against current providers in the Serving Areas, especially when viewed from a cost-per-Mbps perspective.





Marketing & Sales Outreach

Since our inception in 2019, Gateway Fiber has actively engaged in extensive community engagement, marketing, and sales efforts to reach the communities we serve. Gateway leverages grassroots, community-based marketing strategies that have resulted in an **83 Customer Net Promoter Score**, compared to the industry average of 1 for internet providers.³

Our overall approach starts with a commitment to redefining what people expect from their internet service provider. The Serving Areas would receive the same level of attention and effort to drive customer acquisition and retention.

- **Marketing**

- 

Localized marketing strategy is led by research and data before developing outreach material. Social media is a highly efficient channel that puts us directly in touch with prospects and existing customers.

³ Source: NICE Satmetrix U.S. Consumer 2020 Net Promoter Score Benchmarks.

[REDACTED]

- **Digital Experience**

- Our robust website contains essential information for existing and prospective customers, including a tool to find out if their address is serviceable. Gateway Fiber offers a powerful e-commerce platform designed to facilitate orders in less than two minutes. Additionally, our locally based customer service team can fulfill orders over the phone for customers that would rather talk to a customer service representative.
- A key topic for most communities is communications regarding construction. Therefore, Gateway Fiber openly shares construction updates on the “serving areas” page of the website. This feature helps set expectations as to the stage of fiber construction in each community.

- **Sales Team**

- Gateway Fiber leverages a local approach to direct sales, enabling our team to be the face of the brand in the communities we serve. In addition, the sales team is actively involved with consultative business internet sales, homeowner’s association and multi-dwelling unit events, and door-to-door activities.

Gateway Fiber maintains a **4.9 (out of 5) rating on Google Reviews**. A sampling of comments furthering our commitment to the entire customer experience is selected below. We encourage the selection committee to scan our [Google Reviews](#).

(b) (6)
1 review
2 months ago
Positive: Professionalism, Quality, Responsiveness, Value
Absolutely love our service with Gateway Fiber! No outages like we continuously got with other large cable internet companies. Kids are happy streaming videos and games. And the app that allows me to freeze internet on individual devices is awesome! Kids don't think so but parents will love it!! And our technician that came out, Matt, was great! Got everything set up quickly and didn't leave until everything was up and running, including the app. Walked me through it showing me how it works and was able to answer all questions!

(b) (6)
10 reviews
2 months ago
Today I had Gateway Fiber internet installed. I can't say enough about this company. Everyone from Customer Service, to the installers have been extremely helpful, professional, and friendly. They were all on time as well. The service has Quality, Value, and fast internet speed including FREE INSTALLATION! No wait times when emailing or calling is a plus!
They included a free gift for choosing their service, a insulated mug and a bag of Cafe Kaldi coffee. These small gestures mean a lot. Kudos to this company! I would highly recommend this them, and I wish them great success.

Project Viability

Technical Approach and Related Network Capacity and Performance

If funding is awarded, Gateway Fiber’s development of last-mile fiber-to-the-home in the Serving Areas will provide state-of-the-art broadband services capable of symmetrical 1,000 megabits per second (Mbps) speeds to an area currently underserved by internet service providers. In addition, the GPON (Gigabit Passive Optical Network) will provide encrypted, scalable, and modern fiber-based broadband services capable of high-performance data, video, and voice to residents and businesses that will bolster the livability and attractiveness of these growing rural communities.

Gateway Fiber will acquire required permits and design, engineer, and construct the network within one year of awarded funding. [REDACTED]

[REDACTED] Gateway Fiber has streamlined the design to build process, allowing for quicker project starts. Before deployment, Gateway will work alongside its partners to align labor and material to deploy the network within the budgeted timeline.

Physical Project Area

The proposed Serving Areas for the grant are all existing communities in rural areas and do not include future greenfield developments. There are no protected wetlands; however, we expect to cross the Civre River in Josephville and St. Paul serving areas. All proposed locations are similar in soil type and topography to our existing serving areas in Missouri, giving Gateway Fiber an immediate understanding of the effort needed for construction efforts.

Applicant’s Organizational Capability

Gateway Fiber has the capabilities and resources necessary to execute [REDACTED]

- **Engineering & Construction Capabilities**

- █ [REDACTED]
 - █ [REDACTED]

- From project managers to engineers to installers, Gateway Fiber personnel take personal responsibility and ownership for creating a seamless customer experience.

- **Marketing & Sales Capabilities**

- To help spread the word about the company's services, Gateway Fiber [REDACTED]

- █ [REDACTED]
 - █ [REDACTED]

- **Customer Service & Installation Capabilities**

- Gateway Fiber has created a localized customer service model that will support these communities throughout the deployment, installation, and maintenance of the network. Customer service is a key value of Gateway Fiber.

- █ [REDACTED]
 - █ [REDACTED]

- █ [REDACTED] The team, which delivers the critical last step in the customer onboarding process, regularly receives positive reviews for their attention to detail and ensuring our customers are completely satisfied with their new fiber internet service.

Project Budget & Sustainability

Reasonableness of the Budget

[REDACTED]

[REDACTED] Gateway Fiber has not applied for or received funding for the Serving Areas from the State of Missouri, USDA Broadband, the Federal Communications Commission, Economic Development Administration, or any other federal or government source.

Gateway Fiber followed the same process for developing the project budget as it does in all its projects.

[REDACTED]

[REDACTED] inclusive of legal, engineering, permitting, mainline construction, active cabinet material and placement, and contingency expenses. Additional, project expenditures related to customer installation and acquisition are included into the total project cost, but are left out of the cost per passing calculation.

[REDACTED]

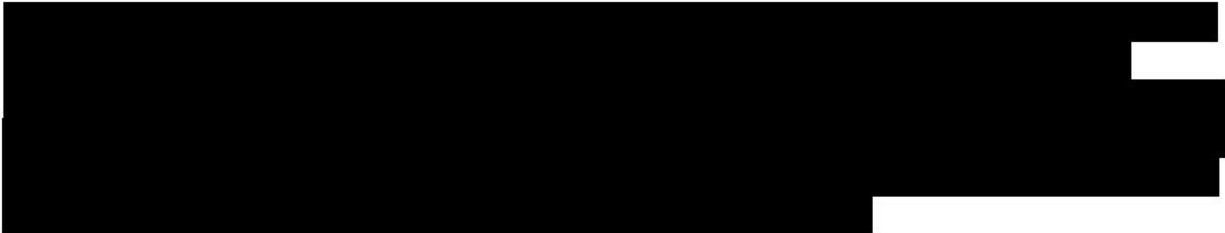
[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

Sustainability of the Project

The combination of broadband network expertise, best-in-class marketing, local customer service, and the future-proof nature of the fiber asset combine to make the proposed project sustainable. [REDACTED]

[REDACTED] Additionally, Cartesian research states that FTTH builds in the "Significantly More Costly" and "Rural & Complex Deployments" bands have assumed penetration levels of 60% and 70%, respectfully. [REDACTED]

[REDACTED]




NTIA - Help bring powerful internet to Lincoln County.

Fairer. Friendlier. Faster...er.

Based right here in Missouri, Gateway Fiber offers the speed you need to keep your entire home connected, but we need your help in order to construct our fiber network here in Lincoln County.

Simple Plans. Even simpler pricing.

 <p>250 Mbps \$65/mo</p>	 <p>500 Mbps \$75/mo</p>
 <p>1 GIG \$90/mo</p>	

If you'd be interested in our service, please scan the QR code below, or visit <https://bit.ly/3qzZWV> and fill out the required form. By doing so, we'll be able to gauge the interest in your community. Your participation is extremely helpful, so don't delay. To learn more about our service, visit getgatewayfiber.com.




NO hidden fees.
data caps.
contracts.
installation fees.*



Appendix

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

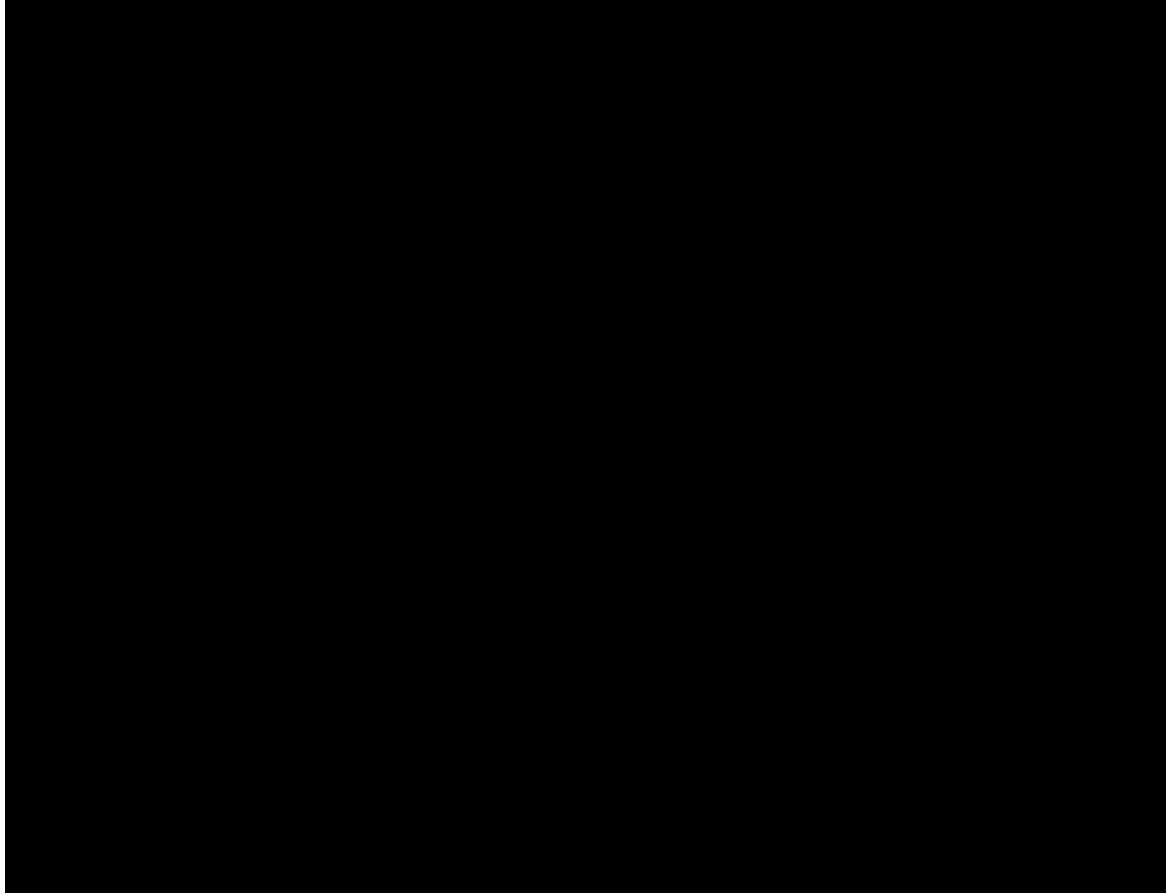
[REDACTED]

[REDACTED]



Proposed Service Area Footprint and Current Gateway Network

The map below overlays the Grant Serving Areas on Gateway Fiber's existing network, denoted by the multi-colored serving areas. Serving areas outlined in black with no coloring are in early-stage evaluation for potential future development.



Legend

GrantServingAreas



GatewayFiber sdm Fiberhoods View - sdm Fiberhoods

Symbol



1



2



3

[REDACTED]

[REDACTED]



Executive Summary

Since 1952, Green Hills Telephone Corporation (GHTC) has been providing leading telecommunications services to North Central Missouri. Headquartered in Breckenridge, Missouri, the Green Hills network extends across ten counties and covers over 1,000 square miles. GHTC provides high-speed broadband, local phone and long-distance service, video (IPTV and cable television), and IT consulting services to over 5,000 residential, business, and wholesale customers. Since 2010, Green Hills has been building fiber optic networks to serve its rural customer base and provides up to 1 Gbps symmetrical speeds in all fiber-to-the-premise (FTTP) locations.

This project will be delivered by Green Hills Telephone Corporation (GHTC). The project is designed to serve eligible areas east of Chillicothe, Missouri. These locations are east of Highway 65 and both north and south of Highway 36. There are 370 locations within the Proposed Service Area (PSA), which includes 11 businesses and 2 anchor institutions. All locations will be serviced with FTTP, with 1 Gbps symmetrical speeds available at every location. The business plan includes an anticipated 75% take rate, resulting in 277 projected customers. The total cost of the project is \$4,960,356.

This project is desperately needed as these locations have limited to no broadband access today. In some locations, an up to 18 Mbps by 1 Mbps connection is available from the incumbent telephone company, but there are no true 25 Mbps by 3 Mbps broadband options available for this community.

GHTC is appreciative of the opportunity to work with NTIA and the Missouri Department of Economic Development on this important project.

Project Purpose and Benefits

The PSA in this project is designed to meet the five statutory funding priorities described in Section 905(d)(4) of the Act. This project will deliver broadband services to 100% of the locations in the PSA. The locations in this PSA are very rural and lack broadband connectivity that is much needed in today's economy. The PSA is not in a county, city, or town that has a population of more than 50,000 inhabitants. Also, the PSA is not in an urbanized area contiguous and adjacent to a city or town of more than 50,000 inhabitants. The project proposes a FTTP design, which will ensure these locations always have broadband connectivity for the foreseeable future. Fiber is the best future-proof



technology offered today, which makes FTTP the most cost-effective solution available for this PSA. Finally, all locations within the PSA will have access to symmetrical 1Gbps speeds.

There are 370 total locations included in the PSA. This total includes 357 homes, 11 businesses, and 2 anchor institutions. The anchor institutions include a public water district and a wastewater location for the City of Chillicothe. The locations in these census blocks were included in the recent Rural Digital Opportunity Fund auction and were awarded to LTD Broadband LLC. However, it is the understanding of GHTC that the RDOF funding has not been approved by the FCC and thus the census blocks are still eligible for the NTIA Broadband Infrastructure Program. The locations included in this application do not have access to 25 Mbps download and 3 Mbps upload speeds at this time. If NTIA awards this project, 100% of the 370 locations will have access up to 1 Gbps symmetrical speeds. The project design includes connecting this PSA to GHTC's Chillicothe Central Office (CO). This CO is part of GHTC's 10 Gbps network ring. This ring also has redundant 10 Gbps connectivity to major internet hubs in both Kansas City and St. Louis, ensuring the locations in the PSA have the greatest resiliency for their services.





For families in need, GHTC offers a lifeline service for eligible participants which provides a \$9.25 monthly discount to broadband service and a \$18.25 monthly discount for phone service. For customers with qualifying disabilities, they can receive a \$24.00 monthly discount for phone service. In addition to lifeline services, GHTC provides discounts in the Emergency Broadband Benefit (EBB) program. Qualifying customers in this program can receive up to \$50.00 per month in discounts for internet service.

Project Viability

Active Ethernet fiber design or “Home Run” will be used to extend service to every premise in the proposed funded service area. This design will provide up to 1 Gbps links from the CO to the optical network terminal (ONT) at each location. Future expansion initiatives are easy to administer by simply adding a 10G, 100G or greater shelf, with associated active cards, in the Chillicothe CO and upgrading the ONT at the premise. GHTC has already begun this type of upgrade in Chillicothe and is serving some customers with 10 Gbps connections today.

The access equipment will be Calix E7-2 Ethernet platform with 10 10Gig XFP transceivers and 16 24 port active E cards located in the Chillicothe Central Office. Calix has a variety of





ONT's with different capabilities and the one that best fits the subscriber's needs will be used. A network diagram and system design have been provided along with this narrative.

The fiber optic cable will be 100% buried in state, county, or city public right-of-way.

GHTC has many years of experience in deploying projects similar to the one in this application. Over the past six years, GHTC has deployed FTTP projects across portions of Missouri in Kingston, Polo, Lock Springs, Stet, and Chillicothe. It has current projects under construction in Chillicothe, Stet, and Mayview. GHTC uses a local contractor, North Missouri Construction, who is based in Chillicothe. This proximity to the PSA will make construction efforts easy to coordinate and execute. Finally, GHTC has been providing services in Livingston County for decades. The knowledge of the communities and the strong working relationship it has with local government will ensure this "shovel ready" project is ready to begin upon award.

A .kmz file of the PSA has been included in this application. The terrain and topography of the PSA is very similar to most of GHTC's existing service territory. GHTC is prepared to work with NTIA and comply with all environmental and NEPA requirements. GHTC was recently awarded a USDA ReConnect Grant, which included an area just north of the PSA included in this project and worked with the State Historical Preservation Office (SHPO), Missouri Department of Natural Resources, Tribal Nations, and environmental consultants to ensure the project adhered to all NEPA regulations.

All construction methods utilized for the project are by general design intended to be the lowest environmentally impacting methods. Horizontal directional drilling will be utilized to crossroads, creeks or in areas too difficult to perform cable plowing operations. The depth of directional drilling is generally 36", unless greater depths are required when crossing roads or in other areas when future excavation may leave less than 36" of soil cover. Fluids utilized in directional drilling operations are water or a water/bentonite mixture as required to allow for bore holes to remain clear prior to conduit pullback and to assist in conduit pullback operations. Fluid volume utilized is no greater than required for placement operations.

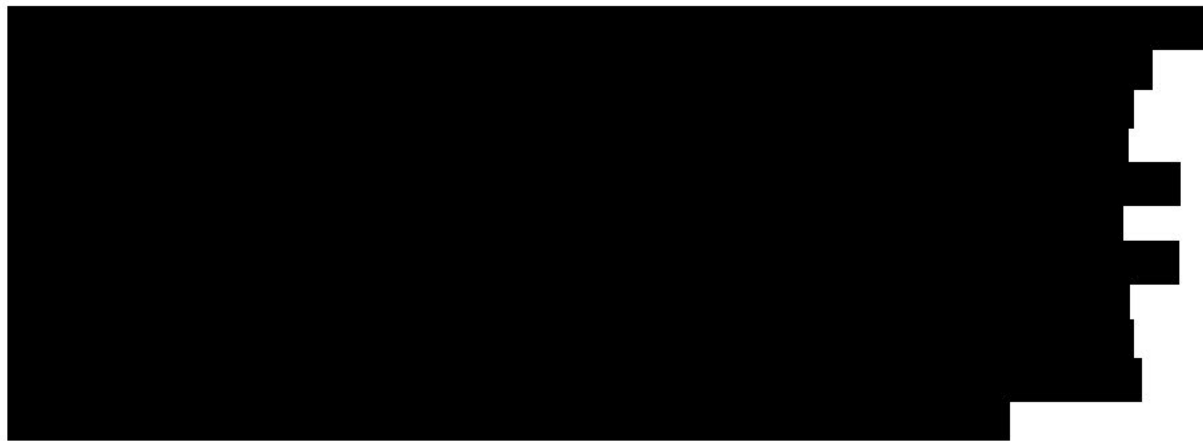
Backhoe operations with excavation up to 36" will be utilized to dig down to conduits in long boring operations or where conduit is placed by boring operations are dug down to a depth for insertion of cable from plowing operations. Backhoe operations will also occur to place fiber pedestals and fiber handhold locations. Excess dirt displaced from the placement of pedestal and handholds is initially utilized to backfill around pedestals and handholds with the excess soil utilized in final grading and backfilling after settling. After



final soil restoration seeding and mulching occurs as soon as practical, in consideration of soil and weather conditions, to encourage growth of vegetation to stabilize soil and for aesthetic considerations. Cable plowing operations consist of steel or rubber tracked equipment capable of pulling a metal shank which places the cable at the required depth, as stated above, 36" for this project. Soil disturbed by plowing operations is compacted back in place by steel tracked equipment of sufficient weight to close the plow rip and return the soil surface to a condition as near to what it was prior to cable placement and will be seeded and mulched.

Cable plowing by small rubber tracked equipment will be utilized to place fiber service to the outside optical network terminal at individual subscribers. Fiber service placement will be direct buried at a depth of 18" from the fiber pedestal or handhold location. The transition to hand digging at a depth of 18" will be required as the fiber service gets close to the residential or business outside optical network terminal which is installed on the house or building. All excavated soil is returned to the location it is dug from, compacted, seeded, and mulched (as required) in order to return the soil to the original state.

GHTC has a long and successful history of providing broadband internet service. This success is predicated upon its technical expertise. Green Hills Telephone Corporation (GHTC) is a telecommunications cooperative based in Breckenridge, Missouri. GHTC has been serving customers in North Central Missouri since 1952. Today, GHTC earns \$20 million in annual revenues offering broadband, voice and video services to over 5,000 customers in ten Missouri counties. Each year, GHTC spend an average of \$5 million in capital expenditures, which focus on fiber optic expansion and network improvements to its patrons.



7926 NE State Route M
PO Box 227, Breckenridge, MO 64625-0227

greenhills.net
660.644.5411

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]



[REDACTED]

[REDACTED]

For each capital project (and for this grant), the personnel listed above would meet on a bi-weekly basis to review progress and discuss timelines and challenges. Budgets are reviewed to ensure costs are in line with projections. Timelines are discussed to ensure communication to customers is timely and accurate. As mainline construction nears its end, the Customer Service team begins to schedule installation of services with customers. All installation work is completed by Green Hills staff members or contractors who have worked with GHTC for years. Upon completion of service installation, the Customer Service team will follow up to ensure all new customers are satisfied with their new service. This level of service differentiates GHTC from its competition and the communities it serves recognize the commitment. In fact, GHTC was recently honored to receive Chillicothe Chamber of Commerce’s “Company of the Year” award after the near flawless fiber optic buildout through Chillicothe, Missouri.

In summary, the team at GHTC has been assembled because of their unique skill sets in building and supporting rural fiber networks. This team is prepared to execute on this grant proposal, and it looks forward to working with NTIA to bring broadband to rural Missourians.

Project Work Plan

GHTC has submitted a Project Work Plan Template with this application. The Project Work Plan includes aspects of the project, from inception to installation of the final customer.

Upon award, the first stage of the process will be Permitting and Environmental Review. In this phase GHTC will work with city and county government officials to obtain necessary right-of-way access to the county roads included in the PSA. Additionally, as described above, GHTC will work with environmental agencies to ensure all NEPA requirements are met. This phase of the process is expected to begin on December 1, 2021, and last until March 1, 2022.

The next phase of the process is Staking. In this phase, GHTC will complete the final engineering

7926 NE State Route M
PO Box 227, Breckenridge, MO 64625-0227

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660.644.5411



documents and plan out each foot of the construction phase. Staking will be completed by GHTC's engineering firm, Finley Engineering. Finley Engineering is a Missouri-based engineering design firm that specializes in supporting the telecommunications industry.

Once the Staking phase is complete, a construction contract will be drafted. GHTC utilizes North Missouri Construction, which is based in Chillicothe, Missouri, and does not plan to bid out the construction contract. If bidding is required, it will alter the timeline and phases of the Project Work Plan. The award of the construction contract is expected to take place between February 2, 2022, and February 9, 2022.

Once the construction contract has been executed, project materials will be ordered. These materials will be delivered and staged at North Missouri Construction's office in Chillicothe. Staging the materials here will simplify the daily construction process and help deliver materials to the job site quicker and more efficiently. We expect materials to be ordered on February 10, 2022, and be delivered by March 18, 2022. It is important to note that this timeline could change should certain materials such as fiber optic cable, duct, or electronic equipment take longer than usual due to high demand. During this phase, Customer Service Representatives from GHTC will contact customers and verify their interest in services from GHTC. If a location is interested in receiving a drop, CSRs will notify the construction crew to plan for a drop to the home or business.

Once materials have been received and staged, construction will begin. Mainline construction will begin first by placing duct and/or direct burying fiber. The placement of the fiber will be done via a boring machine and a fiber plow. Once the mainline fiber and pedestals have been placed, construction of drop fiber to each home will begin. It is anticipated that construction will take place from April 11, 2022, to September 1, 2022.

Once the construction phase has been completed, installation will begin. CSRs will contact each customer, create a service order with the customer's desired services, and schedule the installation. Installation work will be completed by North Missouri Construction. These installation specialists have been working with GHTC for several years and excel at customer satisfaction and technical strength. Once an installation is complete, a CSR will contact the customer and verify the customer is satisfied with his/her service. This phase is expected to occur from September 1, 2022, to November 4, 2022.

Finally, no project would be successful without the marketing team. GHTC's marketing staff will keep customers up to date on each phase of the project. They will supply customers with materials describing each phase of construction, explain what to expect when installations occur, and provide frequently asked questions to help each customer understand what will happen next. Samples of these materials have been included in this application.

For each project, GHTC strives to utilize the local labor market for the construction and installation phases. As stated above, North Missouri Construction will serve as the contractor for the mainline



and drop construction, as well as the installation at each location. North Missouri has a strong track record for paying competitive wages for each staff, which is one of the reasons why they have been successful for so many years. Similarly, GHTC believes in rewarding its staff with very competitive wages and benefits. Each year, GHTC participates in a national wage and benefit study of telecommunication providers to ensure it is paying its staff at or above the prevailing rate. GHTC targets is salary ranges to be between the median and 75th percentile of each comparable benchmark position. GHTC also strives to hire locally and find individuals who want to live and work in our rural communities. When a position becomes available, GHTC works to advertise in local newspapers, radio, and via social media to reach individuals who may be interested in a position with Green Hills. GHTC is a non-union organization.

Project Budget and Sustainability

The application for this grant plans for funding to come solely from NTIA. GHTC is not matching any portion of the grant. The total amount of the grant request is \$4,960,356. This total is broken down into the following categories:

A. Expense Type	B. Cost Classification	C. NTIA Grant Funds Requested
Mainline Construction	Construction	\$ 3,442,580.00
Mainline Electronics	Equipment	\$ 49,906.00
Mainline Engineering	Architectural and engineering fees	\$ 647,003.00
Drop Construction	Construction	\$ 443,266.00
Drop Electronics	Equipment	\$ 328,596.00
Mainline FO Termination	Construction	\$ 35,833.00
Drop FO Termination	Construction	\$ 13,172.00
	TOTALS:	\$ 4,960,356.00
	PERCENTAGE OF TOTALS:	100%

The figures in the table above reflect recent pricing from all relevant vendors and suppliers. GHTC currently has four FTTP projects underway and pricing from these recent projects was used for each of the budget categories so the estimates for the project are realistic and timely. 100% of the funds for the project are in the grant request so there are no other funding sources for the project. The categories above fall into the grant eligible activities described in the NOFO. There are no in-kind resources to be utilized for this project. Also, there is no debt financing for this project.

Pro forma financial statements for this project have been included with the application, along with GHTC’s most recent quarter’s financial statements and three previous fiscal years of financial statements. The financial statements include balance sheets, income statements, and statement of



cash flows.

Once the project has been completed, GHTC has a long track record for successfully maintaining and supporting its networks and customers. GHTC realizes telecommunications is a capital-intensive business and has been investing in networks since 1952.

GHTC also has the experience in supporting customers' needs. GHTC uniquely understands the broadband needs in a home or business and has the staff to support those needs long term. The attached business plan includes an anticipated penetration rate of 75% of the total locations. While GHTC is prepared to serve 100% of the locations (and will have the network capabilities to do so), it also realizes that some homes do not want or need broadband service. The 75% threshold has been derived from past projects similar to this one, in towns such as Kingston and Chillicothe.

GHTC will make every effort to get 100% of locations to take broadband service. Examples of the marketing materials used in the Chillicothe market have been included with this application. Examples of marketing materials include door hangers, email campaigns, postcards, and local radio advertisements. GHTC also hosted a neighborhood cookout, serving hamburgers and hotdogs to local residents, as a way to get more customers to sign up for broadband service.

Once a customer has signed up for service, GHTC does a great job in preparing the customer for the next steps. Its marketing materials include explaining the construction process, describing how services will be installed at the location, and illustrating how buried fiber construction will affect the homeowner's or business owner's location.

Additionally, GHTC offers training tips on its website to aid customers in learning more about broadband and phone services. GHTC also has a 24x7x365 help desk that supports customers' needs. Customers can receive help from this service at any time, day or night. If a technician is needed on premise, GHTC always has techs who are "on call" and can respond nights and weekends.

The Chillicothe and Livingston County communities are fully supportive of this project. For years, city and county officials have urged Green Hills to bring services to this area. As noted previously, the incumbent telephone provider and the local cable provider do not have services in this area. Customers are in desperate need of fast, reliable broadband service. Included with this application are several letters of support from the local community, urging NTIA to award this project to GHTC.

In summary, GHTC believes this application would greatly benefit the citizens of Livingston County and these locations east of Chillicothe, Missouri. GHTC looks forward to working with the Missouri Department of Economic Development and NTIA on this project.

7926 NE State Route M
PO Box 227, Breckenridge, MO 64625-0227

greenhills.net
660.644.5411

Le-Ru Executive Summary

Le-Ru Telephone Company's proposed project will provide much needed Broadband service to 221 underserved and unfunded locations, located in the southeastern part of McDonald County close to the Missouri state line. The project area is in the Ozarks and spans rough terrain with customer locations in remote rural areas that are situated far from the Le-Ru serving wire centers. The proposed project will deliver Fiber to the Premise (FTTP) over buried fiber facilities and the FTTP technology can offer speeds of 1Gbps/1Gbps simultaneously to all 221 locations. Offering 1 Gbps speeds to this area would greatly improve the ability of these locations to be able to keep up with the growing demand of working from home, rising technology advances (Examples: IOT, streaming devices, security cameras), and telehealth services. Le-Ru provides service to some of these locations over copper facilities with internet services today, but the services are limited to speeds of 10/1 Mbps due to distance from the serving remotes and the rough terrain that is typical of the Ozarks.

Project Purpose and Benefits

Le-Ru Telephone Company recognizes the need for qualifying broadband service in the eastern part of McDonald County. The current average broadband speed available in eastern McDonald County is 10Mbps/1Mbps, provisioned over copper plant facilities, which is below the definition of qualified broadband. Additionally, the rugged Ozark terrain means wireless broadband is not available on a reliable scale if available at all. The proposed grant service area is home to a number of Walmart corporate employees as well as other remote workers requiring higher than qualified broadband speeds to work efficiently from home, an aging population segment lacking reliable access to telehealth, college age students lack of access to streaming coursework hinders opportunities to pursue higher education, and small businesses needing broadband access to sustain their operations. These examples of the population type outline the dire need for broadband in this community. Grant funding is critical to the construction and deployment of the proposed broadband project as the cost of fiber deployment is significant and the rural subscriber count not substantial enough to make a business case without the aid of grant funding.

Level of Impact in the Proposed Service Area:

The proposed eastern McDonald County FTTP project aligns with the priorities as identified in Section 905(d)(4) of the Act. Specifically; 1) the proposed covered broadband project is designed to provide services to the greatest number of households in the eastern McDonald County service area as the project was engineered to pass all locations, 2) the proposed eligible service area located in McDonald County, Missouri population as of the 2010 U.S. Census data was 23,083, and is in a rural area not contiguous or adjacent to a city or town of more than 50,000 inhabitants, 3) the proposed project area is located in the extremely rural region of eastern McDonald County near the Missouri state line, 4) the proposed FTTP project will deliver 1Gbps symmetrical download and upload speed exceeding the minimum covered project speed of 100Mbps/20Mbps, and 5) the proposed covered FTTP broadband project meets the requirements of the NOFO by delivering a FTTP product that will meet current needs as well as creating a network that has the ability to evolve, sustain, and scale for future advanced services.

The proposed last-mile FTTP project will connect 221 locations, consisting of 215 households, 6 businesses, to FTTP broadband service capable of serving all locations simultaneously with symmetrical speeds of 1Gbps. The proposed project area is located at the furthest edge of the county and does not contain any community anchor institutions. The total number of unserved locations in the proposed service area meeting the definition of unserved and no broadband provider has been selected to receive federal funding with an enforceable build-out commitment is 221, while Le-Ru is an ACAM elector the locations for the proposed project are not fully funded ACAM locations. The entire proposed last-mile FTTP project location subscriber base of 221 will receive FTTP broadband service with speeds provided at symmetrical 1Gbps which is greater than the qualifying broadband service required minimum.

The proposed project area lacks availability to qualified as the only other options are satellite or fixed wireless services. The NTIA Broadband Need map depicts the Ookla median speed at 10.18Mbps download and 32.70% of households lacking Internet access.

Affordability of Services Offered:

The Le-Ru proposed broadband FTTP speed tier and pricing schedule for the eastern McDonald County area is:

Speed (Download/Upload)	Monthly Price
50Mbps/50Mbps	\$50.00
100Mbps/100Mbps	\$65.00
500Mbps/500Mbps	\$70.00
1Gbps/1Gbps	\$84.00

The current Le-Ru pricing for internet over copper facilities is \$99.95 for 25Mbps Download in the areas available, \$85.95 for 15Mbps Download, and \$65.95 for 10Mbps Download. Upon completion of the proposed FTTP Broadband Grant project locations in the area will have access to significantly greater speeds and experience a cost savings. Additionally, the proposed FTTP pricing is comparable to the rates in the FCC 2021 Urban Rate Survey for Missouri as the average Urban rate for 100Mbps service is \$78.33 and average Urban rate for 1Gbps service is \$104.99. The FTTP service is priced competitively and affordably, while priced slightly lower than the rates of urban comparable speeds the median income for a family is \$31,530.00 in McDonald County compared to \$55,314.00 in one of the Missouri's urban areas. This income disparity was a consideration when pricing to deliver affordable qualifying broadband services to the proposed area. Le-Ru Telephone Company currently conducts advertising and outreach specifically targeted to reach low-income subscribers as a means of promoting digital literacy and sharing the discount options available to low-income households and will extend this targeted marketing outreach in the proposed grant area.

Le-Ru offers significant discounts for low-income households, for example the first month's bill for a low-income household would be \$40.75 (not including applicable taxes) for the 50Mbps broadband plan as compared to the \$175.00 a non-low-income household would pay. Le-Ru provides Federal Lifeline discounts to qualifying Lifeline subscribers which allows for a Lifeline credit discount to be applied against the monthly service rate further increasing the affordability of services. During the pandemic, as well as in the current times, Le-Ru Telephone Company has taken efforts to ensure affordability and continued connectivity and access to broadband service. To do so, Le-Ru Telephone Company has and will continue to waive the \$125.00 installation fee for low-income subscribers, allowing them to subscribe to affordable broadband services without incurring an up-front fee that may otherwise have prevented them from obtaining connectivity. Lastly for pandemic affected and low-income subscribers Le-Ru has not been assessing late payment charges on any carried service balances on bills and has worked with subscribers to develop payment arrangements allowing for continuation of service affordably.

Project Viability

Technical Approach and Related Network Capacity and Performance:

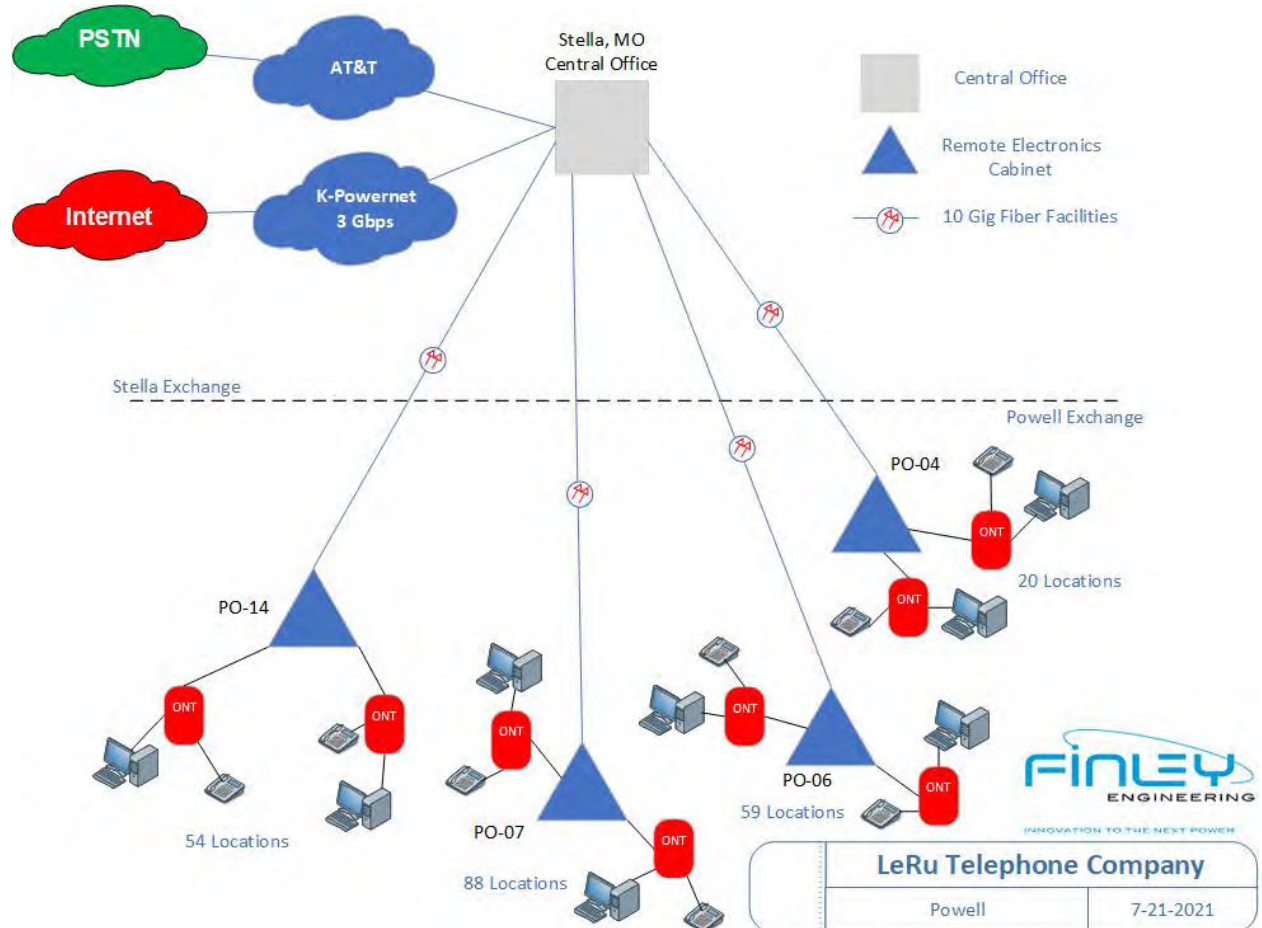
This project is shovel ready as Le-Ru has already worked with Finley Engineering, an engineering firm, to develop the full fiber network ensuring the elements are capable of simultaneously providing symmetrical Gigabit service to all locations and that it will be constructed in a manner that is scalable to meet future broadband speed requirements with the addition or upgrade of equipment. Le-Ru can implement and operate the proposed FTTP Active Ethernet network as it will be an extension of existing facilities that Le-Ru currently operates and maintains. Le-Ru has the full plan and project timeline developed and is prepared to begin ordering fiber and equipment and start construction upon approval of the grant application.

