



**Broadband Infrastructure Application  
Submission to NTIA – Broadband Technology Opportunities Program**

|  |   |
|--|---|
| <b>Submitted Date:</b> Easygrants ID: 6848                             |   |
| <b>Funding Opportunity:</b> Broadband Technology Opportunities Program | <b>Applicant Organization:</b> CITIZENS' TELEPHONE CO-OPERATIVE |
| <b>Task:</b> Submit Application - BTOP                                 | <b>Applicant Name:</b> Mr. Dennis Reece                         |

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## A. General Application Information

| Applicant Information                    |   |
|--|---|
| Name and Federal ID for Applicant        |   |
| <b>DUNS Number</b>                       | 175409010   |
| <b>CCR # (CAGE)</b>                      | 31ER4   |
| <b>Legal Business Name</b>               | CITIZENS' TELEPHONE CO-OPERATIVE                              |
| <b>Point of Contact (POC)</b>            | CHRIS BOND<br>5407459556<br>Ext.<br>ChrisBond@citizens.coop   |
| <b>Alternate POC</b>                     | DONNA SMITH<br>5407459523<br>Ext.<br>DonnaSmith@citizens.coop |
| <b>Electronic Business POC</b>           | CHRIS BOND<br>5407459556<br>Ext.<br>ChrisBond@citizens.coop   |
| <b>Alternate Electronic Business POC</b> | DONNA SMITH<br>5407459523<br>Ext.<br>DonnaSmith@citizens.coop |

| Name and Contact Information of Person to be Contacted on Matters Involving this Application: |              |
|---|--------------|
| <b>Prefix</b>   | Mr.          |
| <b>First Name</b>   | Dennis       |
| <b>Middle Name</b>  |              |
| <b>Last Name</b>  | Reece        |
| <b>Suffix</b>   |              |
| <b>Telephone Number</b>   | 540-745-9528 |



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|                   |                           |
|-------------------|---------------------------|
| <b>Fax Number</b> | 540-745-3791              |
| <b>Email</b>      | dennisreece@citizens.coop |
| <b>Title</b>      | AGM & COO                 |

**Additional Contact Information of Person to be Contacted on Matters Involving this Application:**

| Project Role               | Name            | Phone      | Email                  |
|----------------------------|-----------------|------------|------------------------|
| Secondary Point of Contact | Mr. Greg , Sapp | 5407459549 | gregsapp@citizens.coop |

**Environmental Point of Contact**

|  |
|--|
| Prefix:<br>Name: Huff, Charles<br>Suffix:<br>Telephone Number: 5407459546<br>Title: Engineering Supervisor |
|--|

**Organization Classification**

|   |                       |
|---|-----------------------|
| <b>Type of Organization</b>   | Cooperative or Mutual |
| <b>Is the organization a small business?</b>  | No                    |
| <b>Does the organization meet the definition of a socially and economically disadvantaged small business concern?</b> | No                    |

**Authorized Organizational Representative**

|                 |             |
|-----------------|-------------|
| <b>AOR Name</b> | BOND, CHRIS |
|-----------------|-------------|



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|               |                      |
|---------------|----------------------|
| <b>Result</b> | Applicant Authorized |
|---------------|----------------------|

**Project Title and Project Description**

**Project Title:** NRV-ROAN (New River Valley Regional Open Access Network)

**Project Description:** NRV-ROAN will extend Virginia's successful, open-access fiber network into unserved and underserved communities in the New River Valley region. Citizens Telephone Cooperative will construct a high count fiber system with access in remote communities providing non-profit, wholesale access for economic development, research, education, emergency response, and health care.