The project area is in the southwest corner of Missouri in McDonald County in the boundary of Le-Ru Telephone Company's Powell Exchange. There are no federal or state protected lands within the project area. The new fiber plant and associated equipment will be in public right-of-way in previously disturbed corridor.

Le-Ru Telephone company currently serves approximately 925 subscribers supporting telephone and broadband services. The proposed project will upgrade existing network facilities in the Powell exchange to migrate technology from copper-based DSL technology to fiber-based Active Ethernet technology. The network is also expected to add approximately 100 new subscribers to the network. The Applicant will utilize Active Ethernet Fiber-to-the-Premise (FTTP) technology and with Home Run (point to point Ethernet) architecture to deliver broadband and voice services to the proposed areas. This solution will offer the highest possible capacity and performance to the community in the planned area.

Below is a network diagram that shows the connections and network elements associated with the proposed project.

Network Diagram:



The Optical Distribution Network (ODN) will be designed in a Home Run (point to point Ethernet) architecture.

Such an architecture will allow the Outside Plant (OSP) to be technology agnostic and capable of switching access technologies, such as from Active Ethernet to GPON or future technology, as requirements and technologies evolve over time.

Le-Ru's Central Office is in Stella, Missouri where it connects to the Internet via K-Powernet and the Public Switched Telephone Network (PSTN) via AT&T.

All exchanges of Le-Ru Telephone Company are served by its Ribbon C15 class 5 softswitch located in the Stella exchange central office. The applicant provides carrier grade voice services, including E911, to residential voice customers over its fiber network, supported by a Ribbon C15 softswitch. The VoIP solution offered meets all requirements for Eligible Telecommunications Carrier (ETC) status, including 911 and CALEA Requirements. This switch allows Le-Ru to migrate from traditional TDM protocols to newer IP protocols of SIP and MGCP for both lines and trunks. The C15 can grow to up to 100,000 lines when fully configured. The applicant currently uses only a small percentage of the C15 total capacity.

Upstream data is interconnected and transported via IEEE 802.3 Gigabit Ethernet fiber from upstream partners to the core network over a 3 Gbps core and upstream connection which may be increased as demand grows. Assuming 925 existing broadband customers plus a potential increase of 100 added from the proposed project, a new total of 1,025 subscribers may be anticipated. Assuming 60% of the subscribers are online at one time with 1% sign up for 1Gbps service and the remaining experience an average a sustained rate of 25Mbps, a 3 Gbps upstream connection would support this service with a sustained oversubscription rate of 7:1. Based on realistic bandwidth demands from current subscribers, there will to be ample upstream bandwidth to support service levels proposed in this design to 100% of the planned locations.

Up to 1 Gbps broadband service will be delivered to customers via an Active Ethernet FTTP architecture which is compliant with the IEEE 802.3 standard. The physical fiber network will be based on the optical requirements to effectively implement an IEEE 802.3 compliant network, utilizing centralized OLT locations feeding ONT units via single-mode fiber to the home or business. Each OLT blade supports multiple optical GE and 10GE ports. Multiple OLT ports will be placed at each remote serving location. An IEEE 802.3 Gigabit Ethernet fiber link will be used for backhaul from each OLT location to the core network. The network placed in service will be capable of supporting 1GigE connections to all customers. Broadband internet services are offered from the FTTH network via a Calix Optical Network Terminal (ONT) with either a Cat 5e or WiFi technology connecting customer devices.

This network is fully capable of meeting the proposed speed, performance and latency tiers and can also deliver high quality voice service. The equipment used in the proposed Active Ethernet network will comply with the IEEE 802.3 standard and is highly scalable for subscriber growth and service demand. All equipment used to uplink data will be supported by the IEEE 802.3 Gigabit Ethernet standard and is scalable to increase bandwidth as needed. The physical plant will be designed for compliance with these standards. Both broadband internet access and voice services will be delivered over the same Active Ethernet network and gigabit Ethernet connections for backhaul incorporating products that only comply with the standards mentioned above. The end-to-end data network is designed for low latency. The peak-period network round-trip latency for our current FTTP network is well under 100ms. VoIP services will be supported over the network with less than 100ms round-trip latency during peak periods. Voice Traffic will receive Quality of Service (QoS) treatment, which will protect it during times of peak data usage. With the technical capability to delivery 1 Gbps service with less than 100ms round-trip latency during peak periods, FTTP is the best method available today to meet the performance tier, latency and MOS requirements.

The fiber network includes network management tools that monitor the entire system from upstream provider source, throughout core/backhaul, to end user in real time. Le-Ru will continue to monitor usage during peak usage periods and will make appropriate adjustments, such as increased upstream capabilities, based on need. When system demand in Internet access or middle-mile bandwidth exceeds 75% of capacity requirement, action is taken to increase bandwidth. As needed, the applicant will densify the network by addition of last-mile equipment, upgrade backhaul equipment, increase the fiber points of presence, or boost source bandwidth to

achieve the applicable performance tiers.

The applicant has vast experience building, maintaining, and operating telephone and broadband networks. The proposed project is an expansion of the company’s existing network. All preconstruction requirements have been identified and are included in the project schedule. The project has been sized so it can be completed within a one-year timeframe.

The applicant has built and is currently operating networks using similar equipment and architecture to provide the proposed services. The applicant is developing pricing from past projects to ensure costs remain within budget for this project. The applicant has worked with a variety of vendors and maintained a good working relationship with them. The applicant will utilize in-house talent augmented by outside engineering and construction companies to assist in this effort. All equipment planned is commercially available today with reasonable lead times.

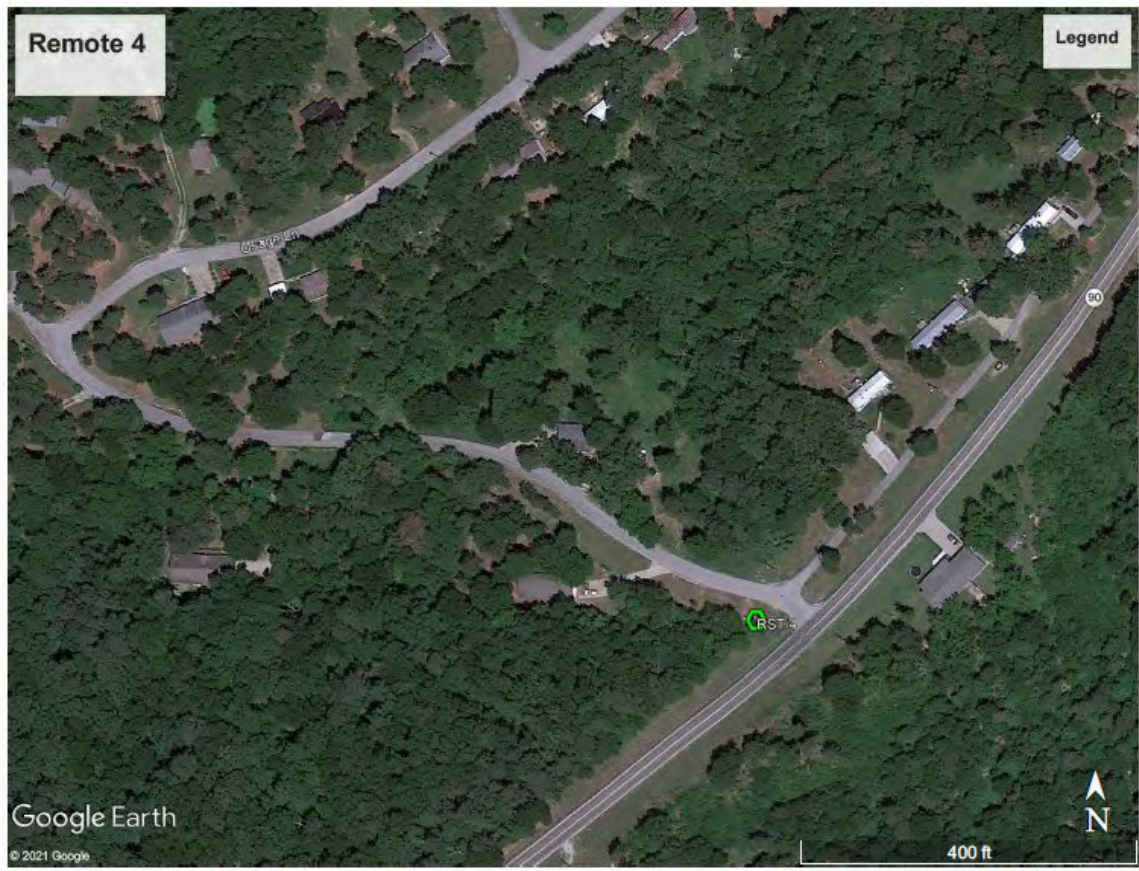
The network is highly scalable. The upstream bandwidth is scalable by increasing the purchased bandwidth from existing upstream provider, K-powernet, or by adding additional upstream providers. The core switches and routers are routing a fraction of the capacity for which this equipment is capable. The fiber infrastructure is virtually unlimited with respect to bandwidth capabilities and is sized to support future growth. The access equipment is software controlled and constantly upgraded. The hardware in the access equipment is also scalable by virtue of changing out line cards within a chassis instead of ripping and replacing an entire system. The technology supported in this network can deliver far more bandwidth and value-added services than are currently planned today.

Physical Project Area:

The physical project area is in rural Missouri where the land is sparsely developed to the extent that copper facilities already exist and currently provide voice and non-qualifying broadband service to the locations. The project as engineered is not adjacent to protected lands or resources. The FTTP project consists of burying fiber in existing right-of-way and current paths for remote areas 4, 6, 7, and 14, following are the Google Earth images depict the project sites:

Remote 4:





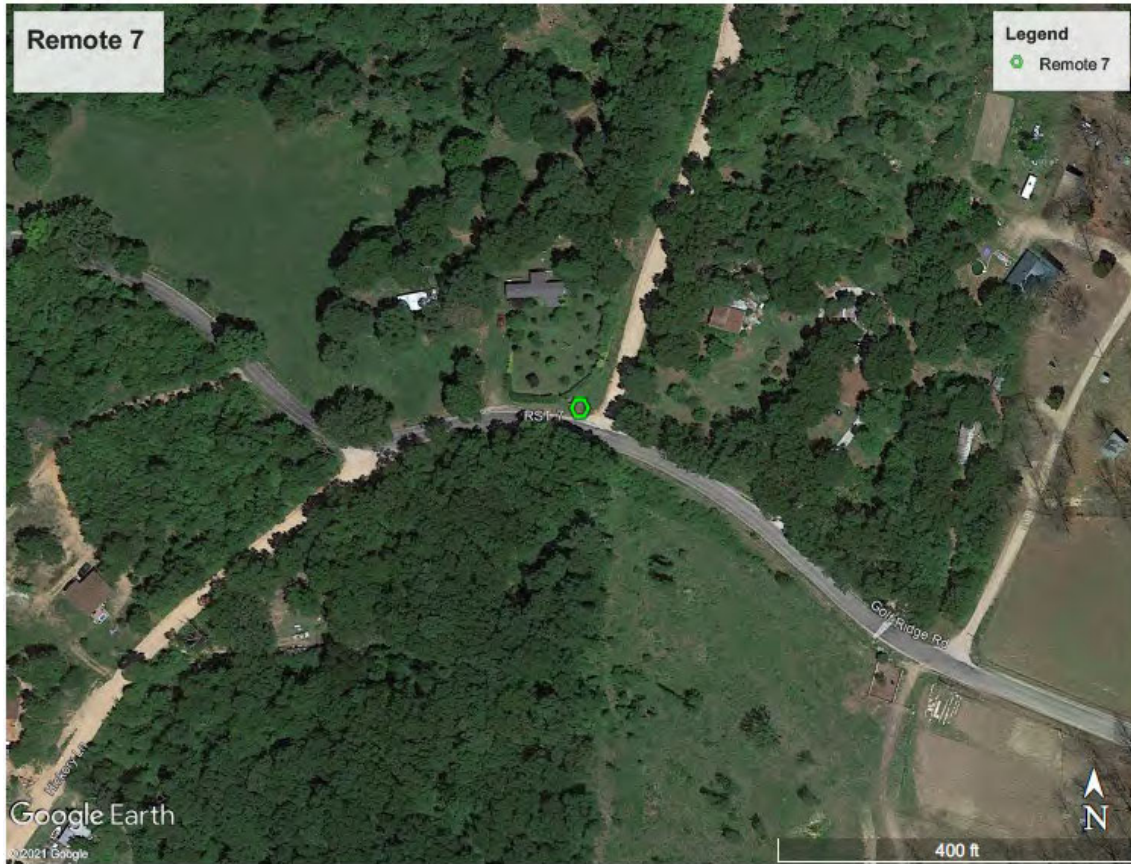
Remote 6:





Remote 7:





Remote 14:



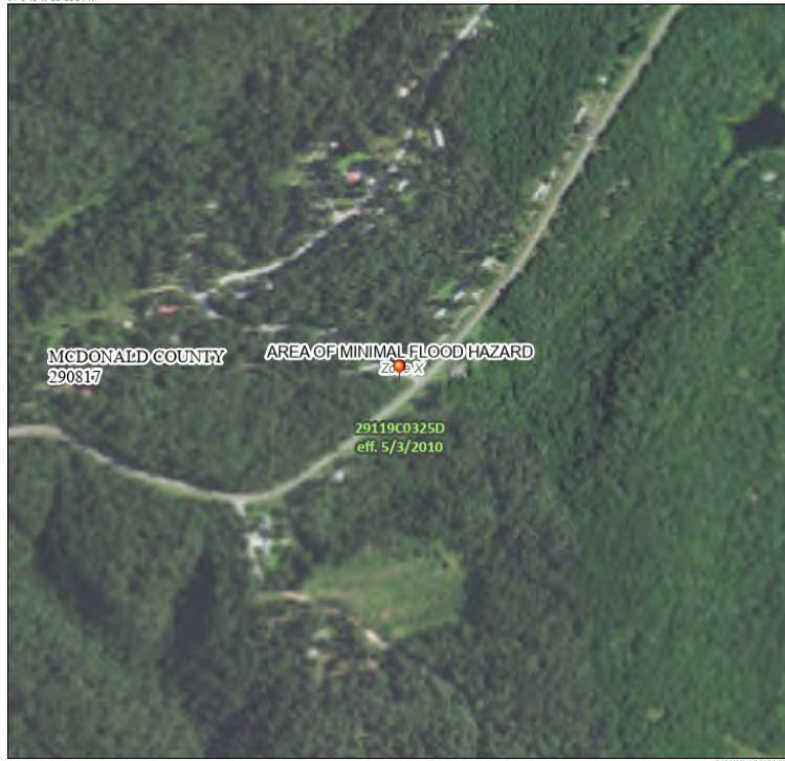


Additionally, the project locations have been submitted to the FEMA National Flood Hazard NFHL web service and have been identified as area of minimal flood hazard potential. FEMA exported maps follow:
Remote 4:

National Flood Hazard Layer FIRMette



94°9'46"W 36°33'34"N



Basemap: USGS National Map. Orthoimagery. Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, APF
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

Digital Data Availability

- Digital Data Available
- No Digital Data Available
- Unmapped

MAP PANELS

- The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/21/2021 at 3:29 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Remote 6:

National Flood Hazard Layer FIRMette



94°10'53"W 36°31'52"N



Basemap: USGS National Map. Orthoimagery. Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, APF
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

Digital Data Availability

- Digital Data Available
- No Digital Data Available
- Unmapped

MAP PANELS

- The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/21/2021 at 3:27 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

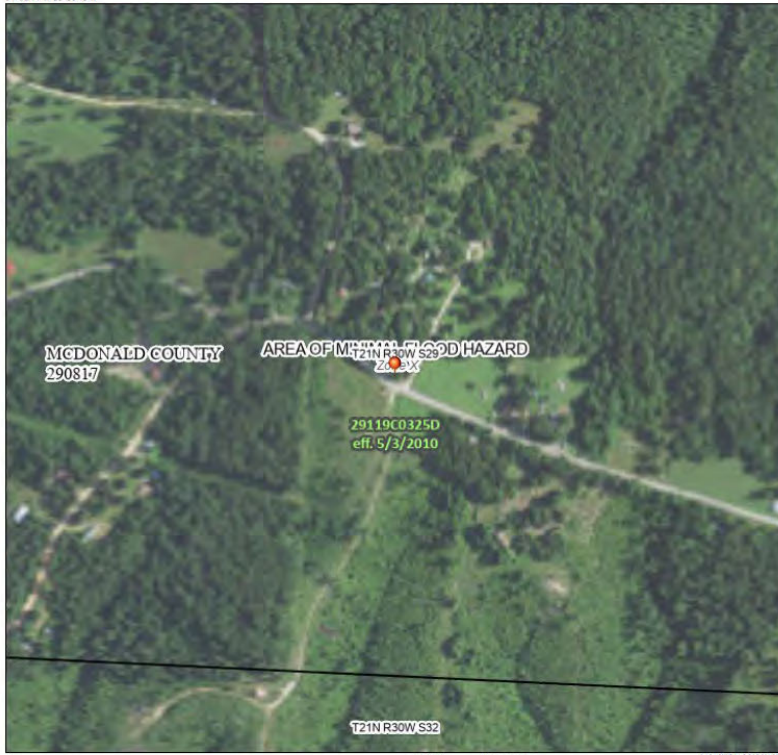
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Remote 7:

National Flood Hazard Layer FIRMette



94°12'44"W 36°30'48"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, X, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard. Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

CROSS SECTIONS

- 28.8 Cross Sections with 1% Annual Chance Water Surface Elevation
- 17.8 Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

OTHER FEATURES

- Digital Data Available
- No Digital Data Available
- Unmapped

MAP PANELS

- Unmapped

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/21/2021 at 3:24 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Remote 14:

National Flood Hazard Layer FIRMette



94°13'37"W 36°34'7"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, X, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard. Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

CROSS SECTIONS

- 28.8 Cross Sections with 1% Annual Chance Water Surface Elevation
- 17.8 Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

OTHER FEATURES

- Digital Data Available
- No Digital Data Available
- Unmapped

MAP PANELS

- Unmapped

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/21/2021 at 3:33 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Applicant's Organizational Capability:

Le-Ru Telephone Company is a family-owned business based in Stella, Missouri, established in 1962 and provides voice and broadband services to approximately 1,189 residential and business subscribers in the rural southwestern region of the state. Le-Ru's rural service area includes the Powell and Stella exchange areas in Missouri. For over 50 years Le-Ru has served its territory, it has constructed copper, DSL, fixed wireless, and fiber technologies to meet the needs of its customers. The use of a multi-technology network is a direct result of the many challenges Le-Ru faces in the service area due to the combination of rough terrain, sparsely located customer base, and high cost associated with constructing a fiber network. As a result of the pandemic and the subscriber demands for higher broadband speeds to allow access to working remote, online education and telehealth services Le-Ru has been exploring additional opportunities to expand its fiber network as the FTTP is more scalable and robust technology for current and future broadband needs.

Le-Ru recognizes the importance of deploying a forward looking and scalable fiber network has recently completed FTTP projects deploying Fiber via Active Ethernet in the more populated areas located nearer the central office facilities. These projects have been completed on time and on budget. The construction, installation, monitoring, and maintenance of the broadband network is all handled by Le-Ru employees. The existing broadband network is monitored to proactively address usage and system elements to avoid outages and ensure the network is maintained at levels of optimal efficiency. Le-Ru is able to undertake these recently completed fiber projects, as well as those proposed in this grant application, by employing skilled and knowledgeable executives, plant manager, and business office staff and these key staff members have added to their skillset with each successful broadband deployment project. Le-Ru's broadband support continues after the build and installation as customer service specialists and technicians provide same day support either by phone or onsite depending on the nature of the issue.

Le-Ru's key personnel responsible for carrying out the proposed grant project implementation include Jay Mitchell the President of Le-Ru and Kendall Williams the Network Manager. Jay Mitchell's role in project implementation resides in his expertise of overseeing all aspects of the project and operations. He has over 40-years of industry experience related to installation of new facilities and technologies and more recently this type of fiber project implementation. His experiences as the President of small rural companies for many years has provided the basis for successfully directing projects in rugged terrain and on a tight budget. Jay Mitchell's role in sustaining the project long term is to continue evaluating pricing and strategic planning for future network improvements, to do so by assessing industry and area broadband needs and trends, more detail can be located on his resume. Kendall Williams role in the project implementation includes working with contractors ensuring timely installation of facilities and is hands on in for installing the FTTP Active Ethernet electronics and marrying it to Le-Ru's existing fiber network to maximize network efficiencies. During the proposed project's construction and installation process Kendall will coordinate training and outreach efforts with Le-Ru's staff for the new broadband availability which will drive the technician installs and customer service support. Kendall Williams role in sustaining the proposed project long term lies in the monitoring and upgrading of the network elements and employee training as the network continues to evolve to meet growing technology and customer needs. Kendall Williams' resume which provides greater detail of his abilities and accomplishments as related to building and maintaining broadband networks is included with this application.

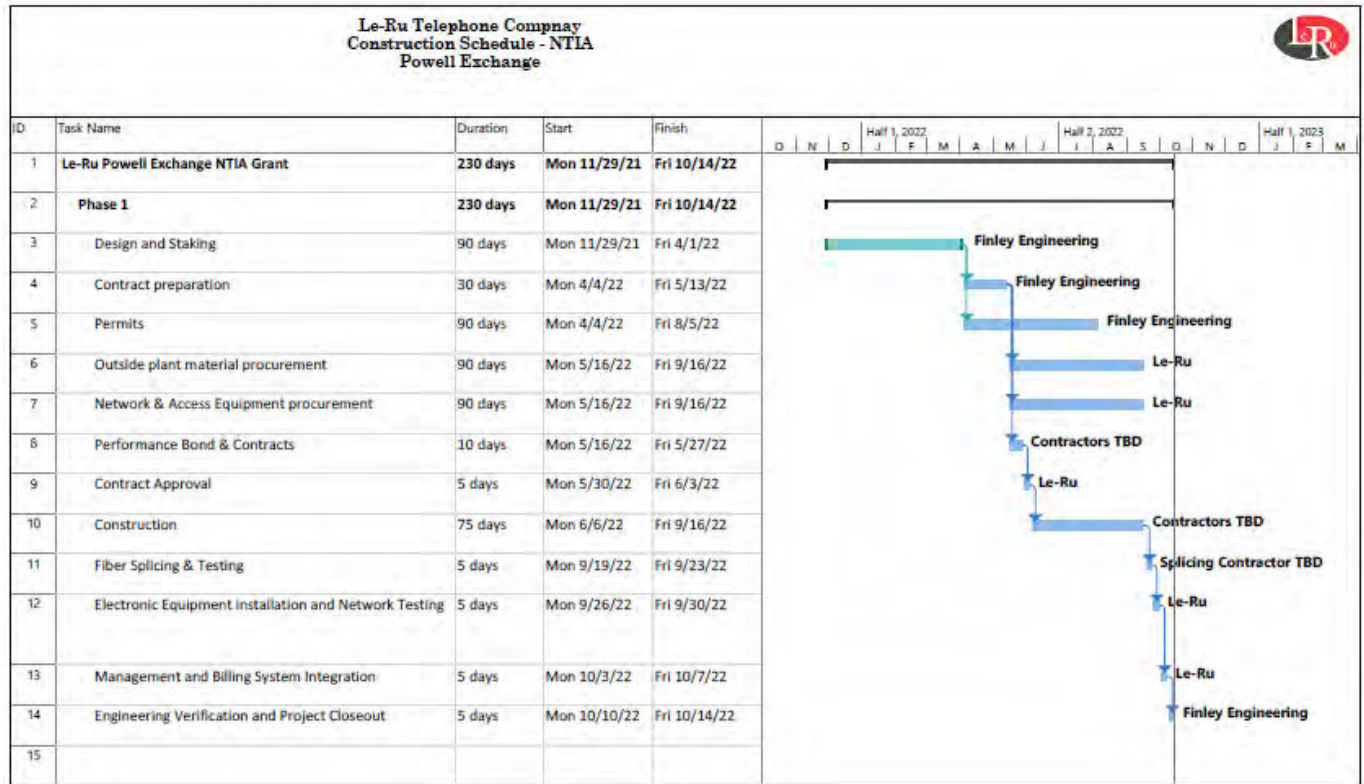
Le-Ru has worked with an engineering firm to develop the full fiber network ensuring the elements are capable of simultaneously providing symmetrical Gigabit service to all locations and that it will be constructed in a manner that is scalable to meet future broadband speed requirements with the addition or upgrade of equipment. Le-Ru is able to implement and operate the proposed FTTP Active Ethernet network as it will be an extension of existing facilities that Le-Ru currently operates and maintains. Le-Ru has the full plan and project timeline developed and is prepared to begin ordering fiber and equipment and start construction upon approval of the grant application.

Le-Ru is seeking to enter into a Covered Partnership with Missouri's Department of Economic Development (DED) as a means to apply for the NTIA grant to fund the proposed project in the east McDonald County area. The offer and opportunity to submit an application to the DED for grant funds is being considered as an offer for partnership commitment. Additionally, Le-Ru has received a commitment of verbal support, though no

corresponding monetary contribution, from the McDonald County Chamber of Commerce for the proposed fiber project.

Project Work Plan

The DED Project Work Plan Excel document is being uploaded in support of the Le-Ru grant application. The proposed grant project is broken into a specific and realistic timeline by milestone activity. Pending grant approval, the project would commence November 29, 2021, and completion closeout would occur October 14, 2022. Below is a chart of the milestone activities and corresponding timeline dates.



Project Budget & Sustainability

Le-Ru has completed and is supplying as part of the grant application submission the DED’s Detailed Budget Justification in Excel format providing detail of the requested funds and use of said funds.

Detailed Budget Narrative:

Le-Ru Telephone Company’s expenses identified on the Missouri Department of Economic Development’s detailed budget justification document will be solely funded by the NTIA grant monies awarded to this application, the application as submitted depicts no funding match in-kind or otherwise. The budget worksheet captures all grant related project specific expenses including grant preparation, outside plant materials and labor costs, purchase of the Active Ethernet Access equipment and corresponding installation costs, FTTP design and outside plant electronics, and estimated permitting costs. As depicted on the

detailed budget justification the grant funds requested total \$3,619,100.91. The project total equates to \$16,376.02 per passed location. The technology used is forward looking and after the initial investment minimal upgrades to electronics allow the network scalability for future bandwidth and advanced service needs. The grant funding requested is solely for the costs of engineering design, permitting, construction costs, purchase of telecommunications equipment required to provide qualifying broadband service, and pre-application expenses as deemed eligible in the NTIA NOFO. The identified costs are realistic based on Le-Ru's budgeting and completion of comparable fiber projects similar in size, technology used, and cost that have been completed in recent years. As a means of creating separation and clearly identifying project expenses separate work orders and purchases orders will be used for the awarded grant project.

Le-Ru Telephone Company has not received funding from the State of Missouri, USDA Broadband Programs, Economic Development Administration, the Delta Regional Authority Federal Communications Commission (FCC) Connect America Fund, FCC Rural Digital Opportunity Fund, or FCC A-CAM for the specific project area identified in the grant application. Le-Ru Telephone Company is an A-CAM recipient however the locations identified in the NTIA grant application are not fully funded A-CAM locations.

Financial Statements:

Le-Ru Telephone Company is providing, via attachments, the most recent quarter's financial statements in addition to three (3) prior years of audited financial statements. The audited financial documents do include balance sheets, income statements, and statement of cash flows documents. This documentation will support the financial viability of Le-Ru and their historic capability of purchasing and operating a fiber broadband network. Also included is the Pro forma business model specific to the grant project which includes forecasted take rates and the financial impacts of the project showing a 20-year view of the projects impact on the balance sheet, income statement, and statement of cash flow as well as the support explanation of the assumptions used in the creation of the Pro forma.

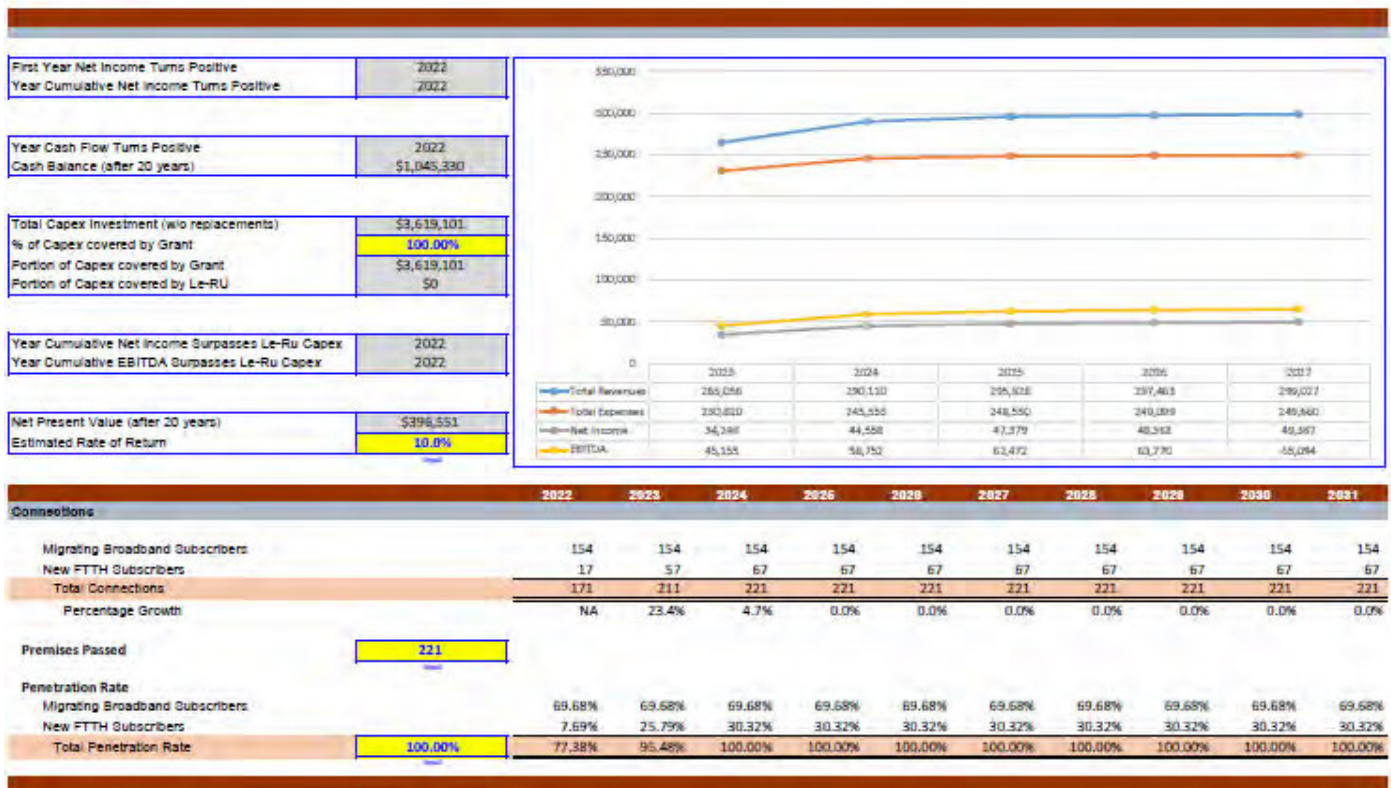
Sustainability of the Project:

For Le-Ru Telephone Company to service the area outlined in this application, Le-Ru can demonstrate through its Pro forma of the project that with grant funding to deploy fiber to these locations the project is sustainable. The Pro forma creation was the first step in the development of the business plan to bring fiber to the east McDonald County area and the underserved customer locations and includes costs, revenues, and market projections to allow for full determination of project viability and sustainability. The full Pro forma financial analysis and assumptions is included as an upload with the financial data for the application, the summary dashboard is included below as reference for the sustainability narrative.

Dashboard with Grant Funding:

Le-Ru Telephone Company
NTIA BB Grant Proforma
Financial Dashboard

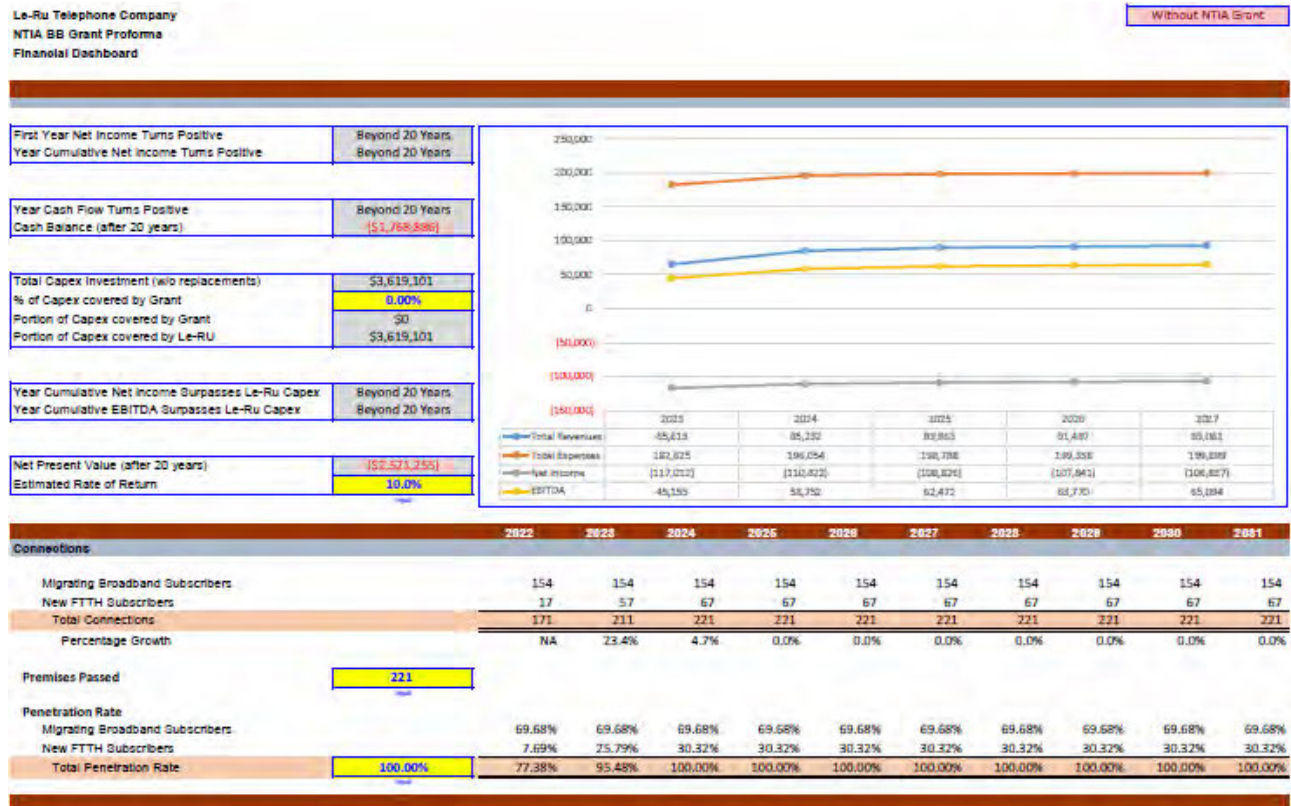
With NTIA Grant



As outlined in the proforma, with the grant funding, Le-Ru can deploy fiber to all 221 locations and given the lack of availability of higher speed broadband in the project area, Le-Ru estimates that it could achieve 100% market penetration. About 70% of the 221 locations are already subscribed to Le-Ru's copper-based DSL services and with this grant, those customers would migrate to fiber. Of the remaining customers, Le-Ru believes it can capture the rest of the 67 locations through digital literacy and marketing efforts. Le-Ru plans to market its fiber based broadband services via its Facebook page, community advertising via signage, bill inserts, and word of mouth, which can be very effective given the very rural nature of the community. Le-Ru's digital literacy strategy includes partnering with McDonald County groups to promote access to fiber broadband service. An example of this includes the McDonald Chamber of Commerce who has committed as a strong supporter of the proposed grant project and is providing a letter of support for this application. To ensure that its broadband service remains the best in the long term, Le-Ru will provide 24x7 tech support to service troubles and will have staff on call to monitor outages and resolve trouble tickets within a 24-hour time frame. Le-Ru anticipates that with the grant funding, it can achieve a positive Net Present Value (NPV) of \$396,551 over a 20-year period as illustrated in the proforma. Le-Ru would be able to generate a consistent level of net income from the project with a steady increase in its net income margins over the 20-year period.

Le-Ru is also providing a financial proforma to illustrate how the project would not be sustainable without the grant. If Le-Ru were to invest the \$3.6 million in CAPEX without the grant funding, Le-Ru would achieve a negative NPV of \$2,521,255. In addition, as the income statement illustrates, Le-Ru would never

be able to generate a positive net income on the amount invested. The view without funding is shown below.



The inclusion of original run of the Pro forma without NTIA grant, reveals a dim forecast and signifies even with the full location count of 221 subscribing to the new qualifying broadband services the project would not be sustainable, is shared as a means of substantiating the critical need for Grant funding. This business plan not being viable, means the 221 locations in the east McDonald County area will not have the opportunity to connect to qualified broadband speeds, or higher, failing to allow reliable access to remote education for children, access to working remotely, and access to telemedicine.

The proposed project technology selection of Fiber to the Premise over active Ethernet technology for broadband delivery of loop plant to the subscriber was intentionally selected because of the scalability. The active Ethernet FTTP utilizes a dedicated fiber connection from the main central office to the customer. This allows Le-Ru to deliver and dedicate 1Gbps bandwidth to each location and means no other customer is on that fiber connection guaranteeing the high performance and low latency. The selection and structure of this technology means the initially offered proposed speed of 1Gbps symmetrical could easily be upgraded to accommodate advanced services and higher speeds by upgrading the ONU, essentially future proofing the network. If or as additional residences and businesses move to the area they could be added to the network.

Community Support:

Le-Ru provides substantive evidence of community support with a letter of commitment from the McDonald County Chamber of Commerce. Specifically, the McDonald County of Commerce emphasizes the benefit of a fiber broadband deployment to the County area focusing on using increased connectivity as

a tool to help the County recover in the post-covid are by providing additional job opportunities for residents to have access allowing remote work as well as the potential for economic growth in the area.

Additionally, Le-Ru includes support letters from residents living in the east McDonald County proposed project area in support of the fiber broadband project and decrying the need for access to qualified broadband speeds. These support letters depict the lack of access to telemedicine, ability to work remotely, and the struggle of a household in juggling internet access for family members to learn and work remotely and have access to entertainment. Summary of submitted support letters:

- Subscriber (b) (6) shares current troubles with access to telehealth as they are unable to complete even the smaller tasks such as providing required information to their doctors via online portals,
- Subscriber (b) (6) shares his struggles with the lack of broadband connectivity and the need for qualifying fiber broadband services to allow him to work remotely identifying the current lack of high-speed internet affecting his ability to work and retain employment,
- Subscriber (b) (6) identifies the process by which family members need to take turns using the internet for access to education, access to work remotely, and access to information from the outside world via news, financial data, and entertainment, and
- Subscriber (b) (6) provided a handwritten note demonstrating the desire for fiber and access to qualifying broadband.

These letters represent a sampling of the residents struggles and need of access to qualifying broadband in the proposed project area and embody why Le-Ru is submitting this application for grant funding to meet the needs of these customers by providing a fiber broadband network capable of 1Gbps/1Gbps speeds.

Leverage of Non-Federal Resources:

Le-Ru Telephone company is not proposing a 10% non-federal cost share, the grant application request is for full Federal funding of the project.

Socket Telecom LLC Executive Summary

Socket Telecom, LLC ("Socket") is applying for a grant to aid in the construction of a Fiber to the Premise (FTTP) network in the Northwest Boone County area. Our proposal will pass 2,980 premises determined to be Unserved using National Telecommunications and Information Administration's definition.

Once the network is constructed, Socket will provide reliable, low latency, synchronous 1Gbps Internet; which is over 100 times faster than some of the internet service speeds available in Socket's proposed service area. This grant is necessary in order to make it economically viable to construct this network and provide these high-speed internet services.

The total cost of the project will be \$12,009,797. Of that Socket is requesting a grant of \$5,005,419 with Socket funding the remaining \$7,004,379. That breaks the funding request down to a grant request of 42% with Socket funding the remaining 58%. Socket's project meets the goal of the NTIA's program, which is to provide an affordable, reliable Qualifying Broadband Service to a large number of households with an effective use of the NTIA's grant funds

Socket's proposed project has the support of consumers, leaders, and educational institutions. Our survey results shows consumers are eager to change service providers and the leading reasons are for faster speeds and better reliability. Consumers recognize the benefits of improved internet service including the need for additional education, training, schoolwork/homework usage, working from home, communicating with healthcare professionals, and entertainment.

Headquartered in Columbia, MO Socket has recently celebrated its 25th year in business with a long tradition of providing internet access in rural communities throughout the state of Missouri. We provide a full range of communication and data services, including internet access, voice, and advanced data services. Socket started providing fiber connections to customers in 2011. The company's philosophy is to provide the best customer service and products to meet the needs of our customers.

Anticipated Broadband Improvements – Project Statement of Need

Socket Telecom, LLC ("Socket") is applying for a grant from the National Telecommunications and Information Administration ("NTIA") through the Broadband Infrastructure Program via a covered partnership with itself and the State of Missouri.

With the funds from this grant and Socket's contribution, Socket will construct a 349 mile fiber to the premise ("FTTP") network to provide broadband service with a symmetric 1Gbps service meeting the latency requirements of a "Qualifying Broadband Service" as defined in the NTIA's Notice of Funding Opportunity ("NOFA") to residential, small businesses, schools, and significant community institutions in the project area designated North Boone County Eligible Service Area ("ESA").

There is a total of 3,943 premises in the ESA. Of those, Socket was able to definitively determine that 2,980 premises are "Unserved" as defined by NTIA's criteria and Socket's market analysis. That many Unserved premises clearly shows a need for broadband improvements and the level of impact will be tremendous.

Socket was unable to determine whether the remaining 963 were Unserved because of the inconclusive results

of Socket’s analysis of these locations. That does not necessarily mean that all 963 should be considered as served. A full explanation of Socket’s methodology for determining Unserved locations is located in Appendix A.

Premises	Quantity
Total Unserved	2,980
Remaining	963
Total Premises	3,943

Socket will use the grant and its contribution to provide the 1Gbps Qualifying Broadband Service to the 100% of the Unserved locations. Socket will use its own funds to construct the network to serve the remaining locations in the ESA.

Premises	Unserved
Total Premises Passed	2,980
Businesses Passed	16
Significant Community Institutions	16
Educational Community Facilities	7
Homes Passed	2,941

There are additional benefits as well. Socket’s network is being built for the future. The service levels within the ESA can be increased as needed. Socket is already using 10Gbps XGS-GPON technology in its existing network. This is more fully explained in the Technical Approach subsection of the **Project Viability** section of the application.

Where currently available, all fixed-wireline Internet service in the ESA is provided over a “best efforts” xDSL platform. This means no user receives broadband service near the speed Socket will be providing. The DSL service in that area has also been reported as being unreliable, with frequent outages or periods where their current service slows to being almost unusable. Unlike “best efforts” xDSL, Socket will provide the Qualifying Broadband Service reliably over a new FTTP at speeds up to 100 times faster than residents receive today and at the actual speed they purchase with lower latency than required by the NTIA’s rules.

While Socket has wanted to build a fiber-optic network in the ESA for some time, it just has not been able to make a business case for doing so. That is largely due to the rural nature and the rugged terrain of the ESA. By sharing the construction costs with the State as the Covered Partner, Socket will be able to make that business case and be able to construct and operate a network capable of providing a Qualifying Broadband Service to each of the Premises with symmetric 1Gbps Qualifying Broadband Service exceeding the NTIA’s latency requirements. A summary of the costs is below

Summary of Costs	Costs	Percent Grant and Socket Contribution
Total Cost	\$12,009,797	
Total Cost Per House Passed	\$4,030	
Grant Cost Per House Passed	\$1,680	

Grant	\$5,005,418	42%
Socket Funded	\$7,004,379	58%

As more fully explained in the Reasonable of Budget section of the application, the NTIA grant funds combined with Socket’s contribution, result in \$1,680 per premise past cost to NTIA. This is an extremely reasonable number and efficient use of NTIA grant funds.

Socket is not receiving any other state or federal resources to fund the construction of this project. Allfull description of the affordability of Socket’s service and it comparability to other service in the ESA and near the ESA is provided in Table 2 – Affordability.

Socket has spoken to community leaders in the proposed ESA at various times and from the discussionswith them has learned of some of the creative ways these communities have worked around the lack offast and reliable broadband availability. For example, in the 2019 school year, the school districts located in and around the ESA resorted to providing wireless hotspots to students’ households in order for students to take classes at home. Several of the school districts shared the general locations ofwhere those hotspots where deployed. The vast majority of those hotspots were in the ESA.

The Harrisburg School District was one of the districts that shared its hotspot data and as well as data from a survey the school district did of Internet availability to its students. In that survey, almost 50% ofthe students reported “No Internet Service” or “Bad or Spotty Service”. The remainder, including the students located within the town outside of the ESA but presumably close to CenturyLink’s Central Office, fell into the category of “Has Internet Service (some of these may not be ‘good’ service)”. This district deployed 65 hotspots. Another school district with rural parts of its district in Socket’s ESA couldnot deploy hotspots because even the cellular coverage is “intermittent and unreliable resulting in hotspots creating more problems than they solve.”² This demonstrates a clear need for broadband availability in the ESA footprint. Further, Socket has the support from all school districts with students living in Socket’s ESA. (See **Letters of Support Attachment** – Centralia Superintendent, Harrisburg Superintendent, and Sturgeon Superintendent).

This project also addresses several of the statutory priorities of the Act.

Socket’s project clearly meets the object of the first priority as it has 2,980 Unserved premises within its ESA. Based upon the Anticipated Broadband Improvements Scoring Table, Socket’s proposed project’s service would receive the full score of 20 as it exceeds 500 households. However, Socket’s project goeswell beyond that. By serving six times as many as indicated on the Broadband Improvement Scoring Table, Socket’s project expects to be one of the largest and has a total cost of \$12,283.046 assuming every premise in the ESA subscribes to Socket’s service. However, Socket is only seeking \$5,005,418 grant. This results in a grant cost per Unserved house of \$1,680. Socket will fund the remainder of the project itself.

The second criteria gives a preference to a county, city, or town that has a population of less than 50,000 inhabitants. While Socket’s project is in Boone County, which exceeds 50,000 inhabitants, BooneCounty is dominated by the City of Columbia and its 125,000 residents. Northern Boone County is very different. It is rural, not contiguous with the City of Columbia, and is geographically and demographically very different than other parts of Boone County and the City of Columbia.

The area in Socket’s ESA has more in common with the adjacent neighboring counties of Howard and Randolph with populations of 10,000 and 25,000 inhabitants respectively. Socket’s ESA has similar economic

conditions and demographics to these counties than the others parts of Boone County. For example, the Harrisburg School District, which has a significant portion of district within Socket's ESA, has approximately 600 students in the district while the City of Columbia school district has approximately 18,500 students, not including the private schools in the City of Columbia. They are obviously two distinctly different and geographically distant communities. The population count at the county level is not reflective of the conditions of all parts of the county, and must be examined at a more granular level. To take the county population as the only criteria is a bit like saying Missouri must be similar to Maryland in broadband access since both have populations around 6 million³. However, Maryland ranks 8th in the nation with average speed of 51.3Mbps and a coverage to 96.7%. On the otherhand, Missouri ranks for 42nd with an average speed of 38.5% and coverage to 81.1%. This prioritization criteria needs to be more granular than the county level.

Socket meets the Criteria of the 3rd priority in being cost effective in regards to the use of NTIA grant money. By contributing 58% of the total cost of the project, the cost per house passed using NTIA grant funds is \$1,680. That is very reasonable cost for an underground and reliable FTTx network delivering symmetric 1Gbps service with low latency.

Socket meets the Criteria of the 4th priority since it is providing a Symmetric 1Gbps, low latency service exceeding the criteria of the definition of Qualifying Broadband Service.

Lastly, by meeting the overall goal of all of the program, which is to provide an affordable, reliable Qualifying Broadband Service to a large number a households with an effective use of the NTIA's grant funds, Socket meets the Criteria 5 requirements.

Socket clearly meets the first Funding Prioritization requirement getting 20 points as indicated on the Anticipated Broadband Improvement Scoring Table. This puts the NTIA\State contribution at \$1,600 per household, which is extremely low. As described above, Socket's proposed network also meets the intent of the second Funding Prioritization requirement. For these reasons, Socket proposed project should receive the maximum number of 20 points.

Table 1, Attachment A - Determination of Eligible Service Area and Unserved Premises

Socket engaged in a very thorough analysis to define its Eligible Service Area, ("ESA") and determined 2,980 premises to be Unserved Households.

Socket defined its ESA at the census block level. One hundred percent (100%) of the Census Blocks within the ESA area are estimated to be "Unserved" as defined in the Notice of Funding Opportunity. Socket used the following methodology to determine this.

This first step required determining a census block's eligibility to be included in an ESA using the FCC's definition of Broadband as shown on the FCC's 477 Broadband Maps which is 25Mbps/3Mbps. The second step was a deeper analysis within the ESA to determine the number of premises (households, businesses, community anchor institutions) that qualify as Unserved using the NTIA's definition of Qualifying Broadband Service found in the Notice of Funding Opportunity ("NOFO"). For the ESA determination, Socket initially reviewed the FCC's 477 data. There were several areas within the ESA area that were shown as not having any service provider providing fixed broadband service as defined by the FCC's definition at speeds of 25/3Mbps or greater. However, by using additional data sources, there were other census blocks Socket determined to be Unserved and eligible to be included in Socket's ESA.

Expanding beyond the FCC's 477 data is appropriate because it is recognized throughout the industry, including the FCC itself, that the 477 data is not an accurate portrayal of broadband availability. For example, Commissioner (now Chairwoman) Jessica Rosenworcel stated, "The flaws in our existing data collection are all too clear. Right now, FCC data overstate service because if only one house or business in a census block has service, we deem the entire census block served. On top of that, there is no check built into the system for citizens to tell the agency that our data and maps are incorrect." ¹ Just recently, the ACA Connects' Broadband Infrastructure Policy Recommendations noted that also found that 2.3 million locations without 100/20 Mbps service are in areas where the FCC already supports existing providers.²

These are just two of the hundreds of criticisms of the FCC 477 data. Because of the regulatory and industry recognition that the FCC's 477 data is flawed, Socket continued to look for census blocks containing at least one Unserved household within a census block.

Next, the NTIA's national broadband map and its Indicators of Broadband Need statistic were analyzed³. Socket focused on the "Speed Tests – Ookla Median Speeds Fixed Broadband Below 25/3Mbps (Census Tract Level)" data analysis which uses speedtest data showing results at the census tract level. A description of that analysis can be found at "Speed Tests – Ookla Median Speeds Fixed Broadband Below 25/3Mbps (Census Tract Level)"⁴.

With this analysis, two census tracts in rural, northern Boone County were identified as having a Median speed available of less than 25Mbps. Those were:

Census Tract: 29019001901 – population 5,605, Ookla Speedtest Median – 10.54/1.51Mbps
Census Tract: 29019001902 – population 9,947, Ookla Speedtest Median – 15.26/2.05Mbps

Those two were the initial focus of determining an ESA based upon the belief there was a higher probability that census blocks would not have broadband service available at one or more households or businesses in these census blocks than in other surrounding areas. For the first pass at determining eligible census blocks, Socket's personnel drove throughout the area to identify other fixed-wireline Internet providers and what speeds they might be able to provide based upon their network assets. CenturyLink is the incumbent local exchange carrier in the area and provides DSL broadband service in the area. The only other fixed-wireline providers identified in the region were cable providers.

All census blocks served by cable providers were removed from the potential ESA areas. This was done based upon the belief that cable providers should be able to provide service above the 25/3Mbps service standard⁵.

We then used publically available data from CenturyLink's website to determine areas where CenturyLink only offered residential service with a 25Mbps or lower download speed. Data regarding upload speeds was not available. We concluded that all census blocks that had at least one household where CenturyTel would not sell broadband service at a speed with an advertised rate of 25Mbps must be an eligible census block as it would not have broadband service available at one or more households or businesses.

This is a very conservative standard as it is based upon where CenturyTel sells broadband service with an advertised speed of 25Mbps rather than actually delivering that speed. Advertised speed alone does not match the NTIA's definition of "Served" at the household level meaning it lacks access to a "Qualifying

Broadband Service” as defined in the NOFA because Qualifying Broadband Service is one that actually provides 25 Mbps/3Mbps Broadband service simultaneously to every household in the eligible service area within a defined latency.

The next step was determining the households within the ESA that were “Unserved” as defined in the NOFA. This determination has two separate components. The first is determining whether the premise lacks access to a Qualifying Broadband Service. Once that is determined, it must be determined whether a broadband provider has been selected to receive, or is otherwise receiving, Federal or State funding subject to enforceable build out commitments to deploy qualifying broadband service in the specific area where the household is located by dates certain, even if such service is not yet available, provided that the Federal or State agency providing the funding has not deemed the service provider to be in default of its buildout obligations under the applicable Federal or State program.

Determining the number of premises lacking access to Qualifying Broadband Service, Socket first relied upon identifying the specific locations of CenturyLink’s publicly available data to determine where CenturyLink would not sell Internet service at a speed above 25/3Mbps. Socket next used speed test data to analyze what speed a CenturyLink customer could actually receive if they purchased Internet service from CenturyLink with an advertised speed greater than 25Mbps.

Socket’s website has a web page where residents can visit and express interest in getting fiber Internet to their location. It is found at <https://www.socket.net/residential/internet-fiber>. When a person expresses interest, that person must provide their address and an e-mail address. Each person that had expressed interest located in the area that Socket was initially reviewing to determine its ESA was sent an e-mail requesting them to take a speed test and complete a short survey. The speed test results were collected using Socket’s Ookla speed test server in Columbia. The test measured upload speed, download speed, latency and jitter. A very detailed description of their methodology can be found at: <https://www.speedtest.net/insights/blog/testing-methods-sampling/>.

The comparison of the actual speed received from CenturyLink’s DSL service and the advertised speed showed that a person purchasing a DSL service with an advertised speed of 40Mbps download from CenturyLink consistently, 100% of the time received a download speed less than 25Mbps. The results were mixed for CenturyLink customers purchasing DSL service with an advertised speed greater than 40Mbps with some, but not all, receiving download speeds greater than 25Mbps.

For that reason, we determined that a person purchasing DSL service from CenturyLink with an advertised speed of 40 Mbps or less definitely qualified as “Unserved”. This allowed Socket to adjust its Eligible Service Area to remove those areas. As shown on the ESA map, it was adjusted to remove those areas where it was inclusive of the area being “Unserved”. This along with the removal of cable Internet is what gives the map the “Swiss cheese” look.

Next, it was determined that no broadband provider has been selected to receive, or is otherwise receiving, Federal or State funding subject to enforceable build out commitments to deploy qualifying broadband service in the specific area where the household is located by dates certain, even if such service is not yet available, provided that the Federal or State agency providing the funding has not deemed the service provider to be in default of its buildout obligations under the applicable Federal or State program for census block in the ESA.

However, there are 1,620 premises in Socket’s ESA where potential broadband providers were successful

bidders in the FCC's recent Rural Digital Opportunity Fund ("RDOF") reverse auction. This means they have tentatively been selected pending a further detailed review including a deeper review of financial capabilities, network design, and ability to provide the required level of service over the required time period also known as the Long Form Review. Each entity will also need to produce the required binding letter of credit. Once that is done, each will negotiate and enter into a binding contract with the FCC that has an enforceable build out commitments to deploy broadband service within six years of executing the contract with the FCC.

There is no binding deadline on when the FCC must complete the Long-Form RDOF application review process. There has been some speculation the FCC might simply sit on controversial applications because doing so would eliminate the possibility of the bidder appealing the decision⁶. Given all of these factors, it is Socket's belief that binding agreements will not be in place by NTIA's selection date of November 15, 2021.

In Socket's opinion, both entities are very likely to require a very thorough review to determine whether they are qualified to move forward with their application and may not be able to produce the letter of credit. Mercury Broadband committed to provide broadband service with low latency and 1Gbps of service over a fiber optic network. Mercury Broadband is currently a wireless broadband provider that has never operated a fiber to the premise network. It has also never operated in Missouri. The areas they committed to serve in central Missouri are non-contiguous and the cost of constructing that network will far exceed the amount of support they would receive from the FCC.

Charter Communications, bidding under the name of COO Holdings, Inc., was one of the largest winners in RDOF auction, winning \$1.22 billion across 24 states⁷. Because of the size of its winnings, Charter is still a risk and will likely require a long, thorough review. Charter is new to providing service in rural areas and is also relatively new to fiber to the home operations as its current residential customer base is served using DOCSIS 3.1 technology.⁸

Charter acknowledges that providing service in rural areas increases its reliance on more poles per household, utility pole permitting and 'make ready' processes'. This increases its risks in meeting build-out timing and speed completion.⁹ To the extent Charter does rely on aerial construction, it will require new aerial construction and not simply over-lashing fiber to its existing coaxial plant as it may be done within its current footprint. Charter also acknowledges it has a significant debt load. As stated in its December 31, 2020 10-K, "We have a significant amount of debt and expect to incur significant additional debt, including secured debt, in the future, which could adversely affect our financial health and our ability to react to changes in our business".

All of these factors make it unlikely there will be a binding agreement in place by November 15, 2021. It also calls into question whether these entities will be able to fulfill their obligations. Even if they do, they will have six years from the date the binding agreement is entered into to complete their projects. Recognizing the inaccuracies of the FCC's 477 data, Charter has already sought a limited waiver of its RDOF obligations upon learning some areas were in fact served by a broadband provider in four states, including Missouri. If that behavior were to continue, it would be likely that Charter would seek a waiver where Socket would receive NTIA funding. This would mean there would be no wasted funding and no binding agreement. Socket believes it is in the public interest to award funding to projects being proposed by a broadband provider such as Socket that has experience constructing and operating a network near the area of the proposed project and must have the project completed within one year.

For all of these reasons, Socket believes its identification of 2,980 Unserved premises is accurate it should be

awarded the full 20 points.

Table 2: Affordability of Services Offered

Socket provides reliable high-speed, low-latency Internet at affordable prices. In addition, Socket offers discounts targeted to low-income households as well as non-profit entities.

Socket commits to providing 1Gbps service in Socket’s proposed ESA for at least three years for a discounted rate of \$60 per month upon completing construction. Socket’s standard rate for 1Gbps Internet in other markets is \$125 per month. These rates include all taxes, fees, and surcharges. When a customer purchases Internet for \$60 per month, \$60 is the exact amount on their monthly bill.

The only wireline Internet service available to households located in Socket’s ESA is DSL service provided by CenturyLink. CenturyLink charges \$50 per month plus additional fees and surcharges, for a maximum advertised speed of 25/3 Mbps. 1Gbps service from CenturyLink or any other provider is not available in this area. The table below shows a comparison of Socket’s symmetric 1Gbps service compared to CenturyLink’s 25/3Mbps service, which is the maximum for a household to potentially be considered “Unserved”.

	Socket	CenturyLink
Download Speed	1Gig	Max. 25/3 Mbps
Upload Speed	Symmetrical	No
Price	\$60	\$50
Contract	No	No with pre-pay
Modem lease	No	Premium Modem Lease - \$15
Data Caps	No	No
WiFi cost	\$7/mo.	Included
Install cost	None	Self-Install Included
Activation Fee	None	None
Taxes	Included	Excluded

The data shows Socket’s rate for fiber-base symmetric 1Gbps service is not materially different than CenturyLink’s 25Mbps\3Mbps service available to the potentially “Unserved” households. Taking into account fiber’s superior quality of service, reliability, and lower latency than copper, the value for the price is much greater.

Additionally, Socket’s rate for symmetric 1Gbps service is lower than the rates charged by nearby providers for their fastest Internet service comparable to Socket’s symmetric 1Gbps service. This is shown by the table below.

	Socket	Spectrum/Charter	Mediacom	Chariton Valley	Calabyte
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Download Speed	1Gig	1Gig	1Gig	1 Gig	1Gig
Upload Speed	Symmetrical	Up to 50mbps	Up to 50mbps	Symmetrical	Symmetrical
Price	\$60	\$109.99	\$79.99	\$97	\$80
Contract	No	No	Yes	No	No
Modem lease	No	Included w/ WiFicost	\$12/mo	Included	Included
Data Caps	No	No	6000GB	No	No
Wi-Fi cost	\$5/mo.	\$5/mo	Included	Included	Included
Install cost	None	Incl. in activationfee	**Free	Free	Free
Activation Fee	None	\$199.99	\$10	N/A	N/A
Taxes	Included	Excluded	Excluded	Excluded	Included
		*prices are for 1yr, \$25 more after	*prices are for 1yr	*must pay firstmonth up front	

Socket is currently providing service at discounted rates to low-income households. For example, Socket is actively participating in the FCC’s Emergency Broadband Benefit (“EBB”) program which provides a \$50 per month discount to qualifying households. Qualifying households are low-income households as well as households with free-and-reduced lunch participants, Pell Grant recipients and those who suffered an income loss due to COVID-19. We have worked with area schools to make them aware of the program and promote it to their students. At this time, Socket’s fiber network is only inside the communities where the schools are located. This grant will allow Socket to expand its network to the surrounding rural areas ultimately expanding the availability of the EBB program.

Socket also participated in the voluntary Keep Americans Connected Initiative and agreed not to terminate service and waive late fees to any small business or residential customer affected by coronavirus pandemic.

Based upon these factors, Socket should receive the full 10 points in Affordability of Services Offered.

Table 3 Project Viability – Technical Approach

Socket’s proposed Fiber to the Home (“FTTH”) project will utilize technology that is the same as Socket has been and is currently using in its existing network. Along with its existing network, the proposed network will perform above the requirements for Qualifying Broadband Service set out in the Notice of Funding Opportunity (“NOFO”). Socket will deliver symmetric 1Gbps broadband service above the required 95 percent or more of all peak period measurement of network round-trip latency at below 20milliseconds. This latency is below the latency required to be a “Qualifying Broadband Service.” By utilizing existing network capacity and technology that is already in place, Socket’s proposed project “shovel ready” from the start. The technologies in place or planned to be used are fully explained below.

1. Overall Network Design.

a) Last Mile Network.

Socket’s last mile architecture is comprised of single mode fiber infrastructure constructed and owned

by Socket. The fiber optic distribution plant will be primarily buried with aerial inserts as the design dictates. It is our intention to have all transport and feeder cable buried to support long term reliability.

Socket currently uses GPON and Splitters to connect huts and cabinets to customers. GPON (ITU-T G.984 - <https://en.wikipedia.org/wiki/G.984>) is capable of transmission speeds of 2.48Gbps downstream and 1.24Gbps upstream shared among subscribers whose access fiber terminates on the same splitter (up to 32). Socket recently purchased additional hardware and has deployed XGS-PON (ITU-T G.9807.1 - <https://www.itu.int/rec/T-REC-G.9807.1/en>). This XGS-PON hardware is capable of symmetric 10Gbps service. This new technology is compatible with existing hardware, fiber and splitters so it can be easily deployed. The distribution network will consist of Optical Light Transmission (OLT) devices supporting the GPON fiber protocol. The OLT will be an Adtran TA5004 or functional equivalent.

From the OLT, single mode fiber optic cable will distribute the signal to Optical Splitters. Each Optical Splitter will take the signal from a single fiber and distribute it to up to 32 optical fibers to provide access to projected subscribers. These 32 optical fibers will terminate on a fiber distribution panel. For premises near the Active Cabinets, the optical splitter will be contained in the cabinet with the OLT. For premises farther from the cabinet, the optical splitter will be located in a remote passive cabinet. This cabinet will contain fiber distribution panels, splitters, and no electronics.

b) Middle Mile Network

Socket connects core network sites with Ethernet (Layer 2) devices with 10G Ethernet interfaces. Socket uses 1G Ethernet interfaces for sites that have lower traffic volumes. The following standards apply:

- IEEE 802.3 (https://en.wikipedia.org/wiki/IEEE_802.3)
- IEEE 802.3ae (<http://www.ieee802.org/3/>)
- IEEE 802.1Q (https://en.wikipedia.org/wiki/IEEE_802.1Q)

IP (Layer 3) traffic is then transferred over the core network and the Internet using IPv4 and IPv6 addressing schemes using the following standards:

- IETF RFC 791 - IPv4 (<https://tools.ietf.org/html/rfc791>)
- IETF RFC 2328 - OSPF Version 2 for IPv4 (<https://tools.ietf.org/html/rfc2328>)
- IETF RFC 4271 – BGPv4 (<https://tools.ietf.org/html/rfc4271>)
- IETF RFC 2460 - IPv6 (<https://tools.ietf.org/html/rfc2460>)
- IETF RFC 5340 - OSPF Version 3 for IPv6 (<https://tools.ietf.org/html/rfc5340>)
- IETF RFC 2283 – BGPv6 (<https://tools.ietf.org/html/rfc2283>)

Traffic is aggregated at core network sites using Ethernet switches and IP routers provided by manufacturers such as Cisco, Juniper, and Extreme Networks. The traffic is routed over its core

network. Traffic is routed through Socket's network by Open Shortest Path First (OSPF) routing tables and the destination IP address of the traffic.

c) Interconnection Architecture, Design, and Technologies Solution to connect to the Internet.

[REDACTED]

[REDACTED]

[REDACTED]

d) Network's scalability and Reliability

Socket has the ability to add Internet and core network capacity as needed and will do so to maintain a congestion-free network. [REDACTED]

[REDACTED]

Socket's network is designed to be redundant and diverse at every level that is feasible from an economic and reliability standpoint. This is shown on Network Design Attachment shows the diversity of Socket's network with each network node having multiple paths to the Internet.

This includes the use of high-availability core network routers (e.g. Extreme MLXe-4, Juniper MX480 and Cisco ASR1006) which have dual power supplies, dual switch fabrics, dual management modules and multiple interface cards. Socket has diverse backhaul circuits for every site that will serve the new premises listed in this project. Socket is multi-homed and uses 10G interfaces to interconnect with multiple neighboring Internet carriers, Internet exchanges and content providers. This design is used to reach a 99.999% service availability level, but it is also to make future changes and upgrades far more manageable.

Socket has made a commitment to maintain a congestion-free network. [REDACTED]

[REDACTED]

The network constructed with this the project will also serve as a core network that will allow for geographic expansion to surrounding locations. It will also allow for expansion within the geographic footprint of the ESA such as filling in the holes shown on the map. The outside plant network will also

be able to accommodate growth as additional premises are built within the ESOA. ¹ As described above, the upgradable fiber backbone and the existing and new electronics that will be installed in the network cabinets can support a customer base beyond the geographic boundaries of the ESA.

Once complete, Socket intends to build a FTTP network connecting to other parts of its existing network such as Centralia and building southwards towards Rocheport, MO. The necessary support systems are already in place and it would be just a matter of constructing the outside plant. Once these additional connections are made, Socket would look to fill these areas in with another FTTP build.

In addition to supporting geographic expansion and service expansion to 10G XGS-PON, this network will allow Socket to support 5G and other wireless service to expand their geographic footprint and bring new services to the ESA and beyond.

e) **Network Infrastructure Ownership.**

Socket's existing network is comprised of infrastructure constructed and owned by Socket as well as facilities leased from third-party carriers. The leased facilities are used throughout Socket's existing network. They are used when Socket owned facilities are not available or feasible. Socket utilizes various types of leased facilities including dark fiber, switched Ethernet, dedicated Ethernet, and dedicated optical wave service.

f) **Capability to provide Qualifying Broadband Service to Unserved Premises**

Socket currently provides 1Gbps broadband Internet service in areas which are similar to the area covered by this ESA project. Assuming there will be similar usage patterns in these areas, Socket can extrapolate its current peak bandwidth usage to estimate its peak bandwidth usage with the additional premises added to its network.

Socket's current network operates at the following peaks:

- [REDACTED]
 - [REDACTED]
- [REDACTED]
- [REDACTED]
-
- [REDACTED]
- [REDACTED]
-

[REDACTED]

2. **Network Management and On-going Operations**

Socket uses several tools to monitor usage and the overall performance of its network. These tools include:

- MRTG(<https://oss.oetiker.ch/mrtg>)
- Nagios(<https://www.nagios.org>)
- Solarwinds’ Orion platform (<https://www.solarwinds.com/orion-platform>)

Information on core router performance (CPU utilization, memory utilization, response time, etc.) as well as circuit operational status and usage are collected and graphed. These tools are used to alert the Socket NOC if any threshold is exceeded. These tools are also used to collect and graph information like ping response times, packet loss and packet jitter.

Socket’s Network Operations Center (NOC) is alerted if a core network or Internet interface goes down or exceeds a 75% usage level. Socket’s NOC personnel monitor ongoing Interface usage graphs which allows Socket’s NOC to see trends in increasing bandwidth levels so adjustments can be performed before network congestion becomes an issue.

Socket will use several different approaches to ensure compliance with the NTIA’s performance measures for speed and latency.

Every new customer interface is tested at the time of installation by a Socket Field Services technician. Socket makes use of the Ookla SpeedTest desktop apps that are available at <https://www.speedtest.net/apps>. These applications are also available for customers. The customers’ speedtests are run using an Ookla host server that Socket maintains at its Columbia, MO data center.

Socket’s continued monitoring of interface utilization, ping response times, packet loss, and packet jitter will guarantee that network performance remains at a very high level for all customers.

3. **Summary of Project Area and Environmental Impact**

The FTTH network is being constructed in rural, unincorporated portions of Boone County. The project covers a variety of terrain types mainly forest land and open land used primarily for agricultural purposes. Some of the forest land has rocky soil conditions. None of Socket’s proposed

network will be placed in any certified or protected wetland, will not cross over or under any navigable river or waterway, and will not cross any 100 year flood plain.

The FTTH network is being constructed in rural, unincorporated portions of Boone County. The project covers a variety of terrain types including forest land and open land used primarily for agricultural purposes. Based upon an extensive review, this project will not be delayed by environmental review requirements. To avoid an environmental review in the first place, Socket has experience in designing and constructing networks so they have no environmental impact. In the event any type of environmental review should be required, Socket will be able to address that quickly. Socket has experience in getting through the review process and is familiar with the entities that need to be contacted and what needs to be explained. By being located in Columbia, MO and near Jefferson City, MO, we are close to many of the offices that need to be contacted and can actually meet with the necessary people or hand-deliver any documents that may be required. Further, the environmental reviewers Socket will work with will be generally familiar with the Socket's proposed ESA. While that may be seen only as a minor advantage, that does seriously speed up the process when there are questions or documents need to be explained or modified.

Socket's review found the following:

- None of the land affected by Socket's proposed project qualifies as important farmland, prime forest land, or prime rangeland. All construction is taking place in previously disturbed public Right-of-Way ("ROW") or, in limited cases, private roads with existing previously disturbed utility easements. Any aerial construction will involve placing fiber-optic cable on existing poles owned by a third-party. Socket will not be setting any new poles of its own. Further, Socket is not proposing to construct any building or hut as part of this project. Socket will not be placing any facilities on land that is owned or controlled by the Federal Government that is outside of any existing, previously disturbed, ROW that are located along existing roads.
- Fiber drops will be placed in established yards, along driveways, and under parking lots and will be either buried a minimum of 12 inches or, in limited circumstances, placed via aerial construction where existing poles are available and placing underground drops is not feasible or is cost-prohibitive.
- None of Socket's proposed network will be placed in any certified or protected wetland. Socket's project will not cross over or under any navigable river or waterway. It will also not cross any 100 year flood plain.
- Socket's project will have either have no impact or only a minor impact on existing farmlands. While applying to the RUS for a similar FTTP project in a nearby location, Socket corresponded with Scott Larsen, Area Resource Soil Scientist with Palmyra Regional Office of the USDA – NRCS. Mr. Larsen determined that Socket's project would have no impact where "fiber facilities or lines are constructed within road and highway right of ways determined "previously converted" to non-agricultural uses." He also stated that in areas, "where the poles and guy wires are installed in cultivated fields and pastures or where lines are buried under these areas will have only a minor impact on the conversion of important farmlands." Socket would expect this same conclusion on this project because of the similarity of the two in regards to Historic and Archeological Sites, as Socket's proposed project will be constructed in the existing, previously disturbed ROW along existing public roads and across

established yards and parking lots along with other existing utilities.

- On its initial RUS project done through the Broadband Infrastructure Program, Socket was required to conduct an archeological survey and successfully worked with Missouri's State Historic Preservation Office and quickly completed that review process.
- Lastly, based upon Socket's review, this project will be unaffected by any Brownfield areas.

Given all the resources that are already in place and Socket's experience in providing Internet and telecommunications services over fiber optic networks, Socket will be able to build and operate this network and provide reliable, low-latency, 1Gbps internet service meeting the Qualifying Broadband Service requirements set out in the NOFA. This network will be expandable; both geographically as well as have the ability to support additional and new technologies. It will also have no adverse environmental impacts. For these reasons, Socket Technical Approach rating is Distinctive and Socket should be awarded the full 20 points.

Table 4: Applicant's Organizational Capability

Socket has just celebrated its 25th year in business with a long tradition of providing internet access in rural communities throughout the state of Missouri. We provide a full range of services from residential Internet and phone service to advanced data and telecommunications services provided to large, enterprise businesses and critical community institutions.

Socket is a well-established competitive local exchange and interexchange carrier regulated by the Missouri Public Service Commission and the Federal Communications Commission to provide telecommunications services. As a utility, Socket has legal access to the public Right-of-Way and utility easements for placing its network facilities.



In 2010, Socket applied for and received a \$23m grant/loan award from the United States Department of Agriculture Rural Utility Service's Broadband Initiatives Program and successfully completed the project to provide broadband to a rural area in Callaway and Boone counties. This project provides up to 1Gbps service and passed approximately 3,000 premises in these unserved and underserved areas. The project was completed under budget and exceeded subscriber projections. In addition, Socket applied for and has been awarded 12 funding opportunities for nearly \$1.4m from Missouri's Department of Economic Development ("DED"). Every project was successfully completed on time, under budget, and met the project goals. Socket was awarded an additional grant for the town of Glasgow, MO. After receiving the grant Socket learned that another provider was placing fiber into that grant area. After consulting with that provider and DED, Socket returned that grant award so that public funds were not wasted.

Socket supports its customers with a call center located in Columbia, Missouri. This call center can address customer service and basic trouble shooting issues. It will be sized to serve the additional

customers added as part of this project.

Our Network Operations Center (NOC) operates an extensive network throughout the state of Missouri which features redundant connections to the internet from both Kansas City and St. Louis. Socket's fibernetwork is built with a combination of in-house and contracted underground and aerial construction crews that are all based out of Central Missouri and have experience working in mid-Missouri. Socket employs in-house Utility Locators that are available 24/7 for emergency locates, if necessary, and are responsive to the needs of contractors and residents through Missouri One Call.

As will be explained in more detail in the Project Viability and Project Sustainability sections of this application, Socket has built much larger projects and continues to operate those networks today.

Socket has deployed fiber in the area near the ESA. Most of Socket's management, field personnel, and customer service staff lives in Boone County and are very familiar with the proposed service area.

Socket has existing partnerships and contracts in place with contractors, including Ridenhour Directional Drilling ("Ridenhour"). This company has experience installing fiber across Missouri, including Boone County. Additionally, Socket has its own outside plant crews that will work on this project. Like Ridenhour, Socket's outside plant crews have experience installing fiber across Missouri, including Boone County.

Socket has an existing inventory of supplies including conduit, fiber, vaults, splice cases, and other network components to get started on the construction. Existing partnerships with fiber and fiber-related equipment vendors such as Western Supply, Walker, Power&Tel, and KGP are in place that will be able to supply the additional materials needed to complete the project. See Letters of Support from Western Supply and Adtran. After the grant agreement is completed, Socket has existing storage facilities and will be able to take delivery of those additional materials necessary to complete the project.

This project will require Socket to obtain permits from Missouri Department of Transportation ("MoDOT") and Boone County to place cable in each jurisdiction's Right-of Way ("ROW"). Socket has experience obtaining permits from each of these jurisdictions. Because of those relationships, permitting will not cause any delay in beginning construction or meeting deadlines for constructing this project. For any aerial construction needed, existing pole attachment agreements are in place and Socket has experience operating under those agreements.

We have existing relationships with an outside engineering firm, Toth & Associates, who will be able to complete the required review of Socket's network design. This firm was used to review the network designed for previous projects funded in part by Missouri's DED to verify those projects met state requirements.

Socket will serve the ESA from existing Point of Presences ("POP") located in Boone County. Two additional cabinets serving as remote POPs will be placed. All necessary electronics, backhaul capacity, and facilities are either already in place and the two new remote POPs can be placed and operational quickly.

The Project Viability- Technical Approach section describes, Socket's overall network, network standards, and services provided over its network. Socket's existing network has more than enough resources already in place to support operating both its current network and the network in the ESA even if Socket obtains 100% subscribership. This means Socket's existing network does not need any additional resources or scalability to operate the proposed network expansion.

As more fully explained in the Budget Section of the Applications and shown in the Audited Financials included in the **Financial Statement Attachment**, Socket has the necessary financial resources in place to fully fund its required match. No outside third-party funding will be required. A lack of funding will not delay the start of construction, full completion of the project, or Socket’s ability to operate the network.

Given all the resources that are already in place and Socket’s experience in providing Internet and telecommunications services over fiber optic networks, Socket will be able to build and operate this network and provide reliable, low-latency, 1Gbps internet service meeting the Qualifying Broadband Service requirements set out in the NOFA. For these reasons, Socket Organizational Capabilities rating is Distinctive and Socket should be awarded the full 10 points.

Table 5: Reasonableness of Budget

Socket Telecom, LLC’s Budget for this project is in the requested format in Attachment 4 – Detailed Budget Justification. A more detailed and **Highly Confidential Detailed Budget** is provided in the **Financial Statement Attachment**.

The total amount that Socket is spending on this project is categorized as “Construction” using the categories in the NTIA’s Detailed Budget document. Socket is requesting a grant of \$5,005,418. Socket will fund the remainder of the project estimated to be \$7,004,379. That is more than the 10% required contribution. There are 2,980 premises located in the Eligible Service Area (“ESA”) The cost estimate is based upon a market penetration rate or take rate of 100% meaning that every premise purchased broadband service. Based upon Socket’s grant request amount of \$5,005,418, the cost per household passed paid for with Grant funds will be \$1,680. The remainder will be funded by Socket. While a 100% take rate is not realistic in the market, one of the requirements is for the grant recipient be able to serve 100% of the unserved premises within the ESA. For that reason, it was calculated at the level to show the maximum cost.

As explained in the earlier in the Project Readiness section, Socket is not relying on any outside funding or any other State/Federal/Local Grants or Loans to fund this project.

When making a business case to assess the economic feasibility of a project, Socket uses a cost model based upon reasonable estimates of cost and revenue inputs and a parameter of a maximum of a 48 month payback period. We have used this cost model, including similar cost and revenue estimates and assumptions, in projects across the state. Without the grant, Socket calculated the payback period on this project to be 84 months. With the grant, the payback is estimated to be 46 months and has a justifiable business case for constructing and operating the network.

The business case cost and revenue model is below:

North Boone County Payback Model		
	Payback Model with Grant	Payback Model without Grant
Total Residences	2,980	2,980
Average Revenue Per End User	\$64.00	\$64.00

Estimated Market Share	70%	70%
Total Monthly Revenue	\$133,504	\$133,504
Total Cost to Socket	\$6,164,689	\$11,170,107
Months to Payback	46	84
Costs and Revenues were calculated with a take-rate of 70%. See explanation below.		

Assumptions

This payback model is based upon reasonable and yet conservative estimates. The number of residences passed is based upon actual Unserved premises in the ESA. The customers in the ESA are almost all residential customers so only residential revenues were taken into account. Residential prices are generally lower than business rates. To some degree, this will understate the actual revenue Socket is likely to see. Socket assumed a 70% take rate for the percent of premises purchasing services. As explained in other sections of this application, this is a reasonable estimate and matches Socket’s own experience in providing service in similar rural areas with no cable Internet competition and where the only fixed-line Internet service is xDSL with speed and reliability issues. In areas like this, there is usually a convex demand curve with high initial growth when service first becomes available. This is due to pent up demand and fast adoption. The demand then tapers off. However, there is still growth as area residents, business and critical community institutions continue to adopt. It also continues to grow as the population grows, which is what is expected in the ESA.

For the residential revenue, Socket used an Average Revenue per User (“ARPU”) of \$64. While Socket’s retail rate for symmetric 1Gbps service is \$60. However, there are additional revenue sources to increase the ARPU. For example, Socket will be leasing wireless routers. Often customers lease more than one so they can have a “meshed” system and receive an Internet signal throughout or beyond their house. Socket will also be selling voice service for an additional \$20 per month. In rural areas where the mobile quality has quality issues, residents tend to purchase wireline service more frequently than in urban areas. For these reasons, Socket arrived at an ARPU of \$64.

On the cost side, Socket already has an existing agreement in place for Ridenhour Directional Drilling to install the network backbone for an extremely discounted rate because of the size of the project. This is shown on the in the Ridenhour - Letter of Support-Commitment to Project and Confidential Detailed Budget. The drop cost or cost to connect each premise is reasonable for rural areas that require longer drops and more rugged terrain. Given the quantity of the number of drops, Socket believes it might be able to reduce that cost to a degree but is being conservative and using the higher amount in this analysis. The material costs were based upon Socket’s current material costs and taking into account the potential for price increases because of future shortages. The quantities of materials estimated to be used are based upon Socket’s experience and design requirements. As stated in the Table 3 – Technical Approach, Socket already has enough materials on-hand and agreements in place to acquire additional materials as needed to get started on the project for a substantial period of time. Socket uses contractors located in the Central Missouri area that hire local employees. These contractors follow all safety standards and pay wages at or above the current market rates for qualified labor.

When these variables are applied to the cost model including the grant, the payback period is 46 months,

which falls within Socket's standard payback period for investment. Without the grant, the payback period is 84 months; meaning it would not be built. Just for comparison purposes, Socket analyzed the market plan and budget with a 100% take-rate; one that is incredibly unlikely to actually happen. That business plan improved with a payback of 37 months with the grant and 63 months without the grant. This shows this project has financial sustainability to operate and even serve 100% of unserved premises as required.

Given the soundness of the financial budget and satisfactory payback period combined with Socket's demonstrated ability to execute its project plans, the requested grant will be a sound investment and provide the currently unserved North Boone County ESA with access to new broadband services and economic opportunities. For these reasons, Socket meets the necessary criteria to receive the maximum of 10 points.

Table 6: Project Sustainability

To ensure sustainability, Socket will largely follow the practices it has done in other rural underserved and unserved markets where it has been highly successful. Market penetration rates or take-rates in similar rural markets where the only other fixed-wireline service available is marginal xDSL service with speed and quality issues, Socket has consistently seen take-rates in the 70% range within a year or less of locations being ready for service. After that, the take rate continues to rise but at a slower rate. It does continue to grow through additional adoption and population growth within the ESA as is expected in this ESA. For example, Socket has comparable service areas that have take-rates over 70% where the services initially became available in October 2020. Based upon Socket's market research, discussions with community leaders, and residents in the area, Socket's market projection for this project is to have take-rates in the 70% range within the first year. After that, the take rate will continue to increase thereafter. It is essentially a convex demand curve with fast initial growth and slower growth over time. As shown in the budget section, this project is sustainable with a 70% take-rate.

As to the business plan in these areas, Socket will aggressively promote its services and broadband adoption overall. To promote the service, press releases will be sent to kick off notification of our new service area to local publications. Direct mail campaigns will begin as soon as the grant is awarded.

Socket will notify all residents and businesses in our eligible service area via direct mail and door hangers of the availability of the new internet services, including information on broadband service in general. Additional direct mail campaigns will notify residents of community training and meet-and-greet opportunities (See Attachment 5 Project Sustainability – Sample Marketing Materials, Sample General Broadband Information). These are just a few of the marketing and adoption materials Socket uses in other markets. Upon award, new marketing and adoption materials will be designed and used that are specific to this ESA.

During the construction phase of the project, construction crews will identify themselves as working on behalf of Socket and will carry marketing materials to provide to residents. They will also place door hangers with information about the construction and Socket's broadband service as construction progresses (See Attachment 5 Project Sustainability – Sample Construction Notice).

Just as done in other markets, Socket will join community organizations such as the area Chamber of Commerce to show support and involvement with local businesses. Socket will work to seek out other opportunities such as supporting local booster clubs and athletic teams within the school system. Socket will have a dedicated website landing page for this ESA. Residents can follow and receive updates on construction and community events via our website and social media channels, including Facebook, Instagram, and Twitter. Digital advertising will target IP addresses in a defined geo-location to distribute information on available

broadband services. Signs and banners can be placed in visible areas throughout the community to show availability of service. Radio and other area event promotions will be considered based on availability. Socket's intention is to become closely involved in every community that is served by Socket.

Socket also discussed promoting its broadband service through the schools using Eligible Broadband Benefit ("EBB") program to households with children in the free or reduced lunch program. Schools will notify households within each district and provide information about the EBB program, broadband in general, as well as information about Socket's broadband service. This will provide information about Socket's service to both households qualifying for the EBB program as well as households that may not be eligible but are still looking for a better broadband solution. Socket has the support of the Harrisburg School District, Sturgeon School District, and the Centralia School District. These schools have agreed to partner with Socket to promote broadband service.

In addition to area schools, Socket plans to partner with local businesses to provide training for business owners and company employees. This includes printed materials and videos to use during their own in-house training programs for employees.

Socket can work with local farmers, agricultural-based businesses, agricultural organizations such as county farm bureaus to coordinate training. This training would help them understand how internet usage could improve their operations, increase efficiencies, decrease expenses and become more competitive.

The letters of Support from the area schools, elected officials, and residents show the support for this project. (See Attachment 6 – Letters of Support).

During the installation of broadband service, Socket's technicians install the service and perform speed tests to make sure the service is meeting the service standards. If the customer leases a wireless router, the technicians will place that router in the optimal location and show the customer how it works. In many instances, they will work with customer to also setup customer-owned equipment so customers the ability to use the service. Socket's customer service center located in Columbia, MO will also support the service and aid customers in using the service by answering questions and offering advice including how to use customer-owned equipment. By keeping the customer experience positive, customers will retain the service.

All of these activities ensure that everyone in the ESA is aware of Socket's service and is able to use the service. As shown in Table 5: Reasonable of Budget, this project is financially sustainable. As shown in Table 3: Technical Approach, this service is expandable to reach additional additional locations with Socket already having plans to do so. As also demonstrated Table 3: Technical Approach, this network is technically capable of supporting advanced data services and wireless services such as. For all of the reasons, Socket should receive the full 15 points.

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Spectrum Mid-America, LLC Narrative

Applicant addresses the sections below in narrative format. Please be concise and submit the following sections in MS Word format (8.5" x 11") unless indicated otherwise.

Executive Summary

Please provide a brief summary (250 words or less and suitable for dissemination to the public) of the proposed project. Include the name of the applicant organization, a description of the project area, number of anticipated connections, and the type of broadband internet infrastructure that is proposed to be deployed (if proposing a hybrid of wireline and fixed wireless modalities, please indicate the percentage breakdown of each mode to be constructed by the grant). Please be sure to describe the project's anticipated improvements in broadband speed offerings from pre-existing broadband service levels to proposed service levels.

RESPONSE:

Spectrum Mid-America, LLC by its manager Charter Communications Inc. Charter ("Spectrum" or "Charter") is requesting a grant to construct a fiber-to-the-premises, Ethernet passive optical network ("FTTP EPON") network to provide service to unserved households in three locations in St. Charles County, MO and St. Louis County, MO. The project includes building 57.82 miles of fiber optic network to reach an estimated 496 unserved homes. Charter's FTTP EPON architecture, a standardized and mature model that is operated by Charter across the country, engineered and managed to meet up to 1 Gbps downstream speeds, 500 Mbps upstream speeds, and latency of well below 100 milliseconds.

New customers in the grant areas will have access to several Internet speed options, including our Spectrum Internet with our minimum speed of up to 200/10 Mbps to our Spectrum Internet Gig service at up to 1000/500 Mbps. Additional services that will be available to Charter Internet customers include, but are not limited to, anti-virus security protection and in-home WiFi. As an added benefit of its FTTP network, Charter will also be in a position to offer competitive video and voice services in the grant area.

Project Purpose and Benefits

Project's Statement of Need: Address the current state of broadband in the proposed project area and why federal grant funds are needed to help construct the project. Share any other factors that make it difficult to expand and address items outlined in the following subsections. Please be concise.

RESPONSE:

The three locations in the project area with 496 households are unserved (having access to speeds of less than 10/1 Mbps or no broadband services).

The three locations are not close to our current plant in St. Charles County, MO and St. Louis County, MO. Without the NTIA grant, this project would not meet the company's standard economic modeling for Return on Investment (ROI) and would not be approved for a build.

Moreover, the Project areas have high costs per passing, making it unlikely that private investment will result in the extension of a comparable fiber network to the Project areas without broadband grant assistance to make construction viable and feasible. Support through the requested NTIA grant, however,

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would make the Project commercially viable once the initial up-front costs on network deployment are expended.

Level of Impact in the Proposed Service Area:

A description of which statutory funding priority(ies) the proposed project would address and how it would address such funding priority(ies).

RESPONSE:

The Project will address the statutory priorities set out in NTIA's Notice of Funding Opportunity as follows:

1. Covered broadband projects designed to provide broadband service to the greatest number of households in an eligible service area: As described above, the Project will provide service to 100% of the identified households in the project area, encompassing 496 households that lack access to qualifying broadband service today.
3. Covered broadband projects that are the most cost-effective, prioritizing such projects in areas that are the most rural: The proposed Project will extend broadband service to a high-cost area that would face challenges receiving private investment in the absence of public support. Here, the proposed Project represents an opportunity for NTIA to increase the cost-effectiveness of public funds through Charter's commitment to pledge a significant voluntary cost-share to offset the costs of the Project. Charter will commit to contribute [BEGIN CONFIDENTIAL] [REDACTED] END CONFIDENTIAL] of the direct costs of constructing the proposed network and to absorb all indirect costs (at the 10% de minimis rate), for a total estimated contribution of [BEGIN CONFIDENTIAL] [REDACTED] END CONFIDENTIAL] of the total project costs. As offset by Charter's contributions, the costs of extending service to the 496 homes supported by the grant would be the requested grant for [BEGIN CONFIDENTIAL] [REDACTED], [END CONFIDENTIAL] a significant discount from the investment that would otherwise be needed to bring broadband service to the area.
4. Covered broadband projects designed to provide broadband service with a download speed of not less than 100 megabits per second and an upload speed of not less than 20 megabits per second: Charter's network specifications for the Project will leverage the capabilities of the network design that Charter developed in order to participate as a qualifying bidder in the gigabit, low-latency tier for the FCC's RDOF Auction. Accordingly, as set forth in above, the Project will offer broadband speeds of up to 1,000 megabits per second download and 500 megabits per second upload, substantially in excess of NTIA's requirements for this priority.

Number of total households, businesses and community anchor institutions that the project will connect in the proposed service area

RESPONSE:

The proposed project will connect 496 residential households.

Total number of unserved households, as defined in Section I.B.10 of the NOFO that the project will connect in the proposed service area

RESPONSE:

The proposed project will connect 496 unserved households in the proposed service area.

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Total number of households, businesses, and community anchor institutions that will receive qualifying broadband service

RESPONSE:

The proposed project will allow the residents in these 496 households to receive broadband service at speeds greater than qualifying broadband service.

Total number of households, businesses, and community anchor institutions that will receive broadband service at speeds greater than qualifying broadband service, and

RESPONSE:

Our proposal will use Charter's FTTP EPON architecture, a standardized and tested model that is operated by Charter across the country, engineered and managed to meet up to 1 Gbps downstream speeds, 500 Mbps upstream speeds, and latency of well below 100 milliseconds. Therefore, all 496 residential households have the ability to receive broadband service at speeds greater than qualifying broadband service.

Projects proposing deployment of middle mile and backhaul networks must articulate how prioritization to connect last mile connection networks serving unserved households and describe other benefits including increased network capacity for last mile circuits, network performance, potential lowered costs to end user and a list of last mile network projects that will be potential partners.

RESPONSE:

Not applicable. Spectrum is not requesting funding for deployment of middle mile and backhaul networks.

Affordability of Services Offered:

Describe the pricing of the broadband services offered as compared to existing broadband services in the proposed service area or denote pricing based on nationwide averages. Demonstrate how the pricing is competitive and affordable to your target market(s).

RESPONSE:

Charter employs a nationwide pricing structure (called Spectrum Pricing & Packaging), which offers standardized pricing for each tier of broadband internet service Charter offers new customers across its service territory. Charter's pricing strategy ensures that rural customers receive the same pricing as other highly competitive areas in the state.

Charter's broadband offerings currently include no data caps, usage-based pricing, early termination or modem fees.

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Application includes documentation of proposed speed tiers, service pricing for each speed tier, and whether there is an affordability option for families of need.

RESPONSE:

Standard Charter Broadband Service Offerings and Prices

Speed Tier ¹	Downstream Mbps	Upstream Mbps	Standard Monthly Rate – without Promotional Pricing as of July 2021 ²	Installation Fee
Spectrum Internet Assist*	30	4	\$17.99	\$0.00
Spectrum Internet	200	10	\$74.99	\$49.99
Spectrum Internet Ultra	400	20	\$94.99	\$49.99
Spectrum Internet Gig	1000	500	\$134.99	\$199.99

*Spectrum participates in the national low-income FCC Emergency Broadband (EBB) program. Spectrum’s Internet Assist program also provides 30 Mbps broadband to qualified families with children on the National School Lunch Program or seniors receiving supplemental income.

In addition to the standard, non-promotional rates itemized above, Charter may also offer promotional pricing, including bundled discounts. Charter’s current promotional offerings can be found at <https://www.spectrum.com/internet>. All promotional offers are subject to change, may not be available in all areas or to all customers.

When needed, Spectrum can also provide dedicated commercial builds to provide broadband speeds in excess of 1 Gigabit in both directions.

Spectrum’s terms of services will apply to all tiers of service. All rates, speeds and terms of service stated herein are subject to change.

Project Viability

Technical Approach and Related Network Capacity and Performance

Describe how the technology solution is the appropriate solution for the community and its related benefits (capacity and performance).

RESPONSE:

Charter has extensive capacity and experience in carrying out projects designed to extend its high-speed broadband network into unserved areas, including unserved rural areas, and would bring market-leading gigabit speeds, with low latency, to homes and businesses in the project area.

As noted above, Charter has recently announced a **\$5 billion dollar investment** to connect more than a million currently-unserved, mostly rural families and small businesses to reliable broadband service with

¹ Represented pricing is for broadband service only. In addition to broadband services, Charter will also offer video, landline voice, and mobile services in the grant area.

² Customers can add WiFi for \$5.00 per month (Spectrum Internet Assist, Spectrum Internet & Spectrum Internet Ultra)

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speeds of up to 1 gigabit per second, including adding significant resources to our construction department and more than 2,000 employees and contractors to support the expansion.

We're driving innovation and growing economies from coast to coast and in communities big and small. From 2016-2020 alone, Spectrum invested nearly \$40 billion in infrastructure and technology – contributing significantly to the US economy. In the last three years, Charter extended its network to reach an additional 2.5 million new homes and businesses, about a third in rural areas. Bringing these services to our customers enables them to connect their homes and businesses to the Internet of Things (IoT), stream video, learn and work remotely, and enjoy enhanced gaming and other entertainment simultaneously on multiple devices.

In 2020 alone, Charter extended its network to reach an additional 11,623 homes and small businesses in Missouri. Charter is therefore well-versed in all elements of constructing and operating new broadband networks, and will be able to leverage those capabilities and experience to effectively manage the proposed Project.

In addition, as set forth in the "Project Plan" section below, Charter has a well-developed process for initiating and managing broadband construction projects, as well as for promptly obtaining access to utility poles and any necessary-rights of way, and established relationships with contractors who will perform design, make-ready, and construction work on the Project. Charter's pre-existing procedures, construction management system, and ability to engage third parties will enable it to begin work on the Project immediately upon authorization.

The proposed technical solution will also effectively serve the needs of the local community by bringing market-leading FTTH offerings, at gigabit speeds, to the Project area, ensuring that the broadband infrastructure is "future-proofed" and able to serve the needs of local residents, as well as any new business that would consider coming to this project area, for years to come. The last-mile connections constructed under the Proposal would connect to, and leverage, the substantial capabilities of Charter's pre-existing middle-mile and backbone infrastructure that power its market-leading broadband services nationwide. The ability to leverage Charter's existing network capabilities will also ensure that the broadband speeds offered to the project area are effectively managed and can be continuously scaled to meet future bandwidth, service quality, and latency requirements.

Describe how the project is "shovel ready" and capable of completion within a one- year award period. Please articulate in a concise narrative format.

RESPONSE:

To consistently expand our network to serve so many new homes and businesses each year, Charter uses a comprehensive proprietary construction project management system called PRISM—a proven tool for tracking and managing all construction activity on a project-by-project, passing-by-passing basis, with the ability to separate out various types of projects and passings by dwelling type and area. On an ongoing basis, PRISM manages thousands of construction jobs, encompassing millions of tasks across multiple Charter departments and third-party vendors. PRISM is able to accomplish this via a comprehensive real-time "Task Dashboard." The Task Dashboard fosters visibility and drives accountability across each of PRISM's five thousand users. This allows all groups involved (including those responsible for construction, permitting, design, and finance) to know the tasks for which they are responsible, and the timeframe allotted to each of these tasks.

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Charter will likewise use PRISM to manage and meet its obligations in the project area. A centralized design team will separate Charter awards in each state into multiple projects in PRISM. Each project will proceed through the following project phases managed through PRISM.

1. **Field Walkout** – Charter construction coordinators review the project area using both maps and by physically driving to and “walking-out” a project area. The survey estimates plant footage and the type of footage (aerial vs. underground) which are used by Charter’s design team to create detailed design plans and are also used to generate cost estimates. The survey will also determine the permit requirements which are submitted and obtained in parallel with the remaining steps. Key activities include:

Acquire landbase and address information for awarded build areas;

Prepare walkout schedule and maps for field vendors;

Finalize statement of work and pricing, award walkout to field vendors;

Acquire list of town, county and state utility projects; and

Identify continuity crossing and permit requirements for all crossings required on highways, railroads, rivers, etc.

2. **Network Design** –The preliminary routing is overlaid with the field walkout to create the final routing for fiber design with make-ready assessments. The design includes confirmation of takeoff points from existing fiber, assessment of future capacity needs, network expansion routes and diverse routing back to hubs. Entry access, floor space, and power requirements at all supporting hubs are accounted for as part of the design.
3. **Pole/Permitting Applications** – Pole owners are identified and pole attachment agreements commence. Pole attachment applications are submitted promptly following all pole owner requirements. In this process, all crossings are identified that may require a town, county, or state permit to ensure timely engineering and construction support. Identify all underground areas; research and engage in discussion on permitting requirements to build conduit underground.
4. **Pole Make Ready Work** – Establish schedule with all pole owners for required make-ready work, meeting weekly or more often as needed with each pole owner to ensure timely completion of deliverables. Work in parallel with all other parties attached to the poles to establish requirements for their work to complete in parallel so that Charter’s schedule is met. Identify local utility approved contractors to support and augment pole owners’ workload. Meet with all town, county, and state official to understand right of way issues, traffic and roadway requirements, and all other construction concerns.
5. **Fiber Placement** – Upon completion of all local, state, and federal safety requirements, and completion of all training, fiber placement construction begins. Review all guying and anchor requirements for materials and utility mark outs. Identify all specific fiber cable requirements and final construction specifications prior to fiber placement. Implement extensive quality control processes for all fiber cables placed.
6. **Splicing and Testing** – Ensure that all testing is done at the proper wavelengths for the deployed OLTs. Add all test results to Charter’s test documentation library.
7. **Network Activation** – Testing to each ONU, accept and document final as-built diagrams of all network elements, and ensure all address data is loaded into Charter billing systems for marketing and service.

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Because Charter has a well-established process for initiating and overseeing new construction projects, well-established relationships with contractors, and holds numerous regulatory authorizations and pole attachment agreements that can facilitate prompt access to rights-of-way and utility poles, it anticipates that it would be able to start work on the Project immediately upon approval, without delay.

If awarded NTIA grant funds, Charter anticipates beginning the project in early December 2021 with completion approximately 10-12 months from the effective date of a grant agreement with DED, subject to timing of grant awards, pole attachment make-ready work required to install facilities, permitting delays, ability to access relevant locations, or other delays outside Spectrum’s reasonable control, including pandemic-related or raw materials shortages. Stages of the project from start to end are included in the attached Missouri Department of Economic Development Project Work Plan.

Application includes broadband infrastructure requirements – Network diagrams and system design, documentation of scalable equipment that can evolve/sustain/scale for future advanced services, and all preconstruction requirements are identified and included in the project schedule.

RESPONSE:

Charter’s network will scale to support customer growth and data usage growth for (a) ever increasing application requirements; (b) increasing quality demand; and (c) lower response/latency demands for ever increasing usage of highly interactive applications. Charter’s capabilities are described in detail below.

Charter’s FTTP EPON solution meets all requirements for bandwidth, low latency, and scalability. Charter employs tiers of connectivity to scale for bandwidth growth. Within each tier, growth is accommodated by either “scaling up” or “scaling out” a Charter network device, as explained below. To support low latency Internet requirements, Charter moves applications or peering closer to the customer.

As Charter adds customers over time and as customers consume more bandwidth, Charter’s scalable model and proven capacity management processes will accommodate this growth. While Charter will be building a new last mile FTTP EPON network, the existing robust and scalable hub, Metro, Regional, and Backbone tiers are already in place and ready for growth. Charter augments its capacity through normal operating procedures, and these procedures will extend to the proposed Project areas seamlessly.

Future scalability explained – Provide a brief description on how the provider will scale broadband service delivery beyond the scope of the proposed project and the feasibility of it occurring in the near future.

RESPONSE:

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[REDACTED]

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[REDACTED]

[REDACTED]

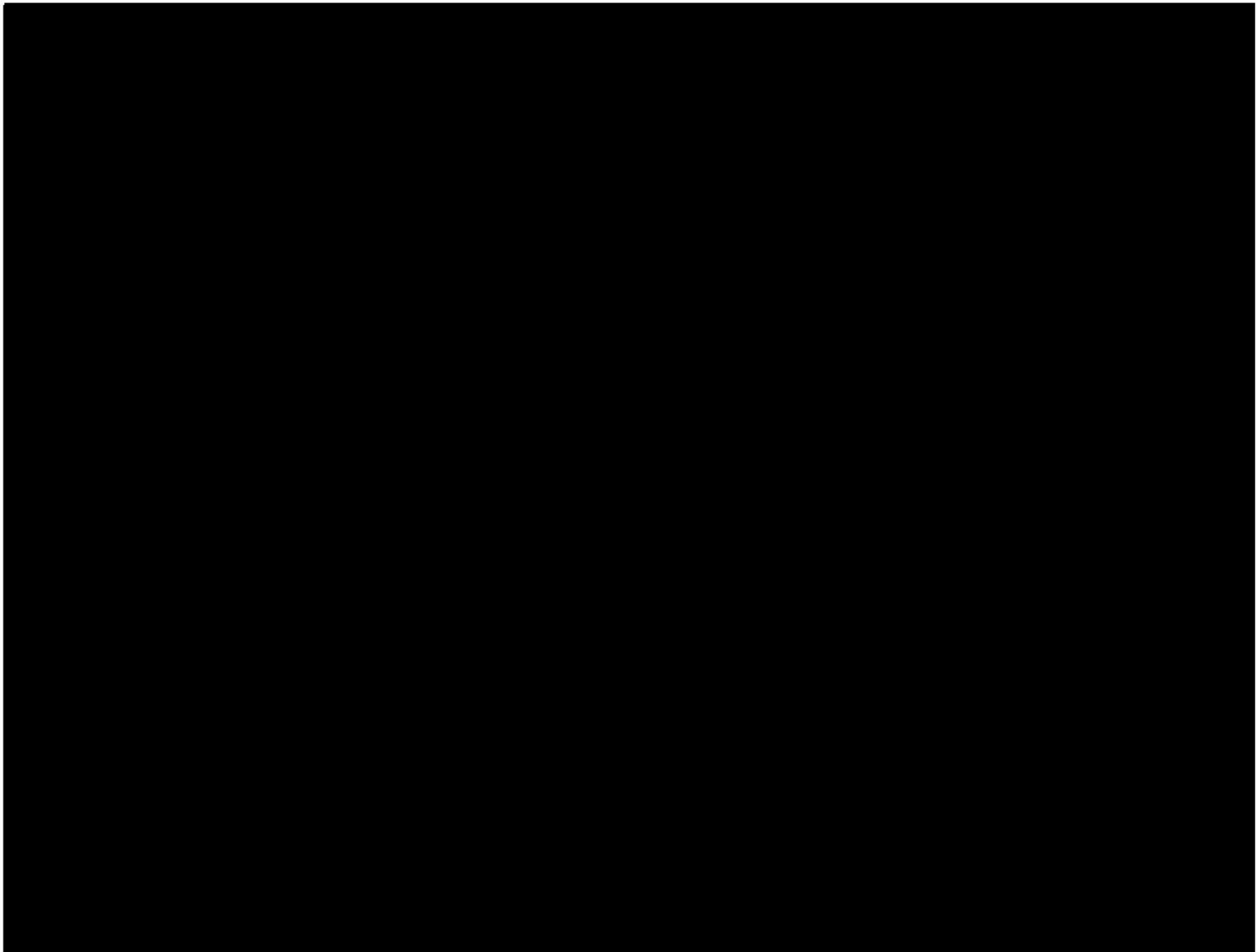
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



A brief description of the physical project area and its surroundings (e.g., disturbed or developed land vs. open space; adjacent natural resources, such as rivers, wetlands, or forestlands; and any protected lands or resources in or near the project area).

RESPONSE:

Descriptions of the three locations in this project are attached.

The project locations are a combination of developed land and open space. The Portage Des Sioux area is along the Mississippi River. Otherwise, no other portion of the project area appears to be adjacent to any natural resources or adjacent to any protected lands or resources.

The project will be able to leverage existing Charter headend, backbone, and interconnection facilities, and will not require the construction of new buildings, towers, or other structures. Charter anticipates that the construction necessary to complete the project will consist of (1) the attachment of fiber optic cable, OLTs, and associated equipment (such as power supplies) onto existing utility poles; (2) the replacement of existing utility poles in any instances in which the existing utility pole cannot accommodate Charter's attachments; (3) where pole attachments are not practical, the burying of fiber optic cable in trenches within the existing

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rights-of-way; and (4) where the attachment of OLTs and associated power supplies on utility poles is not practical, the placement of roadside cabinets, within the right-of-way, to house OLTs and power supplies installed in connection with the project.

Charter's completion of a specific network design setting out the specific utility poles to which its cables will be attached (and identifying any locations within the right-of-way where trenching or cabinet placement will be needed). However, each of these activities falls within the Department of Commerce's recognized department-wide categorical exceptions A-6 ("Adding fiber optic cable to transmission structures or burying fiber optic cable in existing transmission line rights-of-way") or A-7 ("Acquisition, installation, operation, and removal of communications systems, data processing equipment, and similar electronic equipment.")³ The Department of Commerce has already determined that these categories of actions do not individually or cumulatively have a significant effect on the human environment and further evaluation under the National Environmental Policy Act (NEPA) is not required. It is therefore Charter's expectation that, irrespective of the specific details of the forthcoming project design, the project will raise no significant environmental concerns requiring heightened review.

Because all construction activities will occur within existing transmission line rights-of-way, the risks of any adverse impacts to historical properties is also minimized. Notwithstanding these minimal risks, Charter will work cooperatively with NTIA to engage in any consultation that may be required under the National Historic Preservation Act. Charter also commits to cooperate with NTIA to identify measures to minimize any potential adverse effects on the environmental and/or any historical properties.

Charter has extensive experience building new network across 41 states every year, including deployment of its network into unserved rural areas, is well informed and practiced in adhering to required permitting processes and laws, and has well-established procedures to ensure that its networks are always constructed consistent with all applicable legal and regulatory requirements. Charter will obtain all necessary federal, state and/or local governmental permits and approvals necessary for the Project.

Charter's construction project management system called PRISM contains an exhaustive guided workflow to manage all aspects of the construction process, including all necessary federal, state, and/or local governmental permits and approvals. The PRISM permit module enforces strict adherence to permitting rules, ensuring that steps in construction to not proceed without verified and approved permit documentation present in the system. Training is conducted frequently by a dedicated training group in Charter's Field Engineering support organization to ensure Charter's Construction Coordinators are well versed on the business processes and systemic solutions that projects are managed effectively and efficiently.

Applicant needs to include site photographs and aerial (e.g., Google Earth or Google Maps images) photographs, if the project includes construction and/or ground disturbing activities.

RESPONSE:

A Google Earth KMZ file and site photographs are provided for each locations in this application.

³ See *Department of Commerce, National Environmental Policy Act—Categorical Exemptions*, 74 Fed. Reg. 33,204, 33,207 (July 10, 2009).

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Applicant's Organizational Capacity:

Outline the organization's background in providing or supporting broadband internet service, and its capacity for sustaining service.

RESPONSE:

In carrying out the Project, Charter will be able to draw upon the resources, support, and experience of its national operations. Continuing the effort to help close the broadband access gap, Charter has announced a **\$5 billion dollar** initiative to connect an estimated one million currently-unserved, mostly rural families and small businesses to reliable broadband service with speeds of up to 1 gigabit per second. Charter expects to invest approximately \$5 billion to support this infrastructure expansion, offset by about \$1 billion in support won in the Rural Digital Opportunity Fund auction. Thanks to this public-private partnership, Charter will reach many more homes and small businesses than it otherwise would have because of the high costs to reach these areas. This expansion will be in addition to Charter's ongoing annual investments in infrastructure and technology. Charter will also add significant resources to our construction department focused solely on adding more than 100,000 miles of new network infrastructure to our more than 750,000 existing miles. We also plan to hire more than 2,000 employees and contractors to support the expansion.

Spectrum will use the same network deployment and operational procedures in the Project area that are currently successfully employed across the country. These practices include documented and thoroughly tested methods of managing network performance, managing service issue at a network or customer level, and coordinating change management with minimal or no disruption to customers. All of our services are delivered over our state-of-the-art network and we back them up with professional customer service and support from local technicians. We are dedicated to bringing our clients innovative, reliable services, and responsible care.

Over the years, Charter Communications has invested billions of dollars in infrastructure improvements, unleashing the power of an advanced, two-way, fully interactive fiber network. By moving to this all-digital network, Spectrum offers a minimum broadband internet speed of 200 Mbps download across our entire service area in Missouri.

Describe your technical expertise – specific prior experience in providing broadband services

RESPONSE:

Charter Communications and our 6500+ Missouri-based employees have extensive experience providing broadband internet service, as Charter (and its predecessor companies) has been providing broadband internet service in the state for almost two decades. Charter currently provides broadband internet, video and voice service to more than 856,000 customers in 291 communities in Missouri.

Describe how the organization will sustain broadband service delivery and maintenance

RESPONSE:

Charter's FTTP EPON solution meets all requirements for bandwidth, low latency, and scalability. Charter employs tiers of connectivity to scale for bandwidth growth. Within each tier, growth is accommodated by either "scaling up" or "scaling out" a Charter network device, as explained below. To support low latency Internet requirements, Charter moves applications or peering closer to the customer.

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As Charter adds customers over time and as customers consume more bandwidth, Charter's scalable model and proven capacity management processes will accommodate this growth. While Charter will be building a new last mile FTTP EPON network, the existing robust and scalable hub, Metro, Regional, and Backbone tiers are already in place and ready for growth. Charter augments its capacity through normal operating procedures, and these procedures will extend to the proposed Project areas seamlessly.

Provide a list of key personnel (e.g. project manager, engineer, CFO, marketing director) who will be responsible for carrying out project implementation and define their respective roles in sustaining this project long term. Please include a one-page resume for each person.

RESPONSE:

National

Tom Rutledge, Chairman and Chief Executive Officer, Charter Communications

Thomas M. Rutledge is the Chairman and Chief Executive Officer of Charter Communications, which under the Spectrum brand provides Internet, TV, Voice and Mobile communications to more than 31 million customers in 41 states, with more than 96,000 employees. Under Tom's distinguished leadership, Charter has been positioned to be the connectivity provider of choice for both residential and business customers, having invested \$40 billion in technology and infrastructure since 2016. The company's Spectrum-branded services are backed by outstanding service — the result of returning the work of thousands of customer service jobs from overseas to U.S. call centers and insourcing its technical workforce, prioritizing superior craftsmanship with every customer interaction. Prior to becoming CEO of Charter in 2012, Mr. Rutledge served as Chief Operating Officer of Cablevision Systems, where he oversaw the company's cable television business; Rainbow Media, the company's national programming business, which includes the AMC, IFC, Sundance TV and WEtv networks; Clearview Cinemas and Newsday. While at Cablevision, Mr. Rutledge oversaw a \$5 billion fiber-optic network upgrade, the first high-definition video on demand offering, the first cable footprint-wide rollout of VoIP phone service, the first Wi-Fi mesh wireless cable network deployment, and greenlit the iconic television series *Mad Men*, *Breaking Bad*, and *The Walking Dead*. Tom began his cable career in 1972 at Easter Telecom working as a technician while going to college. He received a B.A. in economics from California University in California, Pa., in 1977.

Tom Adams, Executive Vice President, Field Operations, Charter Communications

Tom Adams is responsible for providing national oversight of the Field Operations for Charter Communications and for leading a team dedicated to Charter's rural deployment efforts. Tom's leadership capabilities were demonstrated during the 2016 merger with Time Warner Cable and Bright House Networks, during which he was responsible for making measurable improvements in operations and management. Prior to his current role as Executive Vice President, Tom spent 17 years in Operations under Time Warner Cable, including working as the Regional Vice President of Operations for Wisconsin and the Regional Vice President of Operations for Eastern Carolina. He received an associate degree in applied science, engineering from State University of New York at Delhi, and a B.S. in engineering from Florida International University.

Regional/Local

Robert Burton, Area Vice President

Oversees the management of the daily operation of all activities supporting the field operations including all installation, service, and line activities as well as overseeing all employees and projects in those areas ensuring that the work is handled expediently and within Charter specifications for Missouri and Illinois.

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Contributes to the company's strategies for assigned area through the preparation of business fulfillment plans, budgeting and forecasting. Provides direction to field management for overall fulfillment of operations including technical, construction, system maintenance, safety, Field Ops engineering, Technical Quality Assurance and cost controls. Develops appropriate work productivity, quality and overtime standards for all field technicians; ensure quotas and staffing aligns with business goals and trended future volume of activity. Creates business partner relationships to ensure staffing levels are met.

Jamie Clark, Director, Field Engineering

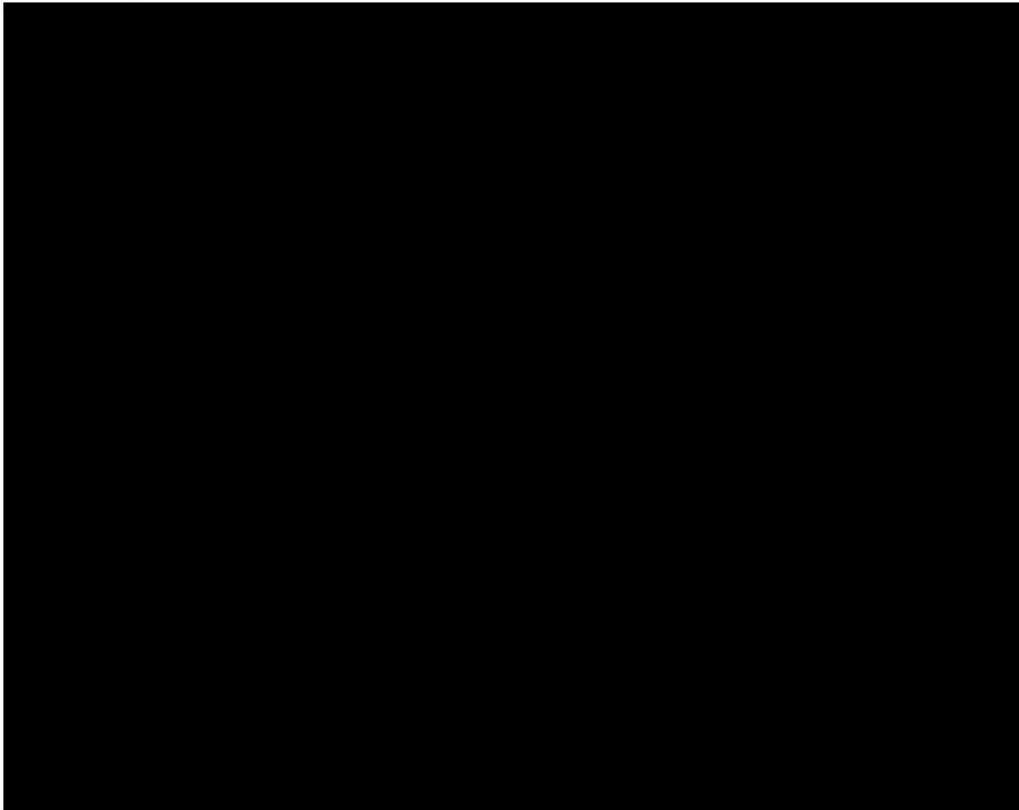
Responsible for management of overall construction and plant maintenance activity, including design, funding, construction, quality control, invoicing, and customer release for install.

As Mr. Burton and Mr. Clark will be responsible for the implementation of the project at a local level, One-Page Resumes of both individuals are attached.

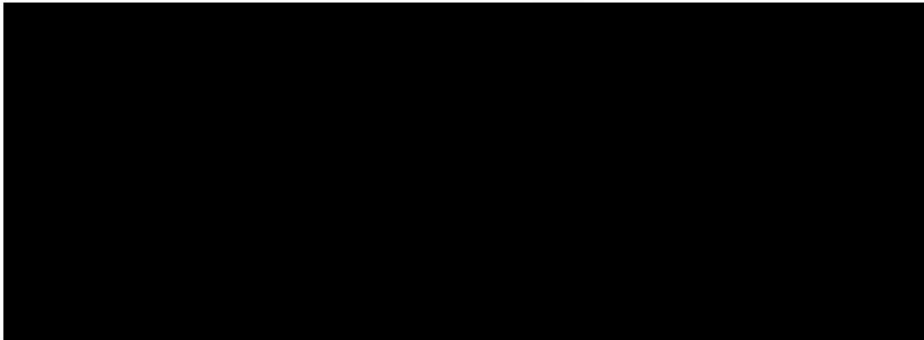
Describe the organization's comprehensive knowledge of the proposed project

RESPONSE:

Charter has extensive experience with extensions of its network to unserved areas, pursuant to numerous joint efforts with state and local governments around the country. Based upon that experience, Charter estimates the following costs for constructing its network to the grant area:

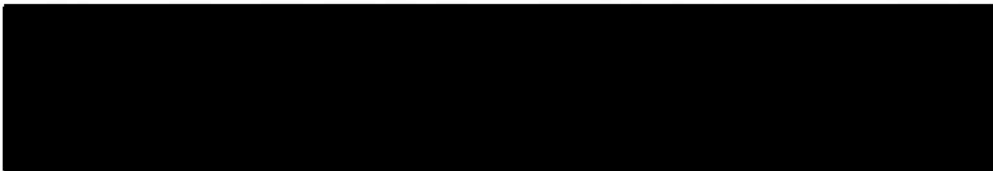


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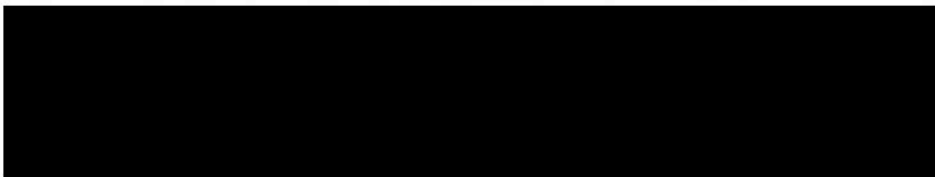
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The Project area has both a low population density high costs per passing, making it unlikely that private investment will result in the extension of a comparable fiber network to the Project area without broadband grant assistance to make construction viable and feasible. As shown in Table 3 below, in the absence of support from a grant, Charter's projected free cash flow return on investment payback from incurring the total costs of the Project using private capital would be **[BEGIN CONFIDENTIAL INFORMATION]**



[END CONFIDENTIAL INFORMATION] years. This free cash flow exhibit does not account for the time value of money. If time value of money were applied using a discount rate, the payback year would be even farther into the future. A return on investment period of this timeframe is unlikely to result in the deployment of broadband service in the Project area using private investment alone.

Support through the requested NTIA grant, however, would make the Project commercially viable once the initial up-front costs on network deployment are expended. When the requested grant is applied, the return on investment payback is in year **[BEGIN CONFIDENTIAL INFORMATION]**



[END CONFIDENTIAL INFORMATION]. This payback is reasonable based on comparable risk-adjusted investment opportunities, both creating an opportunity for a public-private partnership and resulting in a project that is sustainable in the long term, further ensuring the continued provision of quality services to the Project Area in future years.

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Describe how the organization is prepared to begin construction following grant award, with complete project schedule provided

RESPONSE:

If awarded NTIA grant funds, Charter anticipates beginning the project in early December 2021 with completion approximately 10-12 months from the effective date of a grant agreement with DED, subject to timing of grant awards, pole attachment make-ready work required to install facilities, permitting delays, ability to access relevant locations, or other delays outside Spectrum's reasonable control, including pandemic-related or raw materials shortages.

Describe the organization's ability to implement and operate the project.

RESPONSE:

The network will also be backed and operated by Charter, the nation's second-largest broadband provider with extensive experience owning, operating, maintaining, and upgrading broadband networks, as well as well-recognized financial stability. As set forth in the accompanying financial information, Charter is the nation's second-largest broadband provider, with substantial cash flow, revolver capacity, and access to the capital markets. Charter's substantial financial resources and recognized, investment-backed commitment to rural America provide more than sufficient capability to continue to operate the system going forward.

Project Work Plan

Submit a comprehensive Project Work Plan to include project activities, timeline, and corresponding milestones. DED will provide a Project Work Plan template in an Excel format, please refer to the Program Documents section of the grant website to access the template. Please articulate line items in a concise format.

RESPONSE:

See Project Work Plan Template attached for each project.

The project work plan needs to include a project schedule/timeline and activity milestones for each phase of the project. The project period and agreement may be as long as one year in duration (or longer depending on permits). The work plan should incorporate all broadband infrastructure requirements (i.e. design/diagrams, documentation of scalable equipment), preconstruction requirements, project implementation, and marketing activities that align with the proposed project budget.

RESPONSE:

Project Plan and Major Project Activities and Timelines

To consistently expand our network to serve so many new homes and businesses each year, Charter uses a comprehensive proprietary construction project management system called PRISM—a proven tool for tracking and managing all construction activity on a project-by-project, passing-by-passing basis, with the ability to separate out various types of projects and passings by dwelling type and area. On an ongoing basis, PRISM manages thousands of construction jobs, encompassing millions of tasks across multiple Charter departments and third-party vendors. PRISM is able to accomplish this via a comprehensive real-time "Task Dashboard." The Task Dashboard fosters visibility and drives accountability across each of PRISM's five thousand users. This allows all groups involved (including those responsible for construction,

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permitting, design, and finance) to know the tasks for which they are responsible, and the timeframe allotted to each of these tasks.

Charter will likewise use PRISM to manage and meet its obligations in the project area. A centralized design team will separate Charter awards in each state into multiple projects in PRISM. Each project will proceed through the following project phases managed through PRISM.

Field Walkout – Charter construction coordinators review the project area using both maps and by physically driving to and “walking-out” a project area. The survey estimates plant footage and the type of footage (aerial vs. underground) which are used by Charter’s design team to create detailed design plans and are also used to generate cost estimates. The survey will also determine the permit requirements which are submitted and obtained in parallel with the remaining steps. Key activities include:

- Acquire landbase and address information for awarded build areas
- Prepare walkout schedule and maps for field vendors
- Finalize statement of work and pricing, award walkout to field vendors
- Acquire list of town, county and state utility projects
- Identify continuity crossing and permit requirements for all crossing required on highways, railroads, rivers, etc.

Network Design –The preliminary routing is overlaid with the field walkout to create the final routing for fiber design with make-ready assessments. The design includes confirmation of takeoff points from existing fiber, assessment of future capacity needs, network expansion routes and diverse routing back to hubs. Entry access, floor space, and power requirements at all supporting hubs are accounted for as part of the design.

Pole/Permitting Applications – Pole owners are identified and pole attachment agreements commence. Pole attachment applications are submitted promptly following all pole owner requirements. In this process, all crossings are identified that may require a town, county, or state permit to ensure timely engineering and construction support. Identify all underground areas; research and engage in discussion on permitting requirements to build conduit underground.

Pole Make Ready Work – Establish schedule with all pole owners for required make-ready work, meeting weekly or more often as needed with each pole owner to ensure timely completion of deliverables. Work in parallel with all other parties attached to the poles to establish requirements for their work to complete in parallel so that Charter’s schedule is met. Identify local utility approved contractors to support and augment pole owners’ workload. Meet with all town, county, and state official to understand right of way issues, traffic and roadway requirements, and all other construction concerns.

Fiber Placement – Upon completion of all local, state, and federal safety requirements, and completion of all training, fiber placement construction begins. Review all guying and anchor requirements for materials and utility mark outs. Identify all specific fiber cable requirements and final construction specifications prior to fiber placement. Implement extensive quality control processes for all fiber cables placed.

Splicing and Testing – Ensure that all testing is done at the proper wavelengths for the deployed OLTs. Add all test results to Charter’s test documentation library.

Network Activation – Testing to each ONU, accept and document final as-built diagrams of all network elements, and ensure all address data is loaded into Charter billing systems for marketing and service.

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Because Charter has a well-established process for initiating and overseeing new construction projects, well-established relationships with contractors, and holds numerous regulatory authorizations and pole attachment agreements that can facilitate prompt access to rights-of-way and utility poles, it anticipates that it would be able to start work on the Project immediately upon approval, without delay.

Charter will deploy new network to the project areas and provide our products and services according to the estimated and planned schedule outlined

Project labor (if applicable):

Please describe in narrative format to what extent the Fixed Broadband Provider will incorporate strong labor standards, including project labor agreements and community benefit agreements offering wages at or above the prevailing rate; include local hire provisions.

RESPONSE:

i. Wages and Benefits

Charter's workforce is key to our long-term success and we're proud to invest in them. This commitment to our employees is why every employee already makes at least two times the federal minimum wage, and why Charter CEO Tom Rutledge announced we will permanently raising our minimum wage for all employees to \$20 per hour in 2022⁴.

We offer robust benefits, paid time off, company-paid retirement programs, and opportunities for advancement, because Charter is a company where our workers don't just do their jobs, they build careers. And when the lives of our employees are improved, they in turn improve the lives of the customers they serve.

At Charter, we offer our employees:

- Robust health care
- Company-paid retirement programs
- At least 2x the federal minimum wage
- A \$20 minimum wage in 2022⁵

Our \$20 minimum wage continues our commitment to our employees and our customers. After three companies came together to form Charter Spectrum, we started building for the long term. We invested over \$30 billion in training, tools, trucks, test equipment, new call centers, network upgrades, buildings, labs, product development, set top boxes, Wi-Fi routers, modems, and news channels. We also brought work back from overseas, reduced our reliance on contractors, and hired locally.

Our workforce includes:

- 96,000 Employees
- 47% People of Color

⁴ See Charter Communications, *Charter Communications Reaches \$18 Milestone on Path to \$20 Minimum Starting Wage in 2022* (March 9, 2021), <https://corporate.charter.com/newsroom/charter-communications-reaches-18-milestone-on-path-to-20-minimum-starting-wage-in-2022#:~:text=Charter%2C%20which%20established%20a%20%2415,%2416.50%20and%20then%20%2418%2C%20respectively.>

⁵ See Charter Communications, *Why Charter is Raising Our Minimum Wage to \$20 an Hour* (April 02, 2020); <https://policy.charter.com/blog/charter-raising-minimum-wage-20-hour>

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- Nearly 10,000 Veterans and Military Reservists

In the state of Wyoming alone, Charter employs almost 200 employees. Spectrum's Field Operations organization has a keen focus on plant performance, outage and service-call reduction, productivity and quality assurance. They are responsible for maintaining our cable plant, including plant construction and delivering quality service to the homes and businesses of our customers. Our in-house technicians are primarily responsible for installation, service and system maintenance. Broadband technicians are available for day, evening and weekend appointments to meet the scheduling needs of our growing customer base.

Our system technicians work around the clock to ensure our network is always up and running. The hub and spoke warehouse infrastructure makes certain our technicians always have the equipment they need while our dispatch centers assign and prioritize jobs and track technician progress in order to meet our on-time guarantee.

ii. **Workplace Safety**

We value our employees and are committed to providing a safe and healthy workplace. All employees are required to comply with company safety rules and expectations, and are expected to actively contribute to making our company a safer place to work. Charter strives for continuous improvement through an integrated Environmental, Health and Safety ("EHS") management system that provides guidance, instruction, and best management practices that meet or exceed regulatory requirements. As a result, all employees must comply with company safety rules and expectations, and are expected to identify, report, and correct unsafe conditions or acts that may arise during the work day.

We have established a process to investigate health and safety-related incidents, uncover root causes, and create preventive action plans. When incidents do occur, Charter reports, investigates, and documents the event in accordance with applicable federal and state regulations. Any injury that meets the Occupational Safety and Health Administration ("OSHA") criteria will be recorded and maintained to meet regulatory requirements and company policy. Each year, we tabulate and calculate any incidents into a total recordable incident rate ("TRIR") in accordance with OSHA's methodology to reflect the company's safety performance year-over-year. In 2020, our TRIR was 2.4.

The results of many of our procedures are reflected in the downward trend of our TRIR. In 2020, our OSHA injury rate dropped approximately 20% compared to 2019. This trend is largely driven by initiatives such as:

- Management and employee focus on incident prevention awareness
- Documentation of standardized best practices for jobs and tasks
- Standard equipment upgrades (e.g., lighter equipment with more safety features)
- Continuous improvement efforts for job/task training and onboarding as well as fleet management (e.g., standard safety features on vehicles)
- Improvement in insurance processes (e.g., incident intake, data analysis)

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Project Budget & Sustainability

Submit a comprehensive Detailed Budget Justification and Budget Narrative that includes itemized list and also indicates the reasonableness of the budget. DED will provide a Detailed Budget Justification template in an Excel format. Please refer to the Program Documents section of the grant website. Please be concise in both the Detailed Budget Justification and the Budget Narrative.

RESPONSE:

A Detailed Budget Template is attached

Identify and describe all other sources of funding and expenses, including amounts within the narrative and Detailed Budget Justification. Explain whether the applicant organization applied for, or received, funding for the proposed project area from either the State of Missouri, USDA Broadband Programs, the Federal Communications Commission programs (e.g., A-CAM, Connect America Fund, Rural Digital Opportunity Fund, etc.), Economic Development Administration, the Delta Regional Authority, or other federal/government sources. Applicants will be responsible for any cost overruns.

RESPONSE:

The Proposal does not include any further cost sharing or matching funds from any other source. The Project would be funded through the combination of Charter's private investment and the NTIA grant amount as set forth above.

All budget material should be provided in a detailed, clearly understandable manner demonstrating: Sources and uses of funds are realistic,

RESPONSE:

Charter has expanded its network in the last three years to more than 2.5 million homes and small businesses, many in rural areas, and has worked with numerous state and local governments on broadband expansion projects around the country in recent years. As a result of this experience, Charter has extensive real-world data regarding the costs of deploying its network into unserved and rural areas.

Charter's proposed budget for the project is based upon Charter's experience with the cost components of similar construction projects. Its cost estimates for the Project are based on geospatial desktop survey software to ascertain locations and optimal fiber network routing within the Project area, which is used to estimate the miles of additional fiber that will need to be deployed, as well as the likely ratio between aerial and underground deployment. Charter's model then applies costs to those inputs, using Charter's contracts and rate card data, which include negotiated rates with Charter's existing construction and make-ready contractors, as well as the expected pricing for the necessary materials. This is the same construction cost estimation technique that Charter uses for its projects that are funded with private capital, in the absence of public support. Charter's construction cost estimation techniques are performed at massive scale with hundreds of thousands of new passings designed and constructed annually, and Charter has a high degree of confidence in the reliability of those projections to project the costs of new Projects.

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All sources must be listed, but note there are restrictions on using other federal grants as matching funds for this grant. See the NOFO for more information,

RESPONSE:

The Proposal does not include any further cost sharing or matching funds from any other source. The Project would be funded through the combination of Charter's private investment and the NTIA grant amount as set forth above.

Grant eligible activities are included,

RESPONSE:

The Project would be funded through the combination of Charter's private investment and the NTIA grant amount as set forth above for grant-eligible activities only.

Describe the in-kind resources and ensure they are allowed by and that valuation complies with 2 CFR § 200.306, and

RESPONSE:

Charter notes that its project budget includes only the direct labor and material necessary to construct the last mile FTTH EPON network. It does not include labor costs arising out of work performed by Charter's internal employees to supervise and manage the project. It also does not include indirect or overhead costs that are not specifically measureable and cost-coded to the project in Charter's project management and accounting systems. Charter is cognizant that federal grant rules would permit Charter to quantify these additional costs and include them within its proposed budget and grant request; however, as explained below, Charter is proposing to absorb these costs itself as a voluntary commitment in connection with its grant application.

If debt financing will be obtained, submit letter(s) of commitment to demonstrate the willingness of the financial institution to provide the specified amount to construct the project.

RESPONSE:

The Proposal does not include any further cost sharing or matching funds from any other source, including debt financing.

Financial statements provided: Pro forma for the project, most recent quarter's financial statements and three previous fiscal years of financial statements (indicated if any supplied are audited). Financial statements need to include: balance sheets, income statements, and statement of cash flows to demonstrate overall financial viability

RESPONSE:

As a publicly traded company, Charter regularly discloses its average revenue per residential and small business customers in its public securities filings. Charter's most recent 10-K can be found at <https://ir.charter.com/static-files/b9dd7564-8c82-45b9-880c-08f265e4a54f>, with per-customer financial information at page 5 of the report.

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Sustainability of the Project: Outline how the project is to be sustained beyond the award period. Application could include the following items to be evaluated by the reviewers in consideration of demonstrating sustainability:

- business plan,
- market projections,
- marketing materials to include ways to adopt the new broadband service,
- provision of technical support or training on connecting to the new service, and
- other adoption strategies.

RESPONSE:

Once construction is complete in the project area, the addresses will be entered into our system and they will receive mailings for four weeks notifying them about the new service availability. There will be a variety of mail formats- postcards, letters, etc. Within 60 days, the addresses will be placed in Charter's regular customer acquisition mail stream.

In order to achieve positive operating cash flow, at least 23% of total project passings must become customers. Operating expenditures are projected to be approximately 45% of revenues. Positive operating cash flow is projected to be achieved 6 months after the build is completed.

Describe any community support that has been pledged (financial or otherwise), description of activities, and attach affiliated letters of support.

- Verified financial commitment to the project from any qualified community partner(s) Community partner may be any public, private, non-profit, or philanthropic entity – this would include a business, county, township, or municipality. Letters signifying partner support and financial commitment are required to be included in grant submission
- Project applications that provide substantive evidence of community support for the project
 - Substantive evidence may include: letter of commitment from the appropriate unit of local government indicating key support for the project; survey results indicating the number of committed customer connections upon project completion; public hearings; any other mechanism that shows commitment to subscribe from area businesses, households, farms, and community anchor institutions.

RESPONSE:

A letter from St. Charles County is attached

Leverage of Non-Federal Resources: Projects that have at least a 10% non-federal cost share, outlined within the NTIA Letter of Commitment (if applicable), will receive 5 points in this category. Providers with less than 10% cost-share will receive 0 points in this category.

Attachments omitted or missing from the application may impact the overall score and review of the proposed project area. DED encourages fixed broadband providers to review their submissions for completeness prior to submitting your application. Due to time constraints of the review process and submitting Missouri's Broadband Infrastructure Program application to NTIA by August 17,

2021, DED may be unable to offer Providers the opportunity to cure the application.

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Application submission

Applications and attachments can be submitted electronically by noon CDT on July 26, 2021. An electronic confirmation of receipt will be sent.

Online submission: <https://ded.mo.gov/content/ntia-broadband-infrastructure-program>

IMPORTANT: Immediately following the submission of your application, if you are not currently registered as a vendor with the State of Missouri, it is highly encouraged for providers to begin the vendor registration as soon as possible. If selected for a program award, being registered will assist in expediting the company's first reimbursement. Please visit the MissouriBUYS homepage at <https://missouribuys.mo.gov/registration>.

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Exhibit B

Description of Project Locations

The Project Locations for this application are as follow:

St. Charles/Orchard Farms

Located in the unincorporated community of Orchard Farm and west in St. Charles County within the general surrounding areas starting at the SE corner of Hwy 94 at MO H, north on Hwy 94 to the NE corner of Hwy 94 at Hwy V, west on Hwy V to the NW corner of Blasé Station Road and Hwy V, south on Blasé Station Road to the SW corner of Blaise Station Road and Hwy 94.

Portage Des Sioux

Located in St. Charles County, MO and includes the corporate boundary of the City on its east, south and west and the Mississippi River on the north.

6410 Grayhawk

Located in St. Louis County, south of I-44 across from Six Flags within the general surrounding areas starting at the intersection of Hunter's Ford Road and 2nd Street, west on 2nd Street to the corner of Wengler Road, South on Wengler Road until it merges into Hornecker Road, then continues south on Hornecker Road to the intersection of Hornecker Road @ Sheerin Road, east of Sheerin Road until it intersects with Hunter's Ford Road and north on Hunter's Ford Road until it intersects @ 2nd Street.



August 16, 2021

Evelyn Remaley
Acting Assistant Secretary for Communications and Information
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW, Room 4898
Washington, DC 20230

Re: Missouri's Petition for Extension of Award Period
NTIA Broadband Infrastructure Program 2021

Dear Assistant Secretary Remaley,

The Missouri Department of Economic Development (the "Department"), the lead applicant in the State of Missouri's Covered Partnership Application for the NTIA Broadband Infrastructure Program, requests the Assistant Secretary grant an extension of the one-year award period for the Missouri Covered Partnership to a period not to exceed 30 months (2 ½ years) from the initial receipt of grant funds.


Pursuant to the Broadband Infrastructure Program's Notice of Funding Opportunity, the Department certifies that:

- (1) The Covered Partnership has a plan for use of the grant funds, as set forth in its Application; and
- (2) Extenuating circumstances require an extension of time to allow the project to be completed. The extension of time will allow subrecipients to secure environmental clearance, locate utilities for construction, receive core materials that are currently under constraint from the supply chain, and adjust to any challenges they may face in securing contractors or staff due to labor shortages.

The Department commits to any reporting requested by the NTIA documenting the progress of awarded projects and any additional extenuating circumstances that may delay the progress of the awarded projects.

If you have any questions regarding this request for extension of time, please contact Tim Arbeiter, Director of Broadband Development, at Timothy.Arbeiter@ded.mo.gov or 573-694-8785.

Sincerely,


Robert B. Dixon
Director



Missouri Department of Economic Development, NTIA Broadband Infrastructure Program – Budget Narrative

The Missouri Department of Economic Development (DED) has identified nine companies representing 19 project areas with total NTIA grant request of \$42,241,491.12 to construct superior high speed internet to 13,094 households, 312 businesses, and 31 community anchor institutions in Missouri. Seven of the nine providers have included non-federal match resources as cash match within their respective projects totaling \$24,633,828.98 (37%) for an overall total broadband development investment of \$66,875,320.10. Missouri will not be committing any state match as a part of this request. The nine providers included in this request received the superior rankings during Missouri’s review process, demonstrate eligible project areas, cleared DED’s due diligence process, and included within Missouri’s Covered Partnership. Missouri’s Detailed Budget Justification excel sheet includes cover page of all the projects included within the Covered Partnership, each company has a dedicated tab outlining the itemized costs for their respective projects. The following budget narrative sections describe the included budgets and articulation of their consistency with each of their project’s scope of work.

Missouri Department of Economic Development (Tab #2 – Detailed Budget Justification Excel)

The estimated cost of the project will be \$184,004.00. The Missouri Department of Economic Development will be contributing 0% non-federal matching funds from its own resources. The Missouri Department of Economic Development is requesting \$184,004 of grant funding and will contribute \$0 for the project.

Cost classification totals for this project are:

1. Administrative and Legal - \$184,004 in administrative costs to secure a FTE for a grants specialist FTE to provide oversight, logistics, coordination of verification of build-outs, and the various requirements spelled out in the Notice of Funding Opportunity. The amount includes the salary, fringe, office, and travel expenditures necessary to support this professional staff member over a two-year period of performance post award date. The department utilized the same process it undertakes in state budget preparations and fiscal note determinations for staff support for existing and new programs. The costs for each of the items FTE (\$164,370), Equipment and Expense (\$6,426), and Travel for Verification and Validation of projects (\$13,208) are consistent with the project scope.

The following budget narratives were supplied by each of the qualified companies in their applications:

Green Hills Communications (Tab #3 – Detailed Budget Justification Excel)

The estimated cost of the project will be \$4,856,640.57. Green Hills Telephone Corporation will be contributing 0% non-federal matching funds from its own resources. Green Hills Telephone Corporation is requesting \$4,856,640.57 of grant funding and will contribute \$0.00 for the project.

Cost classification totals for this project are:

1. Architectural and engineering fees - \$633,474.86. [REDACTED]
2. Equipment - \$336,310.01. [REDACTED]
3. Construction - \$3,886,855.70. [REDACTED]

Columbus Telephone Company (Tab #4 – Detailed Budget Justification Excel)

The estimated cost of the project will be \$16,822,383.14 dollars. Columbus Telephone Company will be contributing 50% non-federal matching funds from its own resources. Columbus Telephone Company is requesting \$8,411,191.57 of grant funding and will contribute \$8,411,191.57 for the project.

Cost classification totals for this project are:

1. Administrative & Legal - \$14,000.00. [REDACTED]
2. Land, structures, rights-of-way, appraisals, etc. - \$55,184.80 [REDACTED]
3. Relocation expenses and payments - \$375,000.00 [REDACTED]
4. Architectural and engineering fees - \$1,170,646.22. [REDACTED]
5. Demolition and removal - \$5,400.00. [REDACTED]
6. Equipment - \$3,743,073.12. [REDACTED]
7. Construction - \$11,459,079.00. [REDACTED]

Socket Telecom LLC (Tab #6 – Detailed Budget Justification Excel)

The estimated cost of the project will be \$12,009,797.02 dollars. Socket Telecom LLC will be contributing 58% non-federal matching funds from its own resources. Socket Telecom LLC is requesting \$5,005,418.03 of grant funding and will contribute \$7,004,378.99 for the project.

Cost classification totals for this project are:

1. Construction - \$12,009,797.02. [REDACTED]

Gateway Infrastructure LLC (Tab #7 – Detailed Budget Justification Excel)

[REDACTED]

Chariton Valley Communications: Clarence Zone 1 & 2 (Tabs #8 & 9 – Detailed Budget Justification Excel)

ZONE 1

The estimated cost of the project will be \$485,267.52 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$436,740.77 of grant funding and will contribute \$48,526.75 for the project.

Cost classification totals for this project are:

[REDACTED]

ZONE 2

The estimated cost of the project will be \$628,572.89 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$565,715.60 of grant funding and will contribute \$62,857.29 for the project.

Cost classification totals for this project are:



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Chariton Valley Communications: Hannibal Zone 1 & 3 (Tabs #10 & 11 – Detailed Budget Justification Excel)

ZONE 1

The estimated cost of the project will be \$842,727.21 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$565,715.60 of grant funding and will contribute \$62,857.29 for the project.

Cost classification totals for this project are:



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ZONE 3

The estimated cost of the project will be \$161,779.36 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$145,601.42 of grant funding and will contribute \$16,177.94 for the project.

Cost classification totals for this project are:



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Chariton Valley Communications: Monroe City (Tab 13 – Detailed Budget Justification Excel)

The estimated cost of the project will be \$657,905.86 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$592,115.27 of grant funding and will contribute \$65,790.59 for the project.

Cost classification totals for this project are:



A table with two rows and two columns. The top row has a large black redaction box covering the first column and a smaller black redaction box covering the second column. The bottom row has a large black redaction box covering the first column and a smaller black redaction box covering the second column.

Chariton Valley Communications: Palmyra Zones 1-4 (Tabs #14-17 – Detailed Budget Justification Excel)

ZONE 1

The estimated cost of the project will be \$186,636.20 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$167,972.58 of grant funding and will contribute \$18,663.62 for the project.

Cost classification totals for this project are:

ZONE 2

The estimated cost of the project will be \$314,592.29 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$283,133.06 of grant funding and will contribute \$31,459.23 for the project.

Cost classification totals for this project are:

ZONE 3

The estimated cost of the project will be \$379,410.79 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$341,469.71 of grant funding and will contribute \$37,941.08 for the project.

Cost classification totals for this project are:

ZONE 4

The estimated cost of the project will be \$1,148,108.24 dollars. Chariton Valley Communications will be contributing 10% non-federal matching funds from its own resources. Chariton Valley Communications is requesting \$1,033,297.42 of grant funding and will contribute \$114,810.82 for the project.

Cost classification totals for this project are:

The estimated cost of the project will be \$3,158,426.12 dollars. Gascosage Electric Cooperative will be contributing 10% non-federal matching funds from its own resources. Gascosage Electric Cooperative is requesting \$2,842,768.51 of grant funding and will contribute \$315,657.61 for the project.

Cost classification totals for this project are:

[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

Le-Ru Telephone Company (Tab #19 – Detailed Budget Justification Excel)

The estimated cost of the project will be \$3,608,600.91 dollars. Le-Ru Telephone Company will be contributing 0% non-federal matching funds from its own resources. Le-Ru Telephone Company is requesting \$3,608,600.91 of grant funding and will contribute \$0.00 for the project.

Cost classification totals for this project are:

[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

Spectrum Mid-America LLC: Grayhawk (Tab #20 – Detailed Budget Justification Excel)

[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

Spectrum Mid-America LLC: Orchard (Tab #21 – Detailed Budget Justification Excel)

[REDACTED]

Spectrum Mid-America LLC: Portage (Tab #22 – Detailed Budget Justification Excel)

[REDACTED]

Boycom Cablevision (Tab #23 – Detailed Budget Justification Excel)

The estimated cost of the project will be \$1,219,100.00 dollars. Boycom Cablevision will be contributing 10% non-federal matching funds from its own resources. Boycom Cablevision is requesting \$1,097,190.00 of grant funding and Boycom Cablevision will contribute \$121,910.00 for the project.

Cost classification totals for this project are:

1. Architectural and engineering fees - \$26,010.00. [REDACTED]
2. Site Work - \$147,000.00. [REDACTED]
3. Equipment - \$439,493.76. [REDACTED]
4. Construction - \$571,088.25. [REDACTED]
5. Project inspection fees - \$5,508.00.
6. Miscellaneous - \$30,000.00. [REDACTED]
7. Land, structures, rights-of-way, appraisals, etc. -\$30,000.00. [REDACTED]



Cost Classification Category	NTIA Grant Funds Requested	Applicant's non-Federal match: CASH*
Administrative & Legal:		
Missouri Department of Economic Development	\$184,004.00	\$-
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$234,004.00	\$1,022,880.33
Land, structures, rights-of-way, appraisals, etc:		
Missouri Department of Economic Development	\$-	\$-
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		

Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$156,323.59	\$54,598.21
Relocation expenses and payments:		
Missouri Department of Economic Development	0	0
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$187,500.00	\$187,500.00
Architectural and engineering fees:		
Missouri Department of Economic Development	\$-	\$-
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		

Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$2,198,980.70	\$781,141.83
Other architectural and engineering fees:		
Missouri Department of Economic Development	\$-	\$-
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$82,008.19	\$52,856.66
Project inspection fees:		
Missouri Department of Economic Development	0	0
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		

Boycom Cablevision		
Cost Category Total:	\$18,079.20	\$2,008.80
Site Work:		
Missouri Department of Economic Development	\$-	\$-
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$915,682.88	\$111,204.85
Demolition and removal:		
Missouri Department of Economic Development	0	0
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		

Cost Category Total:	\$2,700.00	\$2,700.00
Construction:		
Missouri Department of Economic Development	\$-	\$-
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$32,022,150.23	\$19,216,739.84
Equipment:		
Missouri Department of Economic Development	\$-	\$-
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		

Cost Category Total:	\$6,180,571.84	\$2,820,529.26
Miscellaneous:		
Missouri Department of Economic Development	0	0
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$51,662.17	\$63,964.24
Contingencies:		
Missouri Department of Economic Development	\$-	\$-
Green Hills Communications		
Columbus Telephone Company		
Socket Telecom LLC		
Gateway Infrastructure		
Chariton Valley: Clarence Z1		
Chariton Valley: Clarence Z2		
Chariton Valley: Hannibal Z1		
Chariton Valley: Hannibal Z3		
Chariton Valley: Monroe City		
Chariton Valley: Palmyra Z1		
Chariton Valley: Palmyra Z2		
Chariton Valley: Palmyra Z3		
Chariton Valley: Palmyra Z4		
Gascosage Electric Cooperative		
Le-Ru Telephone Company		
Spectrum Mid-America: Grayhawk		
Spectrum Mid-America: Orchard		
Spectrum Mid-America: Portage Des Sioux		
Boycom Cablevision		
Cost Category Total:	\$191,828.32	\$317,704.97

****No in-kind presented by participants in the Covered Partnership.***

Tim Arbeiter
Director of Broadband Development
Strategy and Performance Division
PO Box 1157
Jefferson City, Mo 65101

Re: Letter of Commitment NTIA/Covered Partnership
Boycom Cablevision, Inc. Western Butler County, MO
Stringtown, FFTH

Mr. Arbeiter,

Boycom Cablevision, Inc. commits if awarded the NTIA grant to support the mission of deploying a "fixed broadband" service. This project will provide qualifying broadband to the underserved and non-served community of Stringtown, in Western Butler County, MO, supporting the cause of bridging the digital divide in this area.

Boycom will cover approximately 31 miles with this project while passing 230 homes, deploying a fixed broadband service using a FTTH GPON network.

Total cost of the project will be \$1,219,100.00. Boycom commits a match of \$121,910.00 which represents 10% of the total project cost. A Letter of Credit from Peoples Community Bank in the amount of \$750,000.00 is provided in the application.

Sincerely,


Patricia Jo Boyers
President

mat



July 23, 2021

Ms. Evelyn Remaley
Acting Assistant Secretary of Commerce for Communication and Information
Herbert C. Hoover Building (HCHB)
U.S. Department of Commerce / NTIA
1401 Constitution Avenue, N.W.
Washington, D.C. 20230

Re: NTIA Broadband Infrastructure Program

Dear Ms. Remaley,

I am pleased to pledge Chariton Valley's 10% match support funds for our NTIA Broadband Infrastructure Program. I am confident after reviewing our application that you will find Chariton Valley has the expertise, capability, and existing infrastructure to build and serve fiber to rural Missourians. As recipients of funds from Alternative Connect America Cost Model (ACAM) II, Connect America Phase CAF Phase II (Phase II), Rural Digital Opportunity Fund (RDOF), Missouri Broadband Grant funds, and CARES Act Broadband Grant Funds, Chariton Valley has shown its commitment to bridge the urban rural divide and successfully complete funded projects.

I appreciate your consideration for our application and look forward to bringing new customers onto our state-of-the-art fiber network.

Sincerely,

Kirby J. Underberg
President & CEO
Chariton Valley Communications Corporation



City of Carl Junction
303 N. Main St. PO Box 447
Carl Junction, MO 64834
417-649-7237
Fax 417-649-6843
www.carljunction.org

7/20/2021

To Whom it is Concerned:

Through this joint initiative with Columbus Telephone Company/Optic Communications, the partnership is applying for \$8,414,191 in funding from the NTIA BIP for a \$16,828,383 construction project to serve approximately 93% of the 3,339 residences, 107 businesses, and 18 anchor institutions along forty-one mainline miles in the community of Carl Junction, Missouri who do not currently have access to 25/3 Mbps. The City of Carl Junction certifies that, contrary to the FCC's 477 data, the average Internet speed available to residents and businesses within Carl Junction is an average of 11.4/2.7 Mbps based on a consumer survey updated in 2021.

As a member of the covered partnership, the City of Carl Junction will assume the role of political subdivision of a State and lead applicant. The proposed project will support the city of Carl Junction in its mission to provide high level services to each and every one of its residents and businesses; to improve quality of life and local economy. The City of Carl Junction asserts that this project does not interfere with any existing plans or ordinances, and all required municipal/city/township/county approvals will be given to begin prompt construction of project upon being awarded grant funds.

For the sake of this project, City of Carl Junction will partner with Columbus Telephone Company/Optic Communications which has been in operation since 1905, and currently provides broadband and voice services to over 1,778 residences and businesses in other communities throughout Kansas and Missouri.

This project will help deploy much needed services to unserved locations within and around Carl Junction, Missouri. To further demonstrate the commitment to this project, the City of Carl Junction will commit to fund the drop and ONT to every city facility (water towers, sewer lift stations, parks, city hall, police stations, public works, and fire stations), including funding the labor, materials, and necessary technology to serve each city location (averaging 7/1 Mbps on Internet speed tests through current provider). Columbus Telephone Company/Optic Communications plans to retain ownership of the project's infrastructure and associated assets subject to the terms and conditions of this program and, with the full cooperation of the City of Carl Junction, will assume primary operational and financial responsibility for completing the project should an award be made. We thank you for your time and consideration.

Sincerely,

Steve Lawver, EDFP
Carl Junction City Administrator

Mission Statement

The City of Carl Junction will represent our citizens, provide high level services, and plan for the future of our community.

7/21/2021

To Whom it is Concerned:

Through this joint initiative with the Missouri Department of Economic Development (DED) and the City of Carl Junction, the partnership is applying for \$8,414,191 in funding from the NTIA BIP for a \$16,828,383 construction project to serve 93% of the 3,339 residences, 107 businesses, and 18 anchor institutions along forty-one mainline miles in the rural area of Carl Junction, Missouri who do not currently have access to 25/3 Mbps broadband, as ascertained from a consumer survey and local speed tests. The average speed attained in Carl Junction is currently 11/1.5 Mbps, with an average speed test of 7/1 Mbps at city locations.

As a member of the covered partnership, Columbus Telephone Corporation/Optic Communications will assume the role of provider of fixed broadband service. Columbus Telephone/Optic Communications has always sought out innovative ways to provide the best and fastest broadband services to rural communities, one of its most recent noteworthy projects being a 1 Gbps fiber buildout to Loma Linda, Missouri. The Carl Junction proposed project will support the company in its mission to continue pioneering communication as it has done since 1905, now providing 100% fiber-optic networks to rural America. Columbus Telephone Corporation/Optic Communications currently serves 1,778 residences and businesses across Kansas and Missouri.

The Columbus Telephone/Optic Communications team has executed some of the most challenging broadband infrastructure projects in some of the most rural communities and has ensured each of its projects have been completed in accordance with project timelines and budgets and achieved intended results. Columbus Telephone/Optic Communications will be directly involved with and take the lead on engineering, construction, operation, and maintenance of such network. To further demonstrate the commitment to this project, Columbus Telephone/Optic Communications has pledged to contribute \$8,314,191 toward the project and plans to retain ownership of the funded project's infrastructure and associated assets subject to the terms and conditions of this program. The City of Carl Junction has also pledged contribution toward the project to bring 1 Gbps minimum service to all city locations; funding the drops, ONTs, labor, materials, and technology, estimated at a contribution of approximately \$100,000.

It is the intention of the Parties to work in collaboration in pursuit of funding sources for the broadband network and, achieving that, to continue their collaborative efforts to design, construct, operate and maintain such covered broadband project.

Columbus Telephone/Optic Communications is committed to serving 1/1 Gbps fiber broadband to rural Missouri to increase quality of life, expand opportunity, and improve local economy. Thank you for your time and consideration.

Sincerely,



Dave Soper

General Manager

Columbus Telephone Corporation / Optic Communications



Gascosage Electric Cooperative

P.O. Box G Dixon, Missouri 65459

July 26, 2021

Letter of Commitment

As a member of the Missouri Covered Partnership, Gascosage Electric Cooperative will undertake the following scope of work for the Dixon South Proposed Service Area (PSA):

- Engineer and design a Fiber-To-The-Home system capable of providing 1 Gigabit per second (Gb/s) symmetrical Internet service with latency less than 100 milliseconds (ms) to the upstream provider.
- Order all materials required to complete the project
- Complete required National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) reviews
- Install all equipment required to complete the project
- Verify system operates up to committed level
- Market to potential subscribers
- Install and maintain customer end equipment
- Provide customer service to all subscribers

Gascosage Electric Cooperative commits to providing a 10% cash match for the funding of the Dixon South Proposed Service Area project. Through their partnerships with CoBank and NRUCFC, Gascosage will obtain financing for the 10% match of \$316,796.25. Gascosage expects to expend the entirety of this match prior to accessing the grant funds and understands that any overruns required to fully complete the project will be their responsibility.

Sincerely,

A handwritten signature in black ink that reads "Carmen Hartwell".

Carmen Hartwell
General Manager
Gascosage Electric Cooperative
Phone 1-573-759-7146 Ext. 205
Fax 1-573-759-6188
carmen.hartwell@gascosage.coop

"People Helping People Since 1945"



Date: 7/26/2021

Letter of Commitment

Gateway Fiber is a fixed broadband service provider applying for grant funding through the National Telecommunications and Information Administration (NTIA) under the Missouri Department of Economic Development (DED) Covered Partnership.

[Redacted]

Heath Sellenriek
President

[Redacted]

Chris Surdo
Chief Financial Officer

[Redacted]



July 21, 2021

National Telecommunications
& Information Administration,
U.S. Department of Commerce,
1401 Constitution Ave,
NW Washington, DC 20230

RE: Letter of Commitment for NTIA Broadband Infrastructure Program Grant

Dear Sir or Madam:

On behalf of Green Hills Telephone Corporation (GHTC), I am pleased to submit this Letter of Commitment from GHTC regarding the NTIA Covered Partnership with the Missouri Department of Economic Development.

The project is designed to serve eligible service areas east of Chillicothe, Missouri. These locations are east of Highway 65 and both north and south of Highway 36. There are 370 locations within the Proposed Service Area (PSA), which includes 11 businesses and 2 anchor institutions. All locations will be serviced with FTTP, with 1 Gbps symmetrical speeds available at every location. The business plan includes an anticipated 75% take rate, resulting in 277 projected customers. The total cost of the project is \$4,960,356.

GHTC has experience working with the Missouri Department of Economic Development in the past, as a recipient of the DED's Emergency Broadband Fund. This project brought fiber-based services to several homes in Daviess County in 2020.

The locations in the proposed funded service area are lacking true broadband connectivity today. All locations cannot receive broadband speeds of a 25 Mbps download and 3 Mbps upload, as defined by the Federal Communications Commission. This project would bring a future-proof technology to this area and provide broadband connectivity for decades to come.

GHTC will not be contributing any matching funds for this project.

Green Hills is appreciative of the opportunity to work with the Missouri Department of Economic Development and NTIA on this important project.

Sincerely,

A handwritten signature in black ink that reads "David Adams". The signature is fluid and cursive, with a long horizontal stroke at the end.

David Adams
EVP & General Manager
Green Hills Telephone Corporation

7926 NE State Route M
PO Box 227, Breckenridge, MO 64625-0227

greenhills.net
660.644.5411



Le-Ru Telephone Company

P.O. Box 147
Stella, Missouri 64867

417-628-3844
Fax 417-628-3686

Covered Partnership Commitment Letter

Covered Partner: Le-Ru Telephone Company (hereinafter "Provider"), a Missouri Corporation, located at 555 Carter Street, Stella, Missouri 64867.

RECITALS

Whereas, this commitment is being entered into between the State of Missouri Department of Economic Development and Provider for the purpose of, and benefit to, the covered partnership in obtaining a NTIA Broadband Infrastructure Grant; and

Whereas, the grant shall be used to build fiber to the home to unserved areas; and

1. Scope of Commitment

- a. This Commitment Letter is to document the commitment of Provider to enter into a formal Partnership Agreement if the NTIA Infrastructure Application is awarded. The Partnership Agreement will detail how the parties will, individually and together, meet the requirements of the NTIA Infrastructure Program to build broadband facilities in the southeastern portion of McDonald County near the Missouri state line, comply with the applicable DOC Standard Terms and Conditions, and CFR 200 requirements as applicable.

2. Description of Project

- a. The S.E. McDonald County Project will construct Fiber to the Premise (FTTP) to 221 unserved premises in southeastern McDonald County in Missouri. These last mile facilities will be connected to the Provider's existing FTTP network connecting back to the main equipment location and ultimately to the Internet. Approximately, 56.62 miles of fiber will be constructed through the very rural Ozarks area consisting of 44.06 buried fiber main line miles and 12.56 buried fiber drop miles. An Active Ethernet FTTP architecture will be used for the project. This architecture is scalable as bandwidth demands increase over time. Broadband service of up to 1Gbps/1Gbps will be offered to locations served in the Grant area. The total cost of the project is estimated to be \$3,619,100.91.

3. Responsibilities of Le-Ru Telephone Company as the Covered Broadband Partner

- a. The Provider will have primary responsibility for engineering, constructing, and maintaining the new FTTP system to the unserved locations in the Grant Area.

- b. Provider will provide broadband service of 1Gbps/1Gbps to all unserved locations and will be committed to building the network to simultaneously be capable of delivering that speed to all locations.
- c. Provider shall be responsible for constructing the FTTP network within the NTIA Grant timeline.
- d. Provider shall be responsible for constructing the FTTP plant and network facilities within the budget of \$3,619,100.91 as provided in the NTIA Grant application.
- e. The Provider will be reliant solely upon Grant funding to complete the project and will not be contributing a 10% match.
- f. Provider shall be responsible for any indirect costs that are not covered by Grant funding.
- g. Provider shall provide financial, status and performance information to the partnership to meet the NTIA reporting requirements.

As the duly authorized representative of the Provider: I certify this commitment:

Provider Le-Ru Telephone Company

A handwritten signature in black ink, appearing to read "W. Jay Mitchell", written over a horizontal line.

W. Jay Mitchell

President



2703 Clark Lane • Columbia, MO 65202
voice: (573) 817-0000 • fax: (573) 441-1050
www.socket.net • 1-800-SOCKET-3

July 23, 2021

Tim Arbeiter, CEcD
Director of Broadband Development
Missouri Department of Economic Development
PO Box 1157
Jefferson City, MO 65102

RE: Letter of Commitment

Dear. Mr. Arbeiter:

This is Socket Telecom, LLC's ("Socket") Letter of Commitment for Socket's Proposed Broadband Project in northern Boone County. Socket is the Funded Project Participant for this proposed project. The project is budgeted for \$12,009,797. Socket is seeking a grant in the amount of \$5,005,418. Socket is contributing more than 10% of the requested grant amount. Socket will contribute the remainder of the budgeted amount of \$7,004,379.

With this project Socket will construct a fiber to the premise network and will provide synchronous 1Gbps Internet exceeding the requirements of a Qualified Broadband Service to every unserved premise in the Eligible Service Area which is 2,980 unserved premises. The service provided over this network will also meet all latency and other requirements including future technology scalability as well as future geographic expansion.

The matching funds will come from internal cash flow. Socket's ability to provide the matching funds is shown in the Audited Financial Statements included in the application.

If you have questions or need further information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "George A. Pfenenger".

George A. Pfenenger
Chief Executive Officer



Ms. Evelyn Remaley
Acting Assistant Secretary of Commerce for Communications and Information
National Telecommunication and Information Administration
1401 Constitution Avenue, NW
Washington, DC 20230

Re: Letter of Commitment to Partner with the Missouri Department of Economic Development in Applying for Grant under the National Telecommunications and Information Administration's ("NTIA") Broadband Infrastructure Program

Dear Acting Assistant Secretary Remaley:

I am writing on behalf of Spectrum Mid-America, LLC (hereinafter "Charter") to express Charter's commitment to partner with the Missouri Department of Economic Development in connection with the National Telecommunications and Information Administration's Broadband Infrastructure Program. I am authorized to offer this commitment on the company's behalf.

If NTIA issues an award under the requested grant set forth in the accompanying application, Charter commits to partnering with the Missouri Department of Economic Development on the proposed project, described in the application, to bring Charter's high-speed broadband internet access services to areas identified as in need of such services as set forth in the application. As set forth in greater detail in the application, Charter would assume responsibility for managing all aspects of the construction effort, including project design, including data collection, securing permits, completing a construction plan, and overseeing the construction and eventual operation of the proposed broadband network. Additionally, Charter would contribute its own funding and personnel to the project as described in the application and accompanying proposed budget, and would also oversee maintenance of the system, customer intake, and service delivery once the project is completed. Charter would partner with the Missouri Department of Economic Development, as needed, to coordinate the verification of addresses served by the project and elimination of any regulatory barriers.

More details can be found in the accompanying application. We look forward to working with you on this endeavor, and would be happy to further discuss if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Thomas E. Adams".

Thomas E. Adams
Executive Vice President, Field Operations
Charter Communications



August 16, 2021

Evelyn Remaley
Acting Assistant Secretary for Communications and Information
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW, Room 4898
Washington, DC 20230

Re: Missouri's Letter of Commitment
NTIA Broadband Infrastructure Program 2021

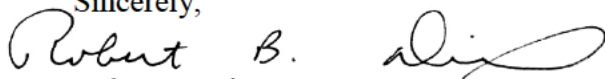
Dear Assistant Secretary Remaley,

The Missouri Department of Economic Development (the "Department"), the lead applicant in the State of Missouri's Covered Partnership Application (the "Application"), is pleased to include our Letter of Commitment for the NTIA Broadband Infrastructure Program (the "Program"). Although the State of Missouri will not be providing funds for the projects included in the Application, the Department will enter into the grant agreement with NTIA, receive grant funds, and retain and disburse the grant funds in accordance with NTIA and other state and federal requirements. The Department will assume primary operational and financial responsibility for ensuring awarded projects are completed. The Department commits to the required reporting and administrative functions outlined in the Program's Notice of Funding Opportunity (the "NOFO").

The Department plans to enter into an agreement with each fixed broadband provider whose project is approved for Program funding, which will (1) detail the roles and responsibilities of each member of the covered partnership in the proposed project; (2) detail each member's commitment to fulfilling the intent of the proposed project, and (3) be signed by an authorized representative of each member of the covered partnership. The Department will require compliance with the terms of the grant agreement the Department enters into with NTIA, the Consolidated Appropriations Act of 2021, the NOFO, non-federal match commitments, and any other applicable federal laws and regulations.

If you have any questions regarding our commitment to the grant program, please contact Tim Arbeiter, Director of Broadband Development, at Timothy.Arbeiter@ded.mo.gov or 573-694-8785.

Sincerely,


Robert B. Dixon
Director



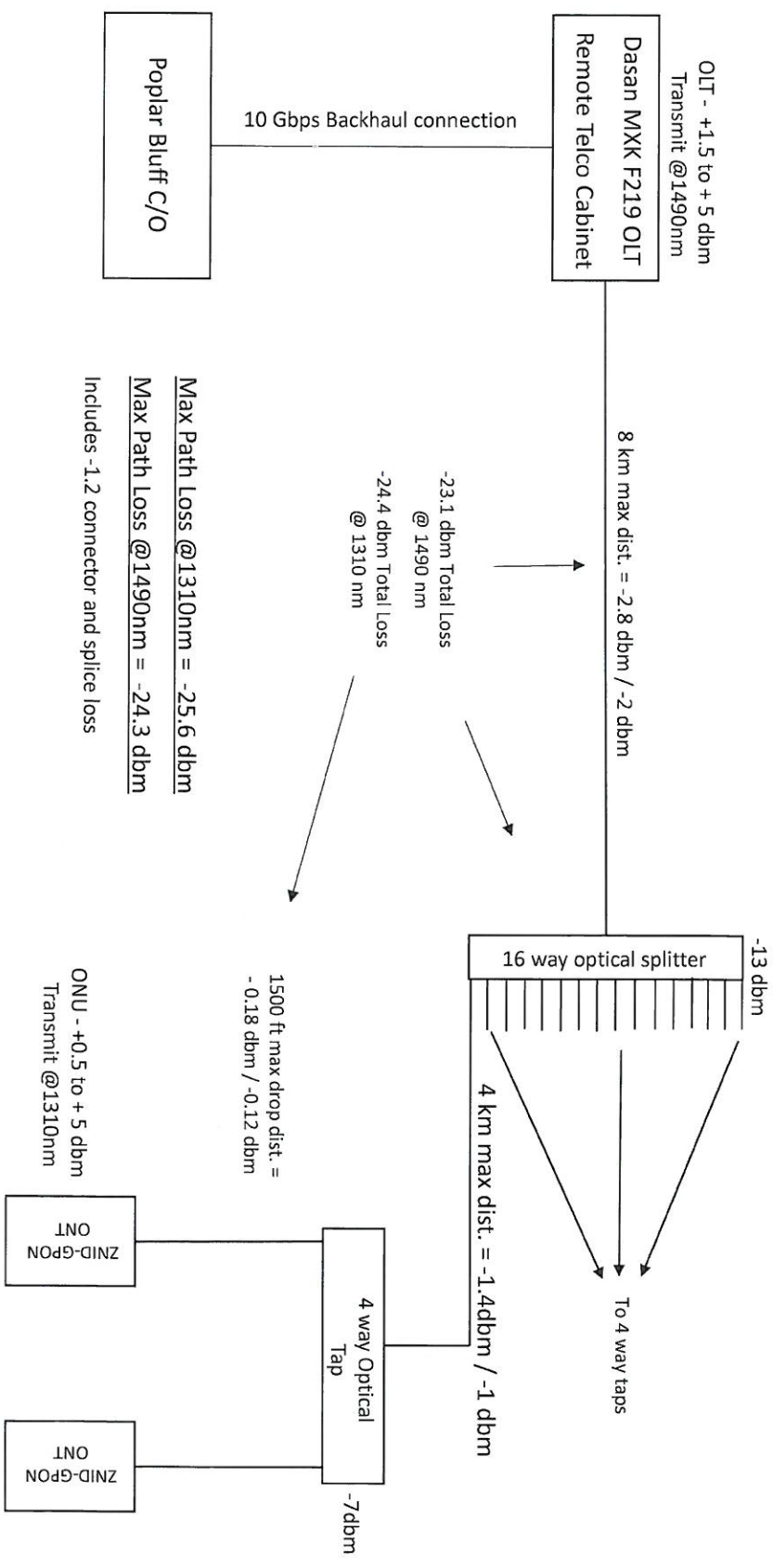


Missouri NTIA Broadband Infrastructure Program

Boycom Cablevision, Inc.
Poplar Bluff, Butler County

Rural Western Butler County Missouri
(Stringtown)

Western Butler County Missouri – Stringtown Fiber to Home Design



Boycorn Cablevision Inc.

Western Butler Co MO - Stringtown Project



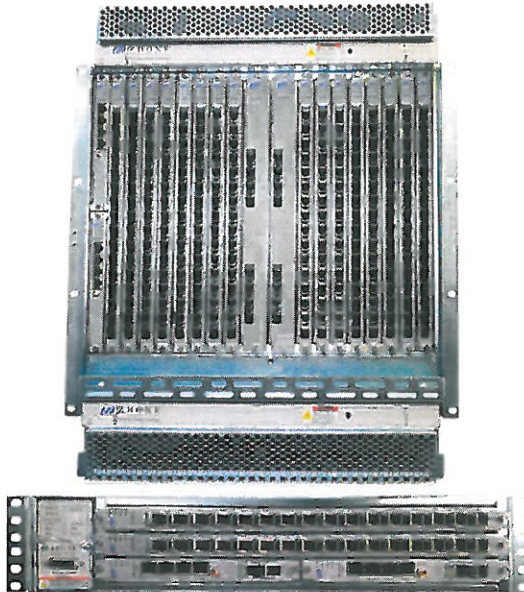
Legend

 Stringtown Area



Google Earth

- ✓ *Highly-scalable aggregation solution for ultra high-capacity fiber access services*
- ✓ *Superior intelligence and security with proven SLMS access operating system software*
- ✓ *Intuitive, comprehensive management, with CLI, Unified Services Provisioning, and ZMS*
- ✓ *Flawless delivery of multi-play services over any FTTx architecture*
- ✓ *Industrial temperature hardened*



Demands on access networks continue to accelerate, and technology advances change and evolve at light speed to cope with this growth. To build a platform with more than 10-years reach requires a networking innovator with extraordinary vision, proven bench strength and experience, and of course, exceptional technology to keep pace.

With over 1,000 global customers deploying Zhone's world-class solutions for their service provider and enterprise networks, in some of the harshest and most demanding environments in the industry in its pedigree, Zhone's MXK-F™ ultra high-capacity fiber-optimized aggregation platform is the latest cost-effective addition to its world renowned MXK™ portfolio.

The MXK-F™ chassis architecture is designed around a dual star design with redundant ultra high-speed links to each subscriber line card slot for future-proof support of today's and tomorrow's bandwidth-hungry fiber-based subscriber services. Also MXK-F™ management control and aggregation switch fabric functions reside on two separate cards, each of which can be equipped in a redundant configuration; MCs (Management Cards) and FC (Fabric Cards). Lastly, a fully-distributed database and parallel firmware loading enable simple fast upgrades.

With a solid, wide foundation to build upon, MXK-F™ is well-suited as high-density fiber-based service platform to cost-effectively deliver ITU-T G.984 GPON, IEEE 802.3-2008 1 and 10Gb/s Active Ethernet, ITU-T G.987 XGPON1, ITU-T G.989 NGPON2, and other advanced fiber-based services for residential triple play and high-bandwidth business services over any FTTx architecture.

MXK-F™ Chassis

MXK-F1421 is designed to be fully-compliant to meet the ETSI EN 300 standard for indoor cabinets and contains 16-access multi-service subscriber slots, and 2-network facing slots. MXK-F1421 can be mounted directly into a 21" wide rack, and into a 23" rack with adapter brackets. The chassis is equipped with a cable management tray, easy fan access, and rear-powered redundant power feeds.

MXK-F1419 is also designed to be fully-compliant to meet the ETSI EN 300 standard for indoor cabinets and contains 14-access multi-service subscriber slots, and 2-network facing slots. MXK-F1419 can be mounted directly into a 19" wide rack. The chassis is equipped with a cable management tray, easy fan access, and rear-powered redundant power feeds.

Rounding out the MXK-F™ product line is the MXK-F219. With its MXK-F14xx lineage, it has exactly the same high-capacity backplane and high-speed virtues found in its larger siblings - except on a 2U 19" form factor.

A favorite in enterprise, hospitality, and academic applications, MXK-F219 contains 2-access multi-service subscriber slots, 2-network facing slots, and supports the exact same line cards as the MXK-F14xx.

That means whether being deployed by an enterprise IT director, or by a service provider servicing a niche market, MXK-F219, like all members of the MXK-F™ family, provides plenty of future-proof capability for 1G to 40G Active Ethernet, as well as GPON, XGPON1, XGSPON, and NGPON2 service requirements, and future undefined services.

MXK-F™ Fabric Cards

As the aggregation point for all MXK-F14xx platforms, MXK-F™ Fabric Cards provide a wide variety of network facing uplink options. These cards provide the network interface for cloud-bound link aggregation, link redundancy, and EAPS ring solutions.

MXK-F™ Management Cards

At the heart of this highly-capable platform is the MXK-F™ Management Card. With countless years of proven field experience, the management architecture of the MXK-F™ represents Zhone's latest state-of-the-art design, further raising the bar set high by other Zhone MXK-family

solutions.

With a fully distributed database, both boot and upgrade times are exceedingly low to reduce enterprise and service provider OPEX, and since the forwarding plane control does not reside on the MXK-F™ Management Card, reboots and upgrade events are much simpler ensuring an optimal level of both reliability and availability - particularly when optionally equipped with redundant MXK-F™ Management Cards.

Also, in addition to its management duties and user interface support ports, MXK-F™ Management Cards provide synchronization connection points for Synchronous Ethernet, 1588v2, and E1/T1/BITS timing inputs.

MXK-F™ Access Service Cards

The MXK-F™ platform supports a 16-port GPON OLT access service card providing standards-based support of 2.5Gbps downstream and 1.25 Gbps upstream bandwidth.

The largest MXK-F1421 chassis supports up to 256 OLT ports, and with 128-splits and the use of Class C+ optics, the platform can support up to 32,768 ONTs.

SLMS

As with all products within the MXK™ portfolio, MXK-F™ utilizes Zhone's proven SLMS™ access operating system, providing intelligent, common functionality across all the company's hardware products. Driven by more than a decade of experience in commercial operation and collaboration with more than 1000 service providers and enterprise customers worldwide, Zhone SLMS™ software delivers functionality critical to today's access networks in advanced networking, quality of experience, security, and management.

Security

To maintain tight security in the last mile, the MXK-F™ platform mounts considerable defenses, powered by all of Zhone's SLMS security features, including multicast control lists, secure bridging, broadcast storm detection and suppression, dynamic IP filtering, SSH and SFTP, and RADIUS authentication.

Smart OMCI

Unlike vendors who have dodged the complexity of the ITU's G984.4 standard for GPON ONT management, Zhone provides a simple and clean interface to a fully standards-compliant OMCI implementation. Zhone's Smart OMCI™ approach allows the MXK-F™ OLT to interoperate with any vendor's ONT, yielding rapid ONT and service extension without OLT software upgrades. Smart OMCI allows the user to configure flows, obtain stats, and support alarms on virtually any ONT.

Cabinets

While Zhone offers a full line of outside cabinets engineered specifically to support MXK-F platforms with a wide range of powering, and fiber termination options, all Zhone MXK-F™ chassis are ETSI indoor cabinet compliant. This means that any MXK-F™ can be mounted within a 300mm deep cabinet, or two of them can be mounted back-to-back in a 600mm deep cabinet. This provides service providers and enterprise customers alike plenty of packaging options where available footprint is always at a premium.

Technical Specifications

Dimensions

- MXK-F219: 3.47" (2U) x 17.38" x 11.02"
(88.1mm x 441mm x 280mm)
- MXK-F1419: 24.49" (14U) x 17.38" x 11.02"
(622mm x 441mm x 280mm)
- MXK-F1421: 24.49" (14U) x 19.25" x 11.02"
(622mm x 489mm x 280mm)

Power

- Nominal power consumption (includes fans)
 - MXK-F219: 15W
 - MXK-F1419: 92W
 - MXK-F1421: 115W
- Operating voltage: -43.75V to -59.9V DC
- Dual (A / B redundant) power feeds

Standards Support

- ETSI EN 300_119-3_v2.2.2_09-2009

Regulatory Compliance

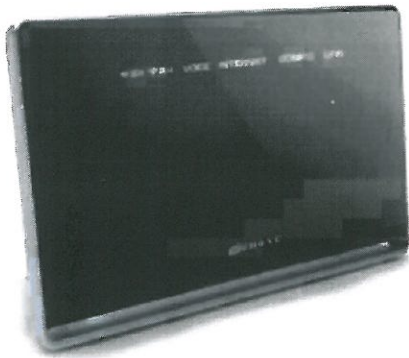
- Safety: UL 60950-1/R:2011-12, CAN/CSA C22.2 No. 60950-1/A1:2011, EN 60950-1/A2:2013
- Emissions: FCC Part 15 Class A, ICES-003 Class A, EN 55022:2010 Class A, ETSI EN 300 386 V1.6.1

Operating Requirements

- Ambient operating temperature
 - MXK-F1419/F1421: -40° F to 131° F (-40° C to +55° C)
 - MXK-F219 (DC mains): -40° F to 149° F (-40° C to +65° C),
 - MXK-F219 (w/ MXK-PWR-AC-SUPPLY-300W): 32° F to 104° F (0° C to +40° C)
- Storage Temperature: -40°C to 65°C (-40° F to 149° F)
- Relative operating humidity: up to 85% (non-condensing)
- Designed for outside plant deployment
- Altitude: -200 ft to 16,500 ft (-60 m to 5,000 m)
- Field replaceable filters and fans

DATA SHEET

zNID 2700A1 Series Indoor GPON ONT with dual-band 802.11ac wifi: 2726A1, 2726H1, 2727A1



Features

- Standard ITU G.984 GPON
- Triple-Play QoS
- VoIP with CLASS 5 Features
- 11b/g/n/ac WiFi
- Lightning-fast WiFi speeds
- Optional RF Video
- Optional HPNA over Coax

Overview

The DZS 2700A1/H1 series indoor GPON ONT combines dual-band 802.11ac WiFi capability with a stylish table-top finish to bring next-generation connectivity and best-of-class performance to Fiber-to-the-Home/Hotel deployments.

Five internal high-gain antennas enable concurrent dual-band radios (2.4 and 5.8GHz) WiFi radios to independently connect multiple users and devices simultaneously, including older 802.11b/g/n devices. The 2700A1/H1 GPON ONT is ideal for providing WiFi coverage in large homes, home theaters, and hotel guest and conference rooms facing a variety of laptops and mobile devices.

The 2726A1 GPON ONT provides four 10/100/1000Mbps LAN ports, two FXS Voice ports, and one USB port. The future-proof GPON optics include a WBF (wavelength-blocking filter) for coexistence with Next-Gen-PON ONTs. The four Ethernet LAN ports can be separated into different services allowing the configuration of dedicated ports for IP video and data. The 2727A1 GPON ONT adds an RF Video port for overlay applications. The 2726H1 GPON ONT supports HCNA (HomePNA over Coax), giving greater flexibility to service providers who want to take advantage of existing coaxial network in the user's home eliminating the need to run new cables.

The 2700A1/H1 GPON ONT sits upright and its attractive, modern enclosure requires a small footprint making it equally at home on a living room bookshelf or as a polished accessory in high-end commercial accommodations. An easy to use wall-mounting bracket is also included. Simplified and easy-to-read indicators allow for quick trouble-shooting even with no internet connection to avoid unnecessary cable-pulling and power-cycling. Hospitality installations will appreciate the guest-friendly indicator modes (Day, Night, Off). Extensive diagnostics in the ONT (run locally on the ONT or remotely from the NOC) reduce service call disruptions.

The supported industry-standard SIP and MGCP VoIP signaling provides reliable voice services. DZS' experience with packet voice ensures interoperability and support with a large number of soft switches and with the ability to tailor the VoIP solution by selecting from a list of over 30 countries.

Flexible management means the 2700A1/H1 GPON ONT may be provisioned using the same intuitive and easy-to-navigate Web interface and CLI as the DZS 2400, 2600, 2800 and 4200 series ONTs, as well as through GPON-standard OMCI, USP (Unified Service Provisioning), the DZS Network Management System (ZMS), or using a TR-069 compliant ACS. Software upgrades and configuration backups can be handled automatically by the ZMS using the CPE Manager feature.

Specifications

WEIGHT & DIMENSIONS

- 28 oz (0.8 kg) 1.54 in.

Main Body

- Height: 6.7 in (170 mm)
- Width: 11.0 in (280 mm)
- Thickness: 1.4 in (35 mm)

Desktop Footprint Depth

- 4 in (60 mm)

POWER

- 12VDC, 2.0A max
- 12VDC Power Supply: 100-240VAC, 50/60 Hz, 36W out
- Round barrel-type connector for power input
- 2x4 Molex-type connector for optional BBU power input with alarm reporting

INTERFACES

Network Interface (GPON Uplink)

- SC/APC connector
- Full ITU-T G.984 compliance
- Class B+ optics
- 985 wavelength blocking filter
- GPON Type B redundancy support

GPON Tx

- Upstream data rate 1.25 Gbps
- 1310 nm optics
- DFB transmitter
- Launch Power: +0.5 to +5 dBm

GPON Rx

- Downstream data rate: 2.5 Gbps
- 1490 nm optics
- APD/TIA receiver
- Receiver Sensitivity: -28 dBm
- Input power overload: -8 dBm
- Input power damage: +5 dBm

RF Video Rx

- 1550nm optics
- Usable input power range: -8 dBm to +2 dBm
- Input power overload: +2 dBm
- Input damage level: +5 dBm

LAN Ports

- Four 10/100/1000Base-T LAN ports
- RJ-45 connectors
- Auto-MDI-X crossover control
- Auto-Speed or manual selection

POTS Ports

- Two FXS ports
- RJ-11 connectors
- 5 REN per line
- Battery voltage: -48VDC
- Max loop current: 40mA
- Ringing voltage: 48Vrms @ 20/25 Hz

WiFi – 802.11b/g/n:

- 4 GHz band
- 2x2 MIMO
- Two +3 dBi internal antennas
- Channel width: 20 MHz, 40 MHz
- Max WiFi Connect (Phy) Rates: 54 Mbps (g); 270 Mbps (n)

WiFi – 802.11a/n/ac:

- 5 GHz band
- 3x3 MIMO
- Three +3 dBi internal antennas
- Channel width: 20 MHz, 40 MHz, 80 MHz

USB Ports

- One USB 2.0 port
- 3G dongle support for uplink fallback

RF Video Output Port (optional)

- 1 x F-Type connector
- RF output impedance: 75 ohms
- RF passband: 47 to 1000 MHz
- RF output level: 17 dBmV minimum (550 MHz, 3.5% OMI per channel)

HCNA Output Port (optional)

- 1 x F-Type connector
- RF output impedance: 75 ohms
- HomePNA 3.1 over Coax support

Specifications

STANDARDS SUPPORT

- ITU-T G.984 compliant
- IEEE 802.3 Ethernet
- IEEE 802.1p/q VLANs
- IEEE 802.3u Fast Ethernet
- IEEE 802.3ab 1000Base-T

VOICE

- SIP (RFC 3261)
- MGCP
- Codec: G.711 (u-law and A-law), G.729B, G726
- DTMF dialing
- Echo cancellation
- Voice Activity Detection and Comfort Noise
- Insertion
- Caller ID, Call Waiting, Call Forwarding, Call Transfer, Three Way Calling, Distinctive Ringing
- G.711 fallback for FAX
- T.38 FAX support
- DHCP client or static IP configuration

WIRELESS

- SSIDs: 4 @ 2.4GHz + 4 @ 5.8GHz
- Max number of subscribers: 64 per Radio
- Max 2.4GHz Tx power: 100 mW (EU models)
- Max 2.4GHz Tx power: 600 mW (US models)
- Max 5.8GHz Tx power: 400 mW (all models)
- Authentication Security: WEP, WPA-PSK, WPA2, WPA2-PSK, 802.1x
- Encryption: WEP (64-bit, 128-bit), AES, TKIP+AES
- WPS modes: push-button, API PIN, STA PIN
- RADIUS Server support
- MAC address filtering
- Access Point and Wireless Bridge modes

PROTOCOL SUPPORT

QOS

- Ethernet bridging/switching per IEEE 802.1p/802.1q
- Traffic management (priority queuing and traffic shaping)
- QoS with support for IEEE 802.1p + DSCP

VLANS

- Per port IEEE 802.1q VLAN ID processing
- All VLAN IDs supported in Open Trunk Mode
- Maximum of 12 VLANs per LAN port in Filtered Trunk Mode
- VLAN tagging/untagging
- VLAN Stacking (QinQ)
- VLAN Switching
- SSID to VLAN Mapping

IPTV

- IGMP v2/v3 Snooping
- VLAN support

Layer 2

- IEEE 802.3n flow control
- Automatic MAC learning and aging
- Support for up to 4,096 MAC addresses for RG traffic flows
- Broadcast storm control

IP Routing and Firewall

- PPPoE
- NAT/NAPT
- Port forwarding
- DHCP Server
- DNS Proxy

MANAGEMENT

- OMCI
- Web UI
- CLI
- SNMP
- TR-069, TR-104 and TR-98
- USP (Unified Service Provisioning)

OPERATING REQUIREMENTS

- Operating Temperature: 0°C to +40°C
- Storage Temperature: -20°C to +85°C
- Relative Humidity: 0 to 95%, non-condensing

REGULATORY COMPLIANCE

- CE
- UL/CSA
- FCC Part B
- 21 CFR 1040.10, 1040.11
- RoHS 2011/65/EU

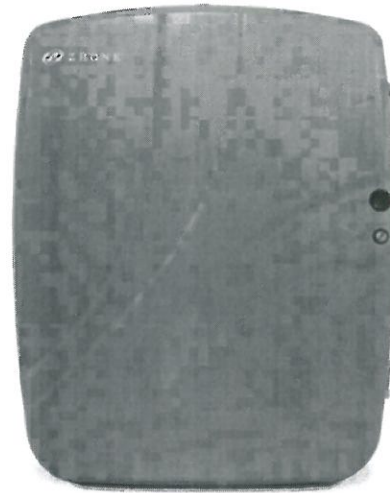


Ordering Information

MODEL	DESCRIPTION
ZNID-GPON-2726A1-xx	Indoor GPON ONT, 4xGE, 2xPOTS, 802.11b/g/n/ac WiFi; xx = 00, EU, NA, UK power supply options
ZNID-GPON-2726H1-xx	Indoor GPON ONT, 4xGE, 2xPOTS, 802.11b/g/n/ac WiFi, HCNA; xx = 00, EU, NA, UK power supply options
ZNID-GPON-2727A1-xx	Indoor GPON ONT, 4xGE, 2xPOTS, 802.11b/g/n/ac WiFi, RF Video; xx = 00, EU, NA, UK power supply options

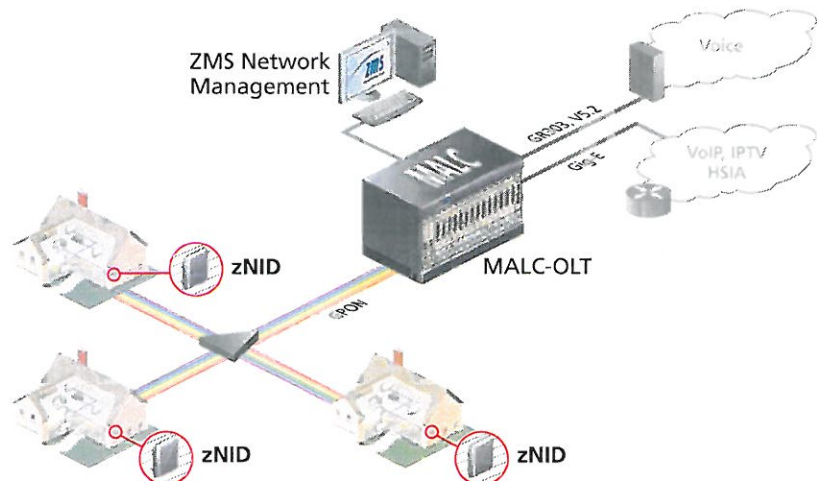
GPON ONT with integrated intelligent gateway functionality.

- ✓ *Triple Play Services - IP Video, VoIP, High Speed Internet Access*
- ✓ *No New Home Wiring - HPNA supported simultaneously on Coax and Phone Line eliminates the need to run new wires.*
- ✓ *Two Step Easy Installation - Install fiber enclosure without the need for electronics. Electronics can be installed after services are ordered.*
- ✓ *Remote Management - Web GUI, SNMP, and ZMS.*



The zNID is an intelligent NID supporting GPON termination with full-featured gateway functionality providing an ideal solution for FTTH deployments.

Triple Play services - IPTV, POTS or VoIP, and High Speed Internet Access (HSIA) - over existing coax and/or phone line make service offerings and installations flexible and easy.



No New Home Wiring

The zNID product line is the first gateway on the market to support both HPNA over coax and phone line using two HPNA chipsets giving greater flexibility to service providers who want to take advantage of the network already installed in the user's home. The zNID is able to guarantee the best throughput possible over the coax network and the phone line network giving added flexibility when offering triple play services. HPNA over the existing coax and the existing phone line simultaneously virtually eliminates the need to run new cables.

Gateway Features

The zNID is a full-featured gateway supporting services such as DHCP server, ALG's, scheduling, comprehensive logging, and more. The zNID product line implements a very flexible QoS allowing the service provider to guarantee that services are being prioritized correctly and the end-user is getting the Quality of Experience that is expected.

Enclosure

The enclosure can be installed in two stages for carriers wanting to terminate fiber before installing the active components. A small plastic enclosure can be installed first allowing the installer to terminate the fiber. Later, when the customer has ordered service, the active components are snapped into the fiber enclosure, allowing for a quick and easy installation.

Management

The zNID has a very intuitive Web interface. The zNID is also managed by the Zhone Network Management System (ZMS), using SNMP. Software upgrades, or configuration backups are handled automatically by the ZMS. The zNID can also be managed using OMCI, with Zhone's Smart OMCI tool.

Technical Specifications

Dimensions

- 12.7 in. H x 9.9 in. W x 3.8 in. D
- 32.2 cm H x 25.1 cm W x 9.7 cm D

Weight

- 3.5 lbs. (1.6 kg)

Power

- 12 Vdc
- Max Power: 15W
- Power options include:
 - Separate Indoor battery backup
 - Separate Outdoor battery backup
 - Standard 7-pin power and alarm connector.
 - Optional 2-pin power and alarm module.

Interfaces

- Uplink options:
 - SC/APC connector for GPON
 - OptiTap support
- Common interfaces:
 - 2x FXS
 - 2x RJ45 10/100/1000Base-T
 - 6x RJ45 10/100/1000Base-T (4226 model only)
 - 1x Coax type F connector for HPNA
- USB Craft Port
- HPNA:
 - First phone line
 - Coax

Standards Support

- IEEE 802.3 Ethernet
- IEEE 802.1p/q VLANs
- IEEE 802.3u Fast Ethernet
- IEEE 802.3ab 1000 Base-T

Voice Support

- SIP
- SIP-PLAR
- MGCP
- Codec Support: G.711, G.726, G.729a
- Major CLASS features supported
- Three way calling, distinctive ringing
- 5 REN per port

Protocol Support

- DHCP Server, DHCP Client
- IP Routing and Bridging
- NAT
- Virtual LAN bridging (VLAN)
- Firewall and Security
- QoS
 - 802.1P/Q prioritization
 - Diffserv (RFC2474, RFC2475) marking and queuing
 - Traffic shaping – bandwidth management and rate limiting
- IPTV:
 - IGMP Multicast
 - IGMP Snooping

Management

- Web GUI
- ZMS (Zhone Management System) CPE Manager
- CLI
- SNMP

Bandwidth/Distance

- GPON interface with Class B+ optics (20km)
- 1310nm
 - Launch Power:
 - Minimum 0.5 dBm
 - Average 2 dBm
 - Maximum +5 dBm
- 1490nm
 - Sensitivity -28 dBm

Regulatory Compliance

- EMC: FCC Part 15 Class A, ICES-003 Class A, EN55022 Class A, EN55024
- Safety: UL60950-1, CSA C22.2 No. 60950-1, EN60950-1
- Network: FCC Part 68, IC CS-03

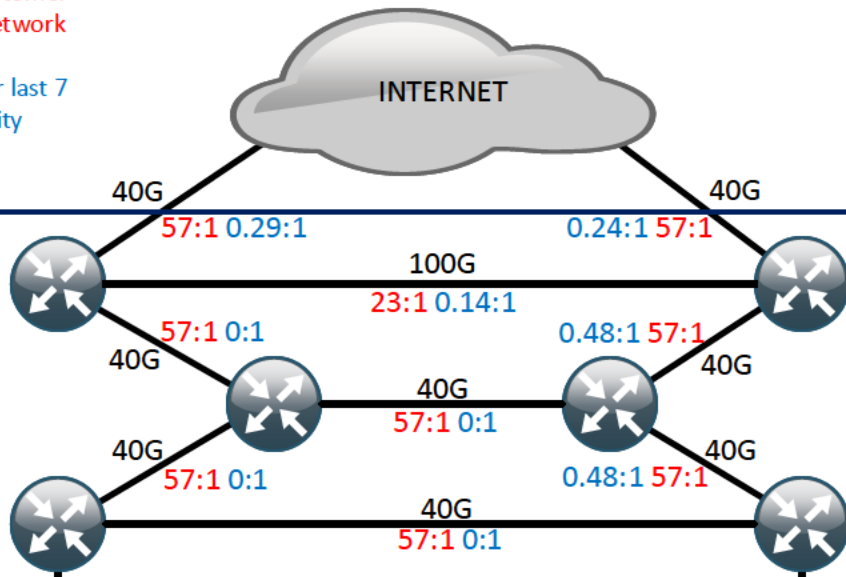
Operating Requirements

- Temperature: -40°C to +60°C
- MTBF: greater than 100,000 hours

Ordering Information

ZNID-GPON-4220	Outdoor ONT, 2x Voice, 2x GE, with Fiber enclosure.
ZNID-GPON-4220-EL	Outdoor ONT, 2x Voice, 2x GE. Electronics only. Power and Fiber enclosure sold separately.
ZNID-GPON-4221	Outdoor ONT, 2x Voice, 2x GE, RF Overlay, with Fiber enclosure.
ZNID-GPON-4221-EL	Outdoor ONT, 2x Voice, 2x GE, RF Overlay. Electronics only. Power and Fiber enclosure sold separately.
ZNID-GPON-4222	Outdoor ONT, 2x Voice, 2x GE, HPNA-Coax, with Fiber enclosure.
ZNID-GPON-4222-EL	Outdoor ONT, 2x Voice, 2x GE, HPNA-Coax. Electronics only. Power and Fiber enclosure sold separately.
ZNID-GPON-4223	Outdoor ONT, 2x Voice, 2x GE, HPNA-Coax, RF Overlay, with Fiber enclosure.
ZNID-GPON-4223-EL	Outdoor ONT, 2x Voice, 2x GE, HPNA-Coax, RF Overlay. Electronics only. Power and Fiber enclosure sold separately.
ZNID-GPON-4224	Outdoor ONT, 2x Voice, 2x GE, HPNA-Coax, HPNA-Phone, with Fiber enclosure.
ZNID-GPON-4224-EL	Outdoor ONT, 2x Voice, 2x GE, HPNA-Coax, HPNA-Phone. Electronics only. Power and Fiber enclosure sold separately.
ZNID-GPON-4226	Outdoor ONT, 2x Voice, 6xGE, with Fiber enclosure.
ZNID-GPON-4226-EL	Outdoor ONT, 2x Voice, 6xGE. Electronics only. Power and Fiber enclosure sold separately.
ZNID-ENCL-422x	zNID-422x fiber termination enclosure. (GPON electronics sold separately.)
ZNID-ENCL-422x-OPTITAP	zNID-422x OPTITAP fiber termination enclosure. (GPON electronics sold separately.)
ZNID-ENCL-422x-STORAGE	zNID-422x Slack cable storage enclosure.
ZNID-BATT-IN-12V27W-xxxx-D	zNID indoor battery backup. xxxx = 003G, EU3G, NA3G, UK3G
ZNID-BATT-OUT-XX	zNID outdoor battery backup. XX = NA, EURO, UK

X:X – Oversubscription rate of customer provisioned rates compared to network capacity
 X:X – Actual Peak usage ratio over last 7 days compared to network capacity



Internet

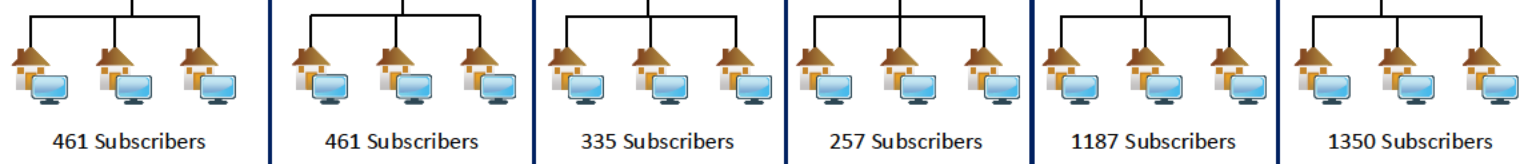
Routing Core

DWDM Ch1 – 56:1 0.43:1
 DWDM Ch2 – 14:1 0.13:1
 DWDM Ch4 – 57:1 0.8:1

Middle Mile

Randolph Co Moberly 17:1
 Monroe Co Moberly 17:1
 Monroe Co Jacksonville 4:1
 Marion Co Hannibal 9:1
 Linn Co Brookfield 29:1
 Macon Co Atlanta 28:1

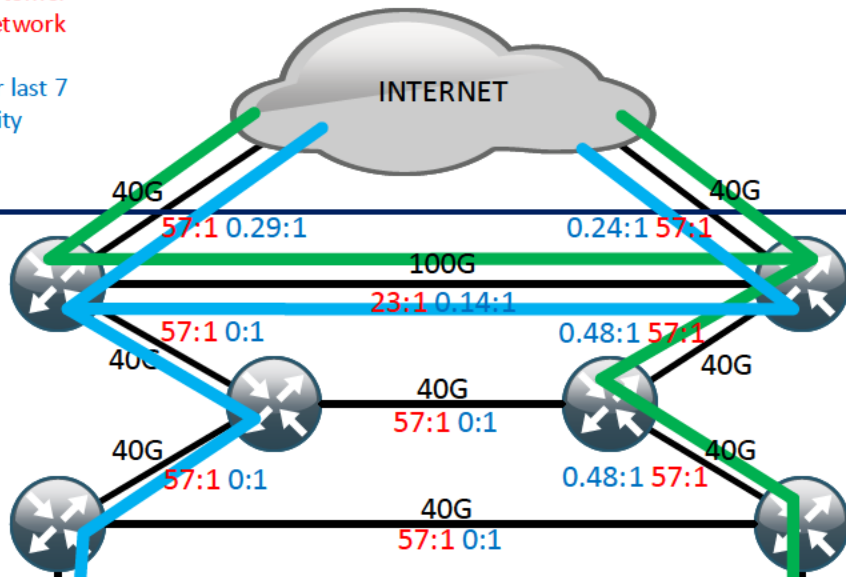
Last Mile



Customer Premises

X:X – Oversubscription rate of customer provisioned rates compared to network capacity
 X:X – Actual Peak usage ratio over last 7 days compared to network capacity

Primary Traffic Path
 VRRP Failover Path



Internet

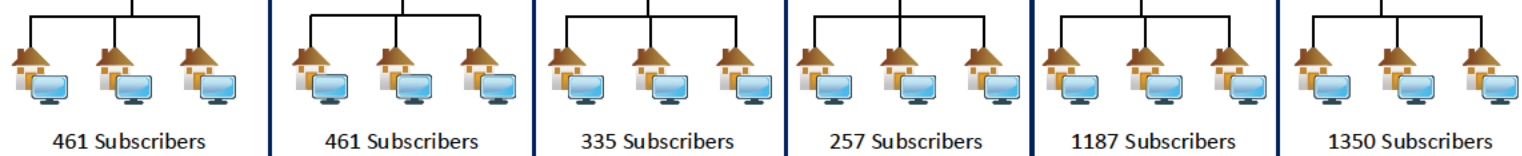
Routing Core

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Middle Mile

Randolph Co Moberly 17:1
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 Marion Co Hannibal 9:1
 Linn Co Brookfield 29:1
 Macon Co Macon F 28:1

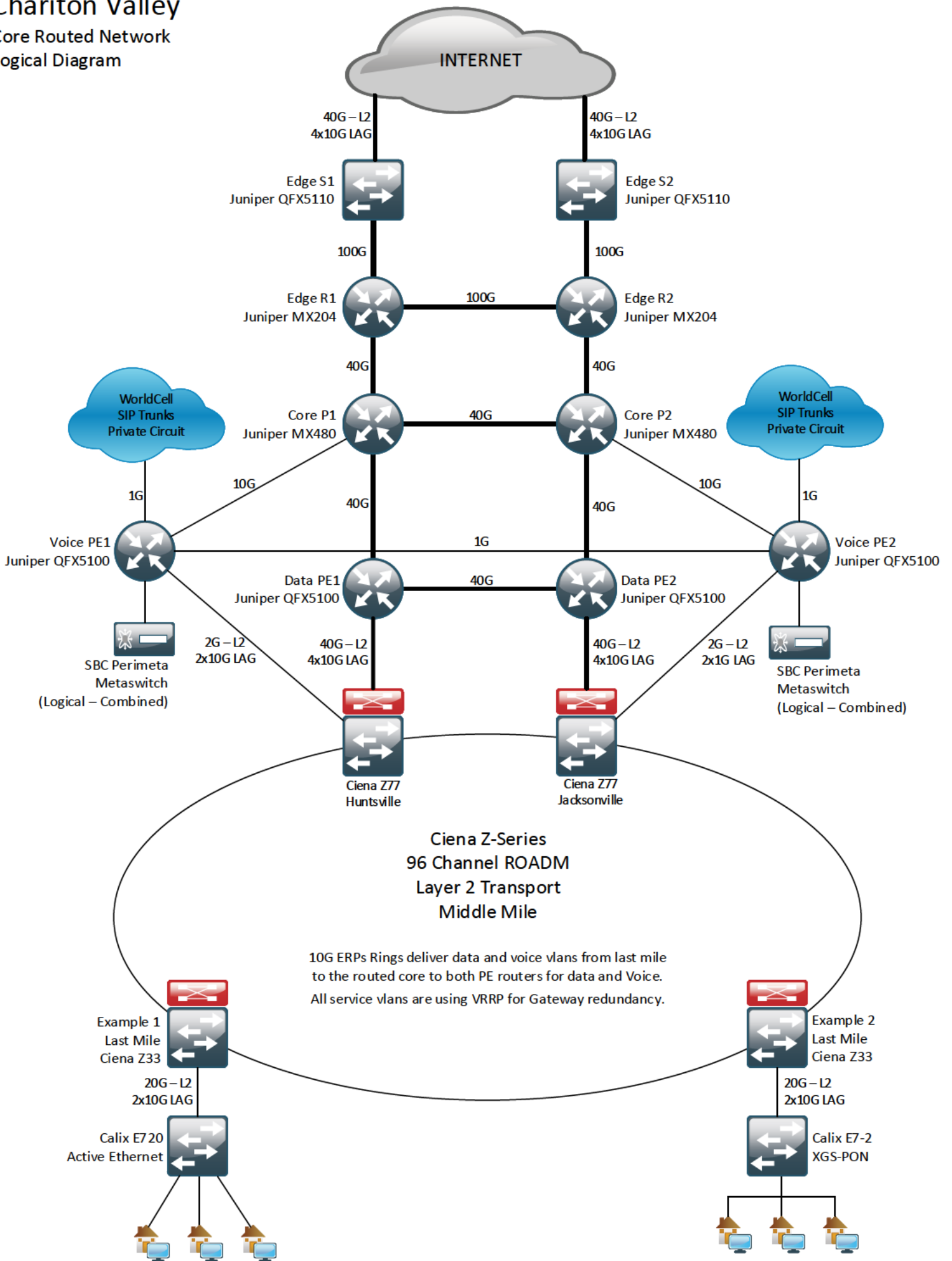
Last Mile



Customer Premises

Chariton Valley

Core Routed Network Logical Diagram

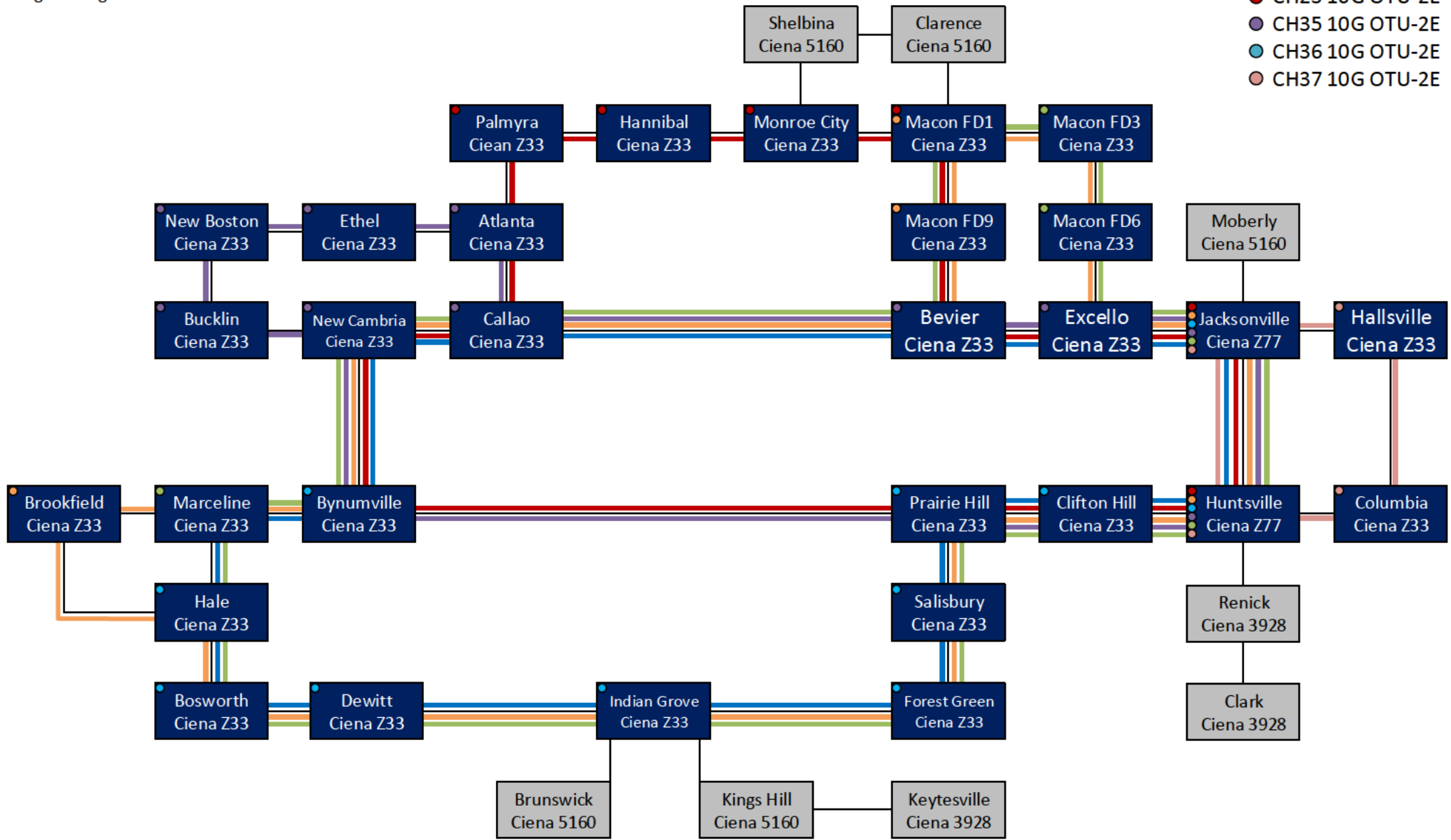


Chariton Valley

Ciena Z-Series ROADM Network
Middle Mile Transport
Logical Diagram

Key

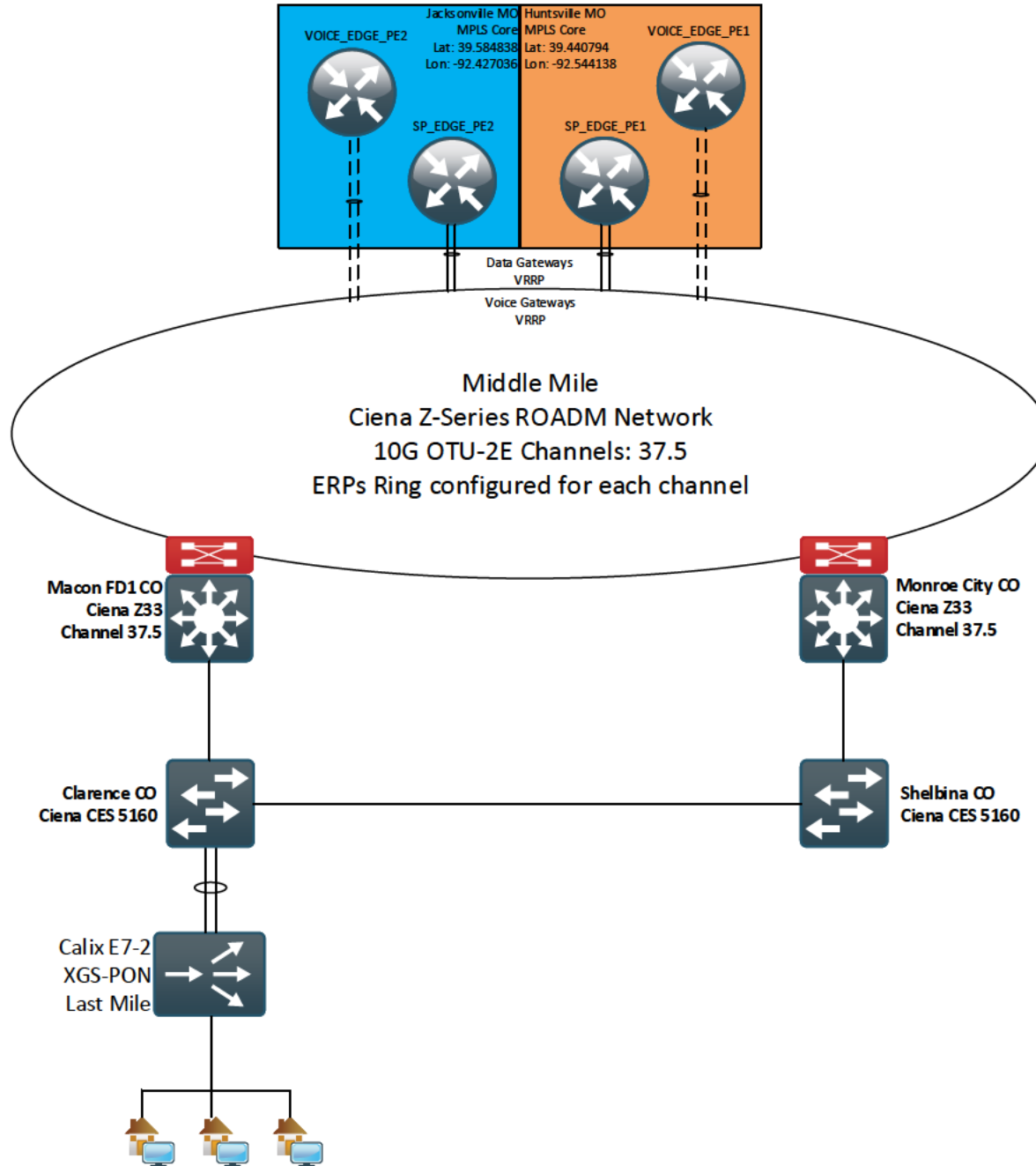
- CH21 10G OTU-2E
- CH22 10G OTU-2E
- CH23 10G OTU-2E
- CH35 10G OTU-2E
- CH36 10G OTU-2E
- CH37 10G OTU-2E



NTIA Customers in Clarence Zone 1

Last Mile to Backhaul

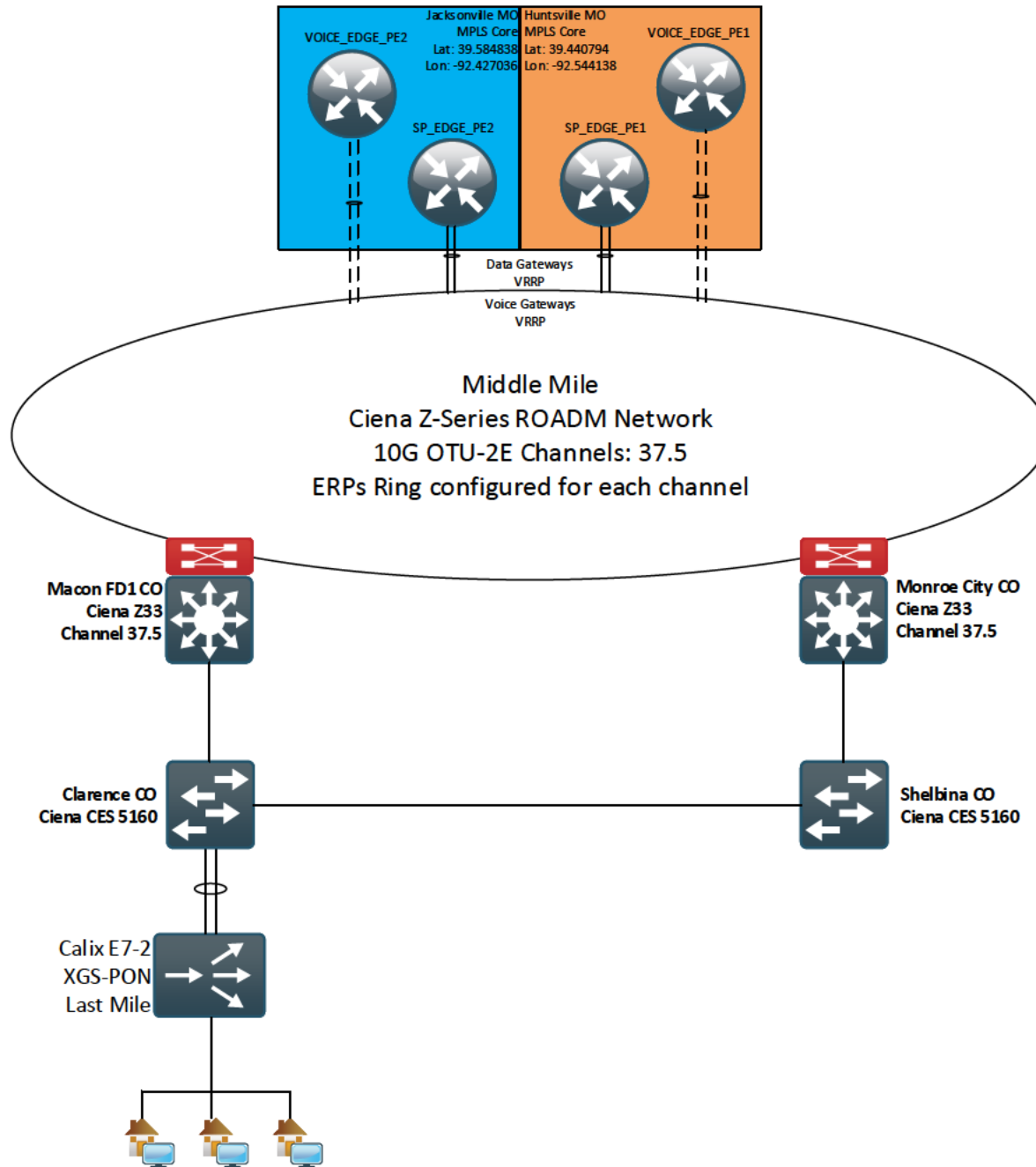
Key	
10Gig	————
1Gig	-----



NTIA Customers in Clarence Zone 2

Last Mile to Backhaul

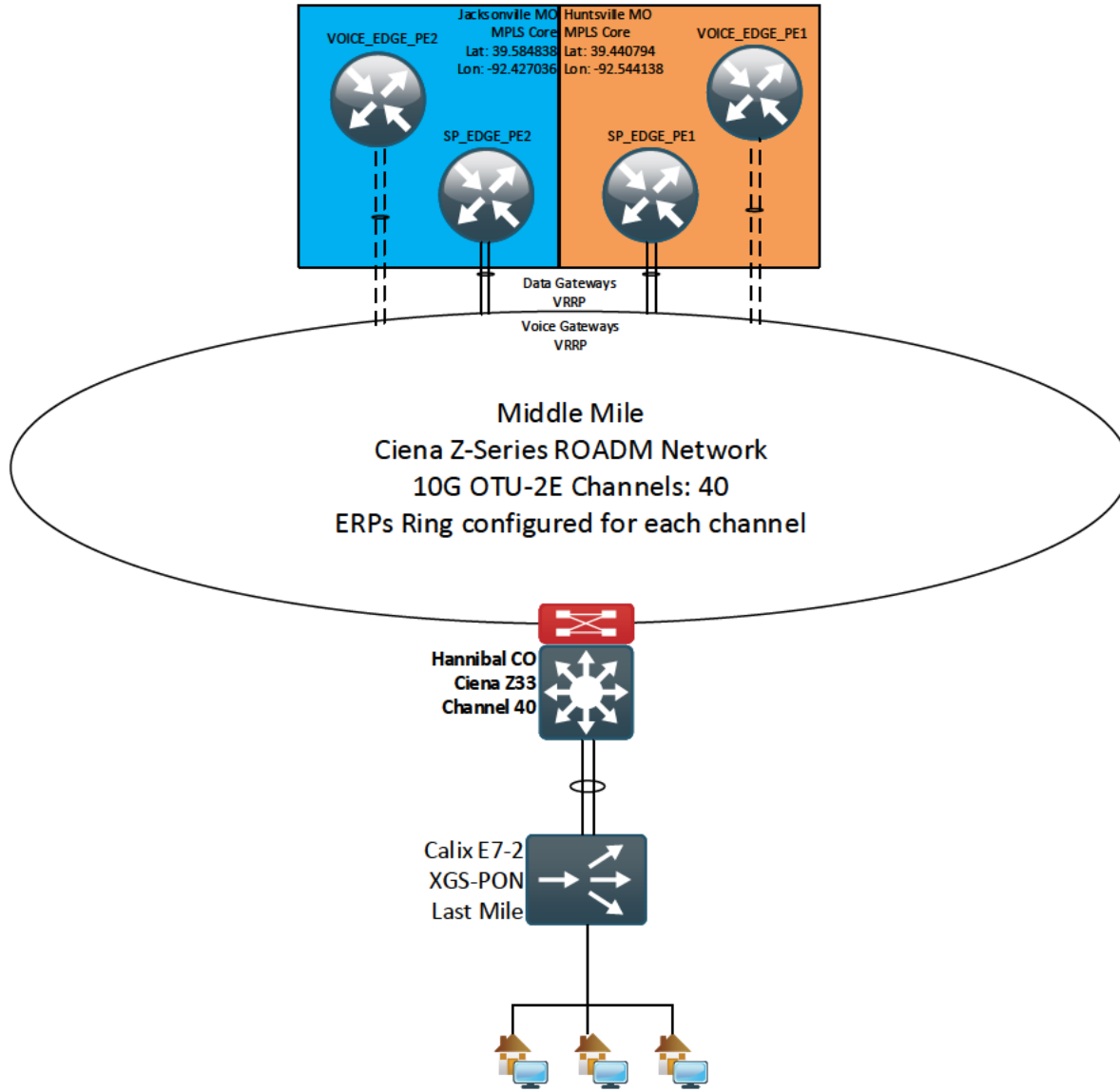
Key	
10Gig	————
1Gig	-----



NTIA Customers in Ralls County

Last Mile to Backhaul

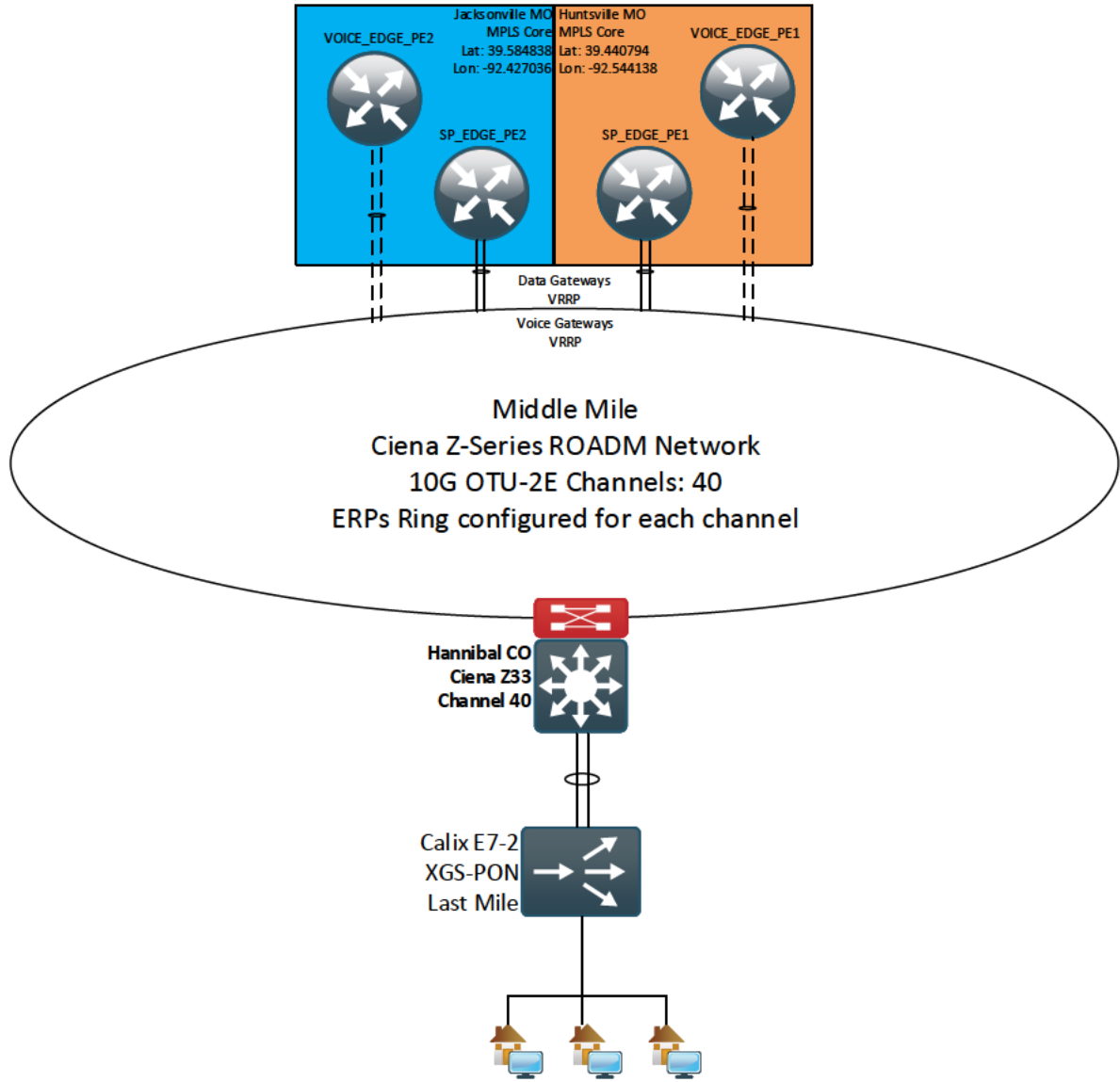
Key	
10Gig	————
1Gig	-----



NTIA Customers in Hannibal Zone 1

Last Mile to Backhaul

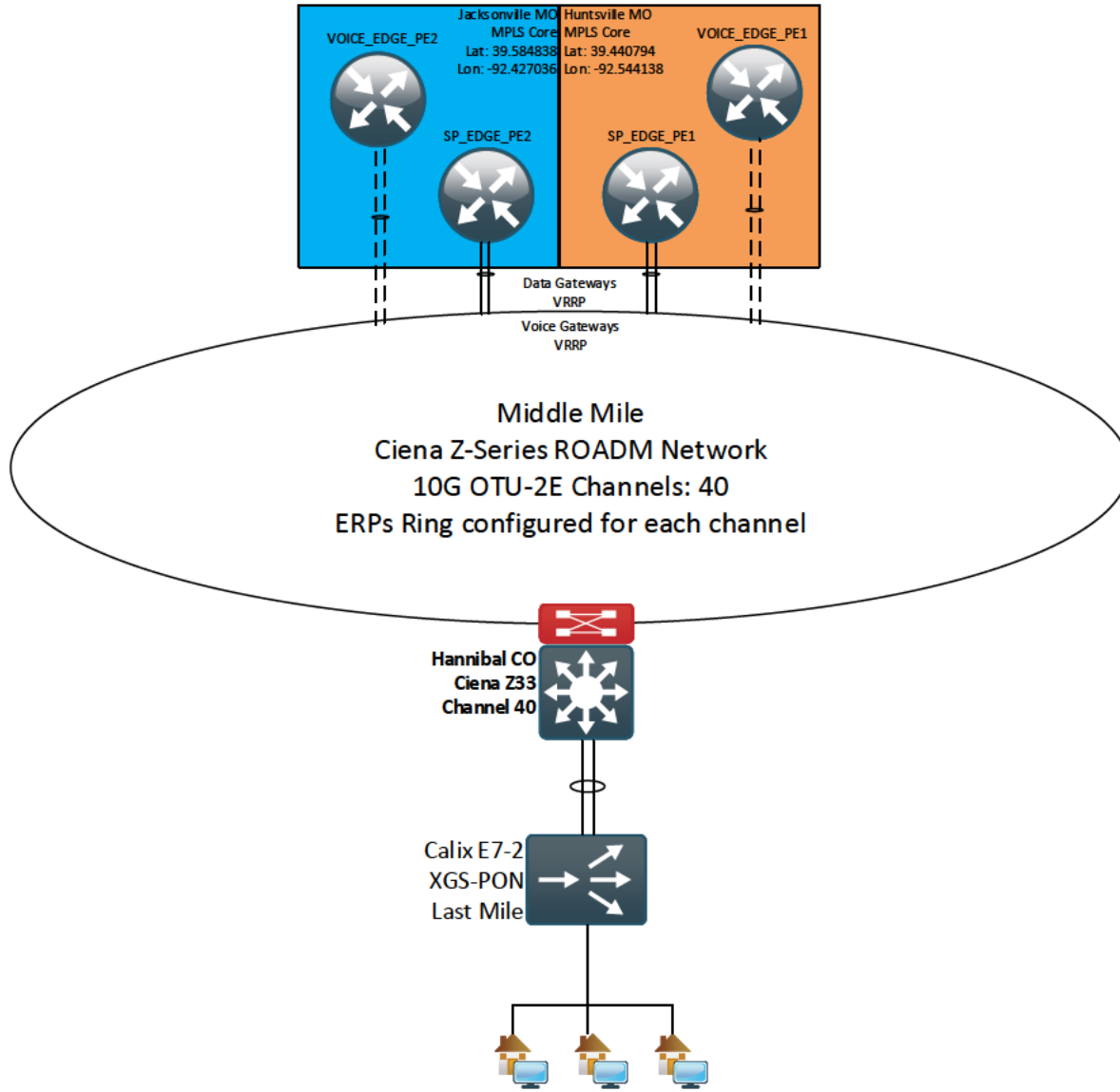
Key	
10Gig	————
1Gig	-----



NTIA Customers in Hannibal Zone 3

Last Mile to Backhaul

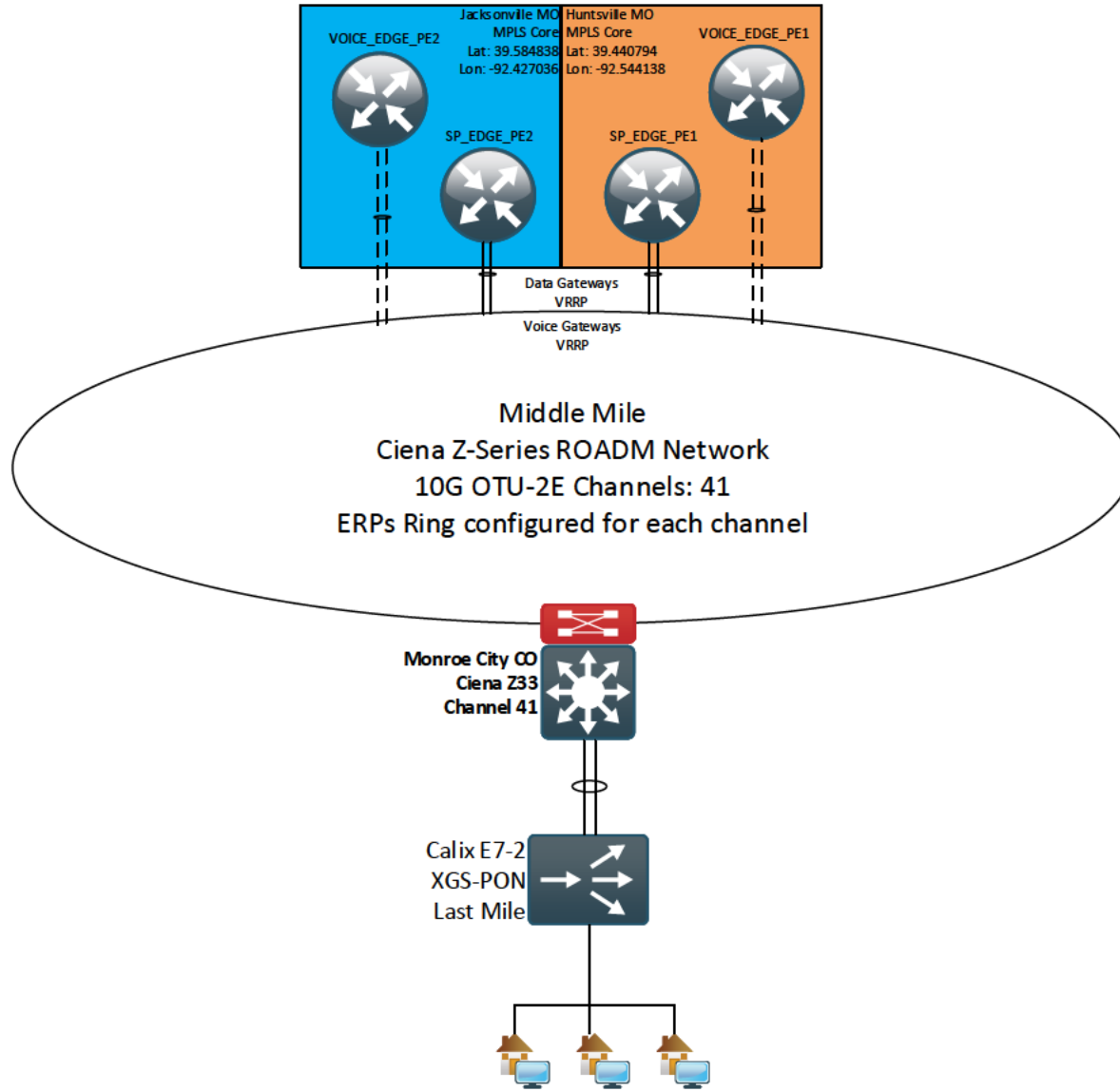
Key	
10Gig	————
1Gig	-----



NTIA Customers in Monroe City

Last Mile to Backhaul

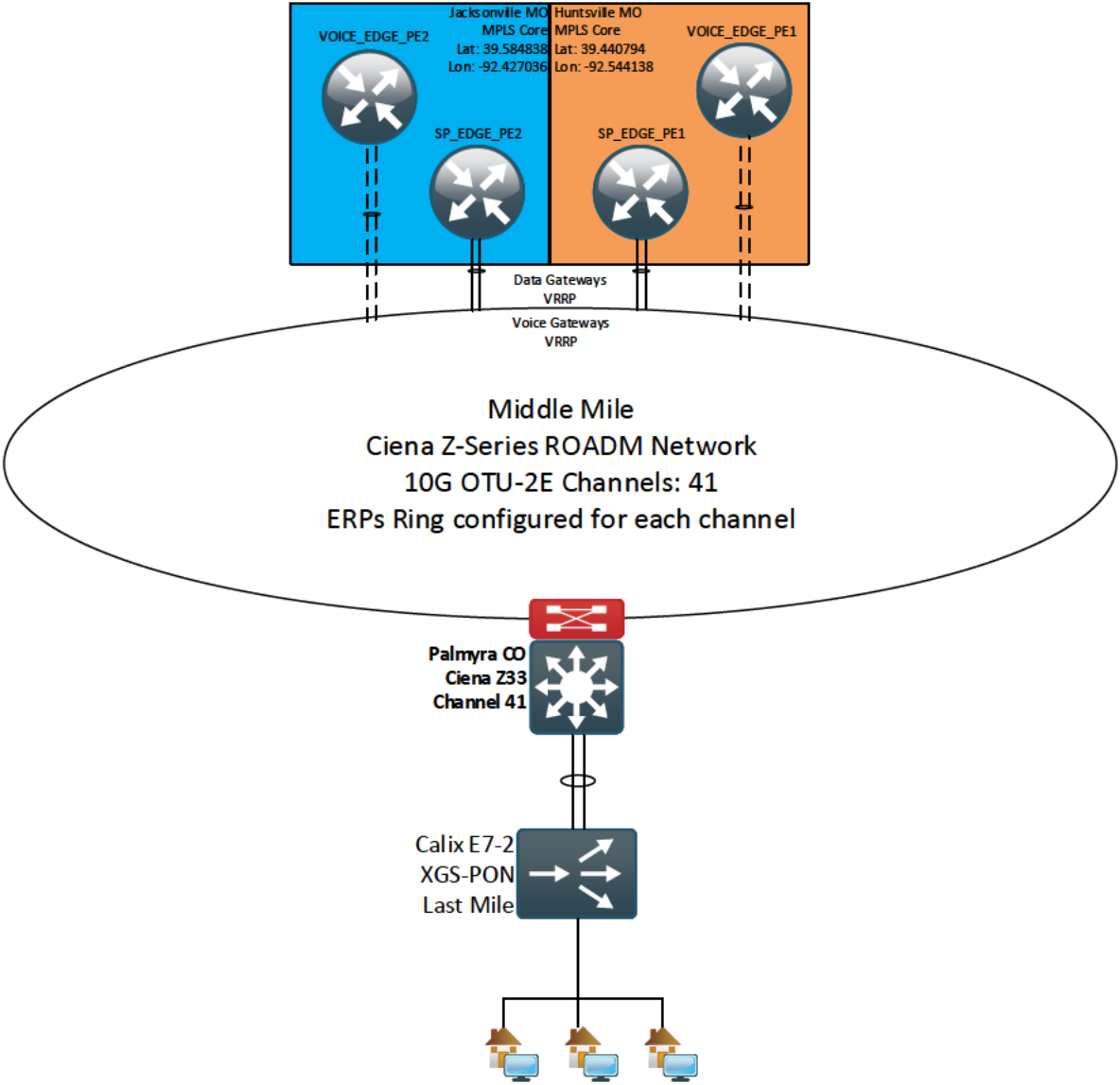
Key	
10Gig	————
1Gig	-----



NTIA Customers in Palmyra Zone 1

Last Mile to Backhaul

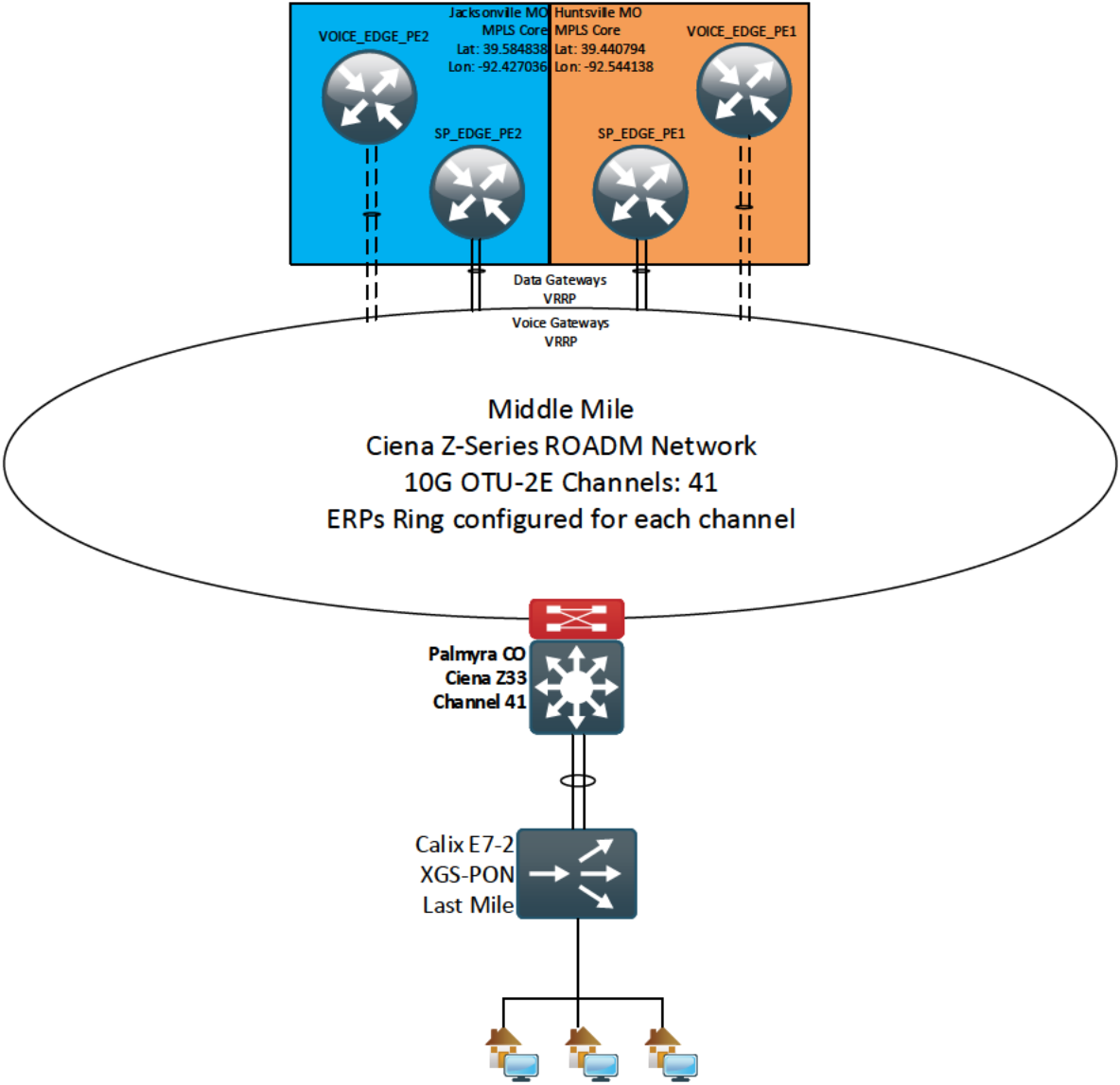
Key	
10Gig	————
1Gig	-----



NTIA Customers in Palmyra Zone 2

Last Mile to Backhaul

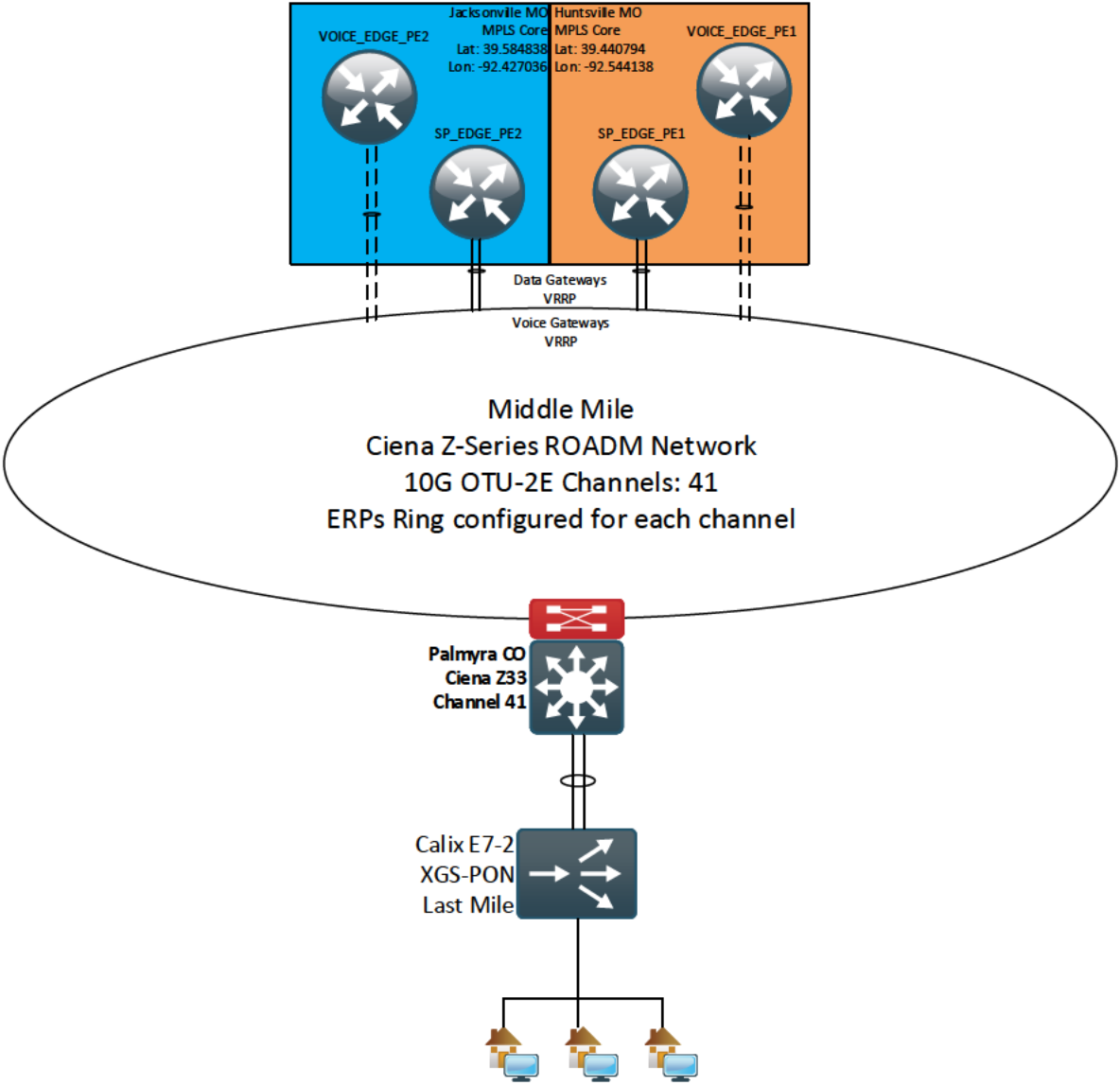
Key	
10Gig	————
1Gig	-----



NTIA Customers in Palmyra Zone 3

Last Mile to Backhaul

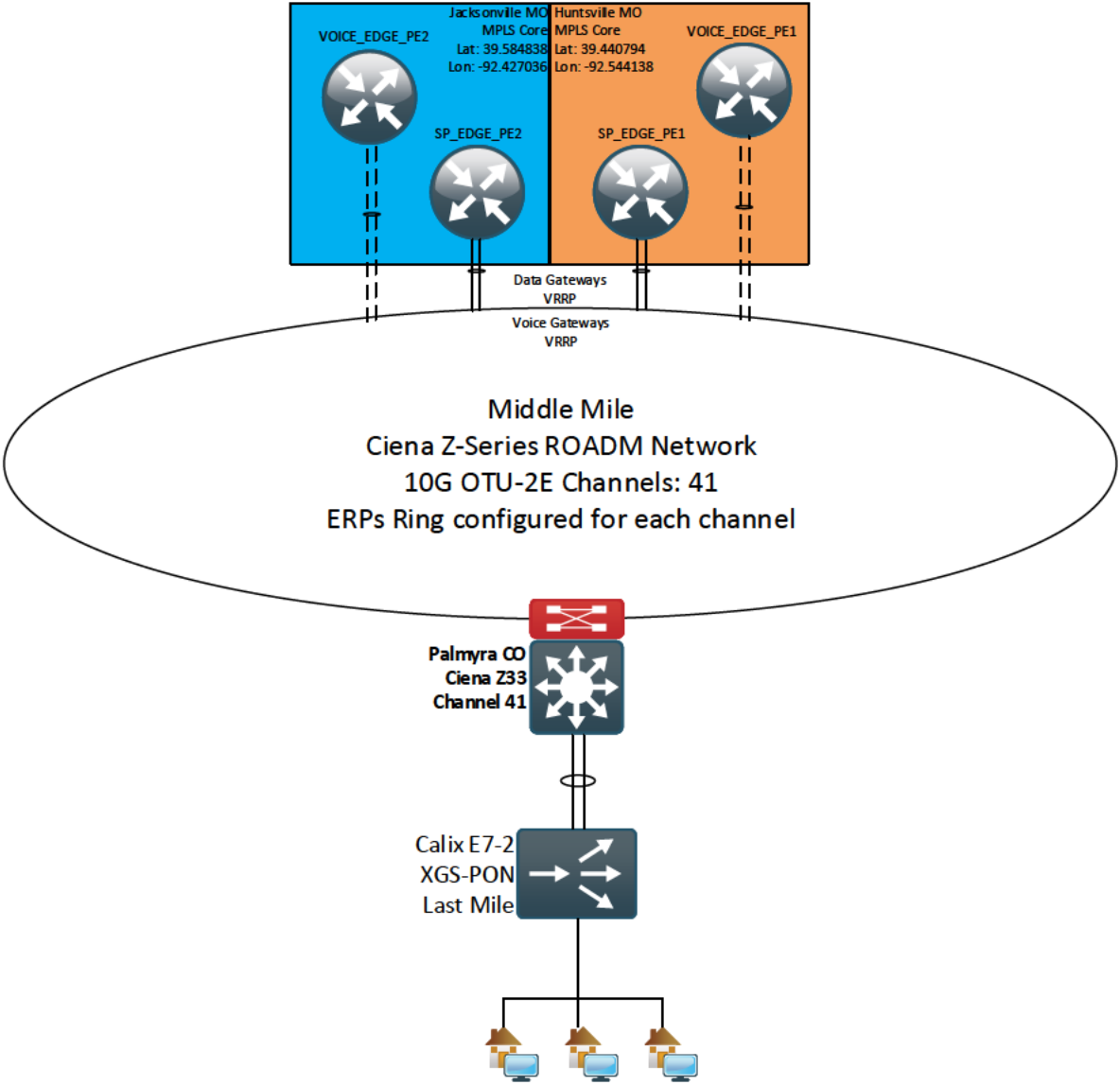
Key	
10Gig	————
1Gig	-----

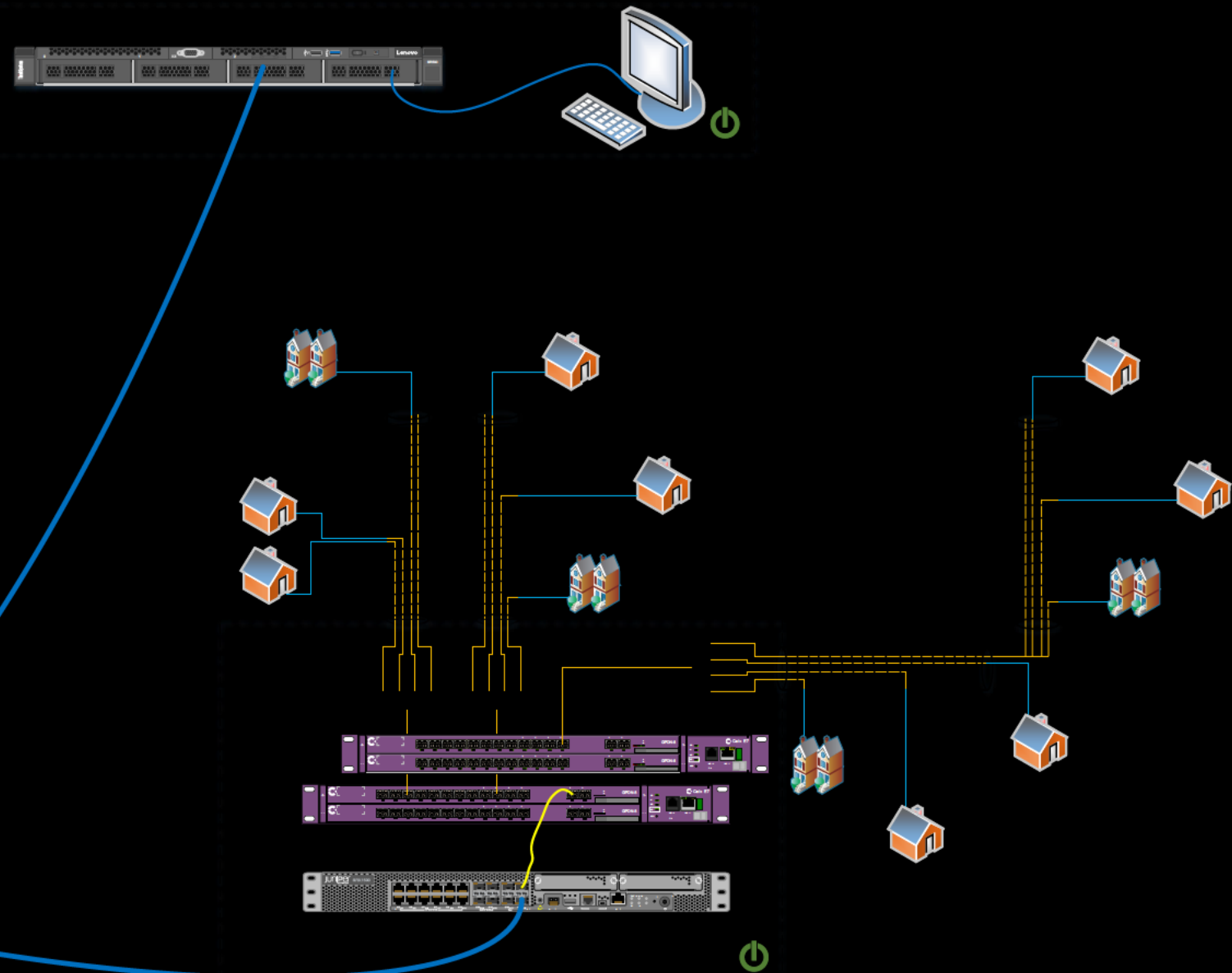


NTIA Customers in Palmyra Zone 4

Last Mile to Backhaul

Key	
10Gig	————
1Gig	-----





Sho-Me Internet Feeds
10 Gb/s Protected Internet shared amongst the GFRC's
Management VLAN back the Dixon Headend

[REDACTED]

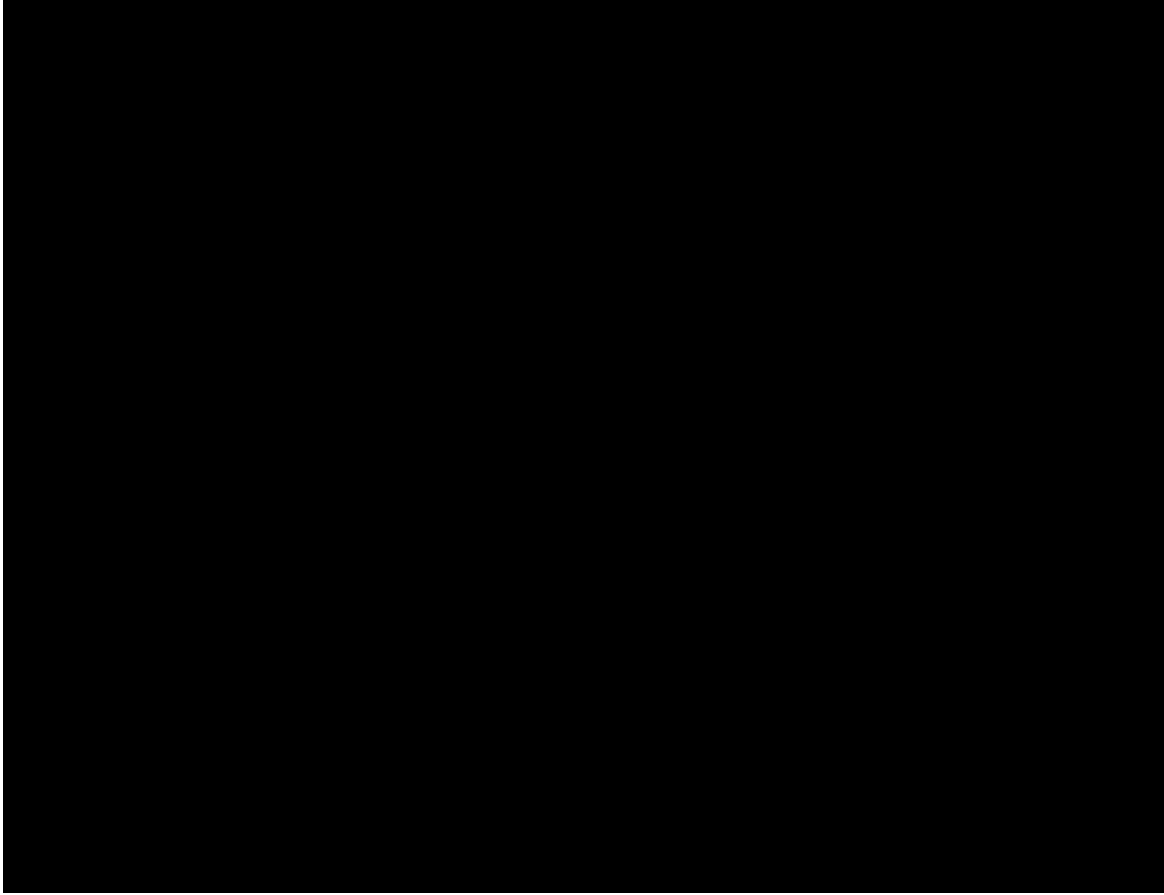
[REDACTED]

[REDACTED]

[REDACTED]

Proposed Service Area Footprint and Current Gateway Network

The map below overlays the Grant Serving Areas on Gateway Fiber's existing network, denoted by the multi-colored serving areas. Serving areas outlined in black with no coloring are in early-stage evaluation for potential future development.



Legend

GrantServingAreas



GatewayFiber sdm Fiberhoods View - sdm Fiberhoods

Symbol



1



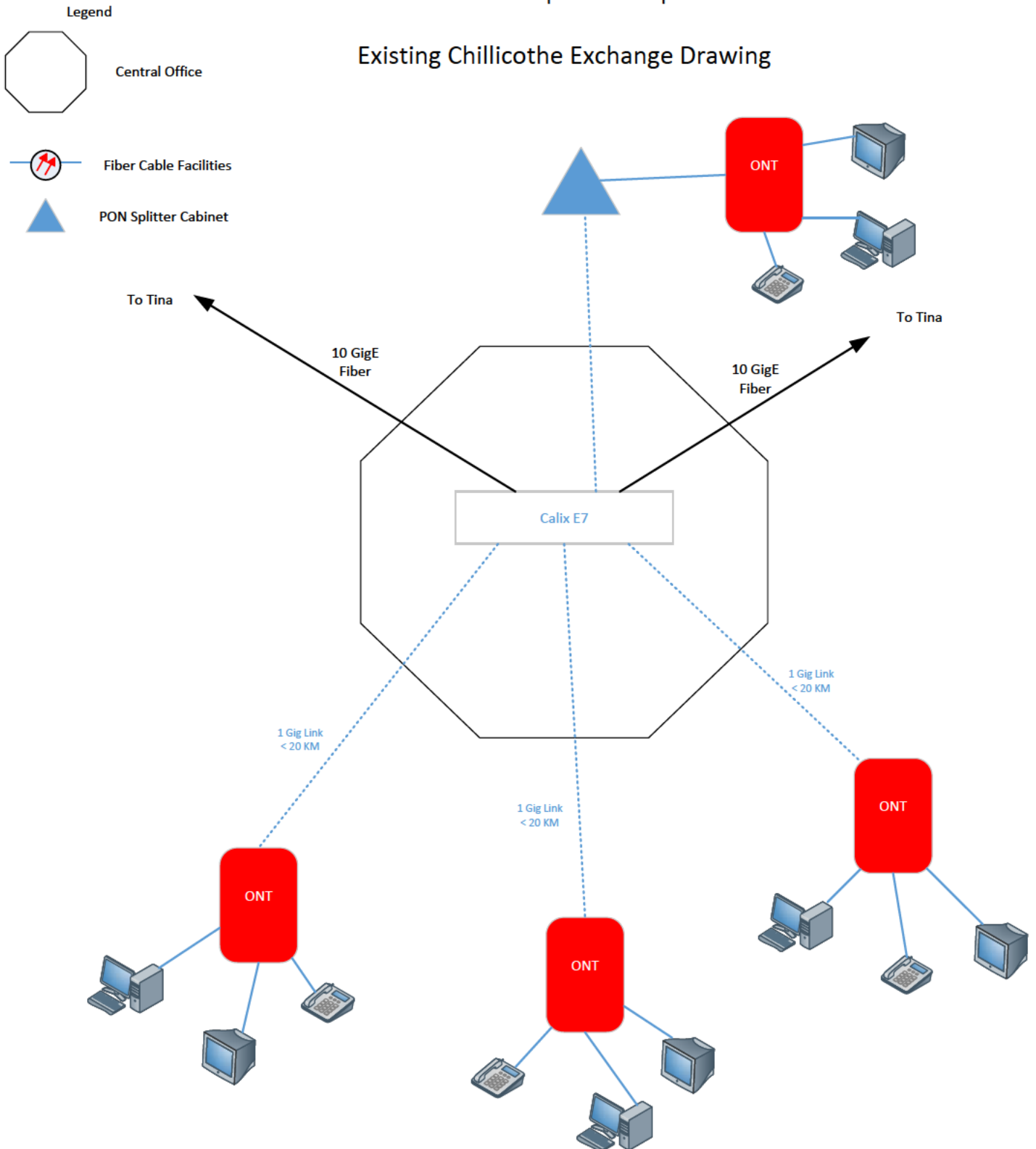
2



3

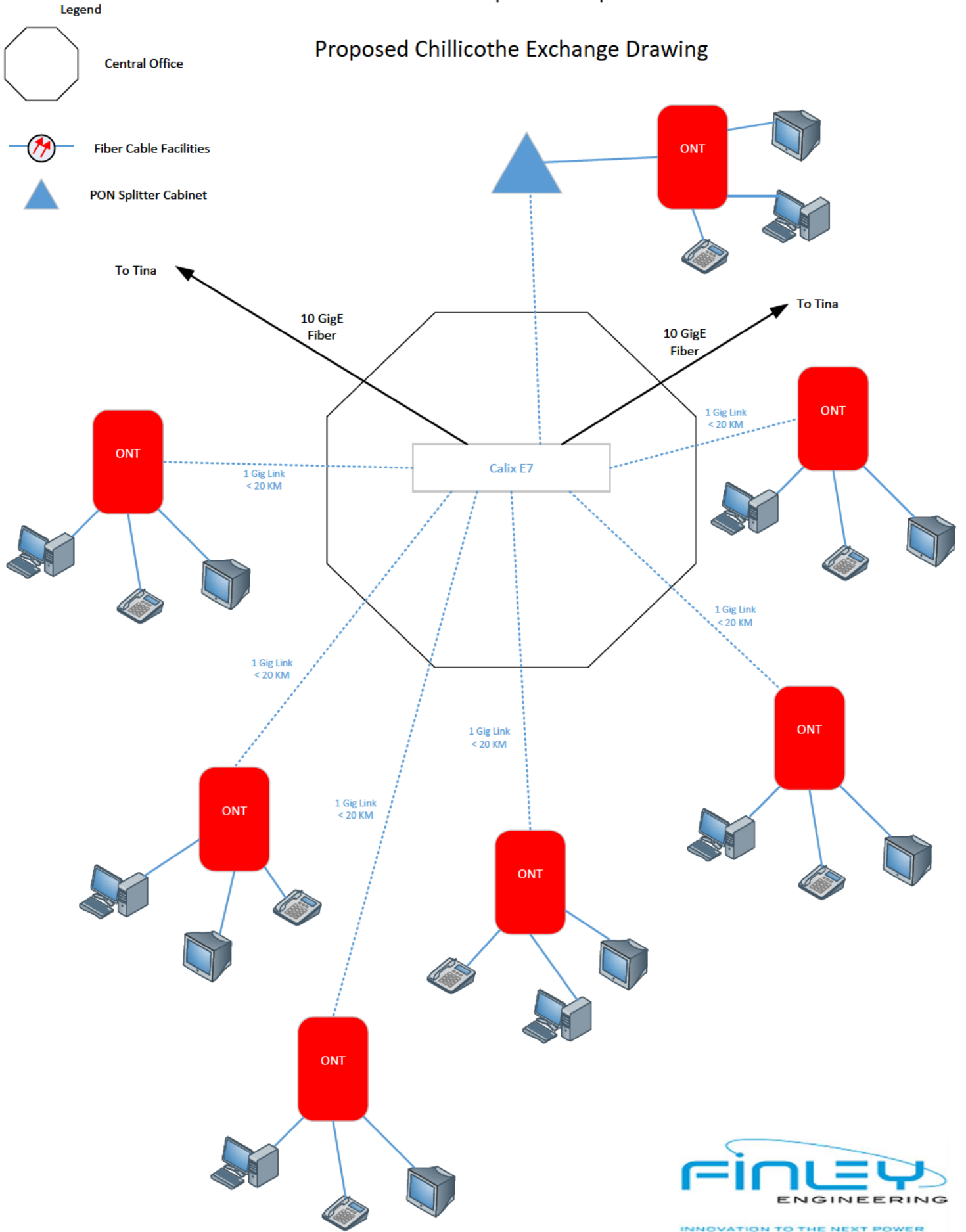
Green Hills Telephone Corporation

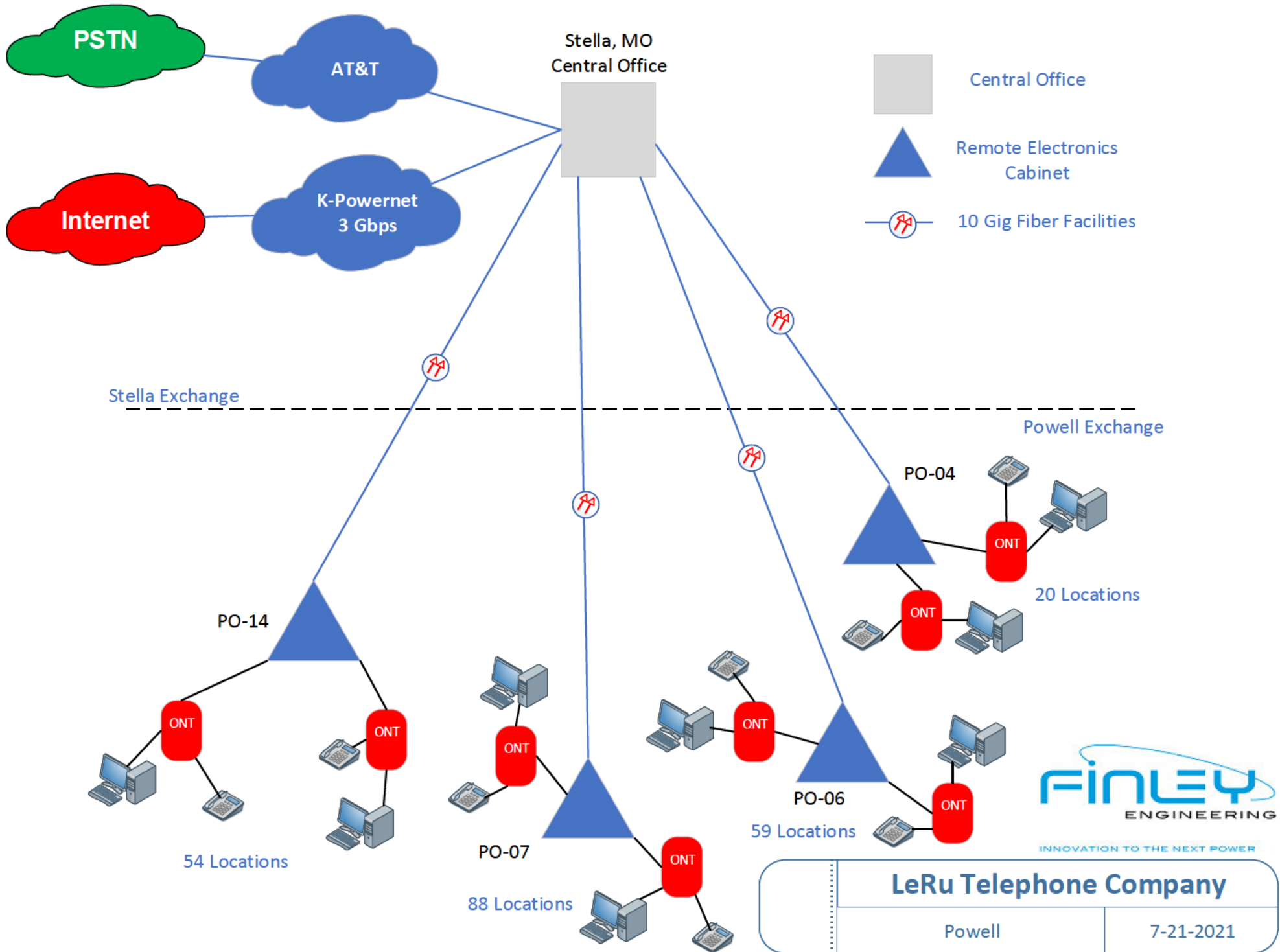
Existing Chillicothe Exchange Drawing



Green Hills Telephone Corporation

Proposed Chillicothe Exchange Drawing





LeRu Telephone Company	
Powell	7-21-2021

Missouri Covered Partnership NTIA BIP Funded Projects