**CCI Priority Checklist**

**The following items were selected from the CCI Priority Checklist:**

1. This project will deploy Middle Mile broadband infrastructure to community anchor institutions.
2. The project will deploy Middle Mile broadband infrastructure and has incorporated a public-private partnership among government, non-profit and for-profits entities, and other key community stakeholders.
3. This project will deploy Middle Mile broadband infrastructure in economically distressed areas.
4. This project will deploy Middle Mile broadband infrastructure to community colleges.
5. This project will deploy Middle Mile broadband infrastructure to public safety entities.
6. This project will deploy Middle Mile broadband infrastructure and either includes a Last Mile infrastructure component in unserved or underserved areas or has received commitments from one or more Last Mile broadband service providers to utilize the Middle Mile components. Any Last Mile components in rural areas do not exceed 20% of the total eligible costs of the project.

**Comprehensive Community Infrastructure Components**

**The following items were selected from the Comprehensive Community Infrastructure Components:**

Middle Mile



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Last Mile Non-Rural

**BIP Applicants**

Have you also applied to BIP for funding in the sample proposed funded service area?

- No

If Yes, please provide the project title and Easygrants ID number:

Title of Joint BIP Application:

Easygrants ID:

**Other Applications**

Is this application being submitted in coordination with any other application being submitted during this round of funding?

- Yes

| Easygrants ID | Project Title  |
|---------------|--|
| 248           | Allegheny Fiber: Extending Virginia's Open Access Fiber Backbone to the Ridge and Valley |
| 4506          | Southwest Virginia Middle Mile Project   |

If YES, please explain any synergies and/or dependencies between this project and any other applications.

There are no dependencies between the NRV-ROAN proposed project and the other two projects referenced; however there are synergies.

The NRV-ROAN project will create critical diverse routes/links to both the Allegheny Fiber; Easygrants ID: 248 and the Southwest Virginia Middle Mile Project; Easygrants ID: 4506.

Diversity in routing is critical to anchor institutions, carriers and service providers. This further improves the reliability of services to residents and businesses as well.

This project also will provide critical diverse routing for Virginia's open access network. Mid-Atlantic Broadband Cooperative (MBC), Bristol Virginia Utilities (BVU), and Citizens



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Telephone Cooperative (Citizens) are key providers in this open access network that stretches across southern and southwest Virginia.

**Individual Background Screening**

Is the Applicant exempt from the Department of Commerce requirements regarding individual background screening in connection with any award resulting from this Application?

- No, Applicant is subject to these requirements

If the answer to the above question is "No," please identify each key individual associated with the Applicant who would be required to complete Form CD-346, "Applicant for Funding Assistance," in connection with any award resulting from this Application:

| <b>Name</b>  | <b>Title</b>                    | <b>Employer</b>                      |
|--------------|---------------------------------|--------------------------------------|
| Dennis Reece | COO & Assistant General Manager | Citizens Telephone Cooperative, Inc. |
| Chris Bond   | Finance Manager                 | Citizens Telephone Cooperative, Inc. |
| Greg Sapp    | CEO & General Manager           | Citizens Telephone Cooperative, Inc. |

## **B. Executive Summary, Project Purpose and Benefits**

**Essay Question**

**Executive Summary of the proposed project:**

The establishment of regional open access, optical infrastructure, or middle mile broadband networks is essential to providing affordable, competitive, broadband access in unserved and underserved communities.



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The New River Valley Regional Open Access Network (NRV-ROAN) is a middle-mile proposal to expand existing open-access fiber into adjoining rural counties. This project will include a fiber path through seven counties connecting to Citizens Telephone Cooperative's (Citizens) existing open access network, as well as Mid-Atlantic Broadband Cooperative's and Bristol Virginia Utilities' networks. Virginia Tech, Radford University, New River Community College, and the public schools in Pulaski, Giles, Montgomery, and Wythe counties are the primary anchor institutions. Fiber will be constructed and operated by Citizens as part of Virginia's open-access, fiber network. This is a joint proposal of Citizens and the New River Valley Network Wireless Authority (NRVNW) submitted by Citizens.

The New River Valley (NRV) is a rural portion of Virginia on the edge of the Blue Ridge Mountains. The region is mountainous with rocky ridges and deep valleys, making the construction of communications infrastructure a challenge. The NRV is not unserved with a limited number of broadband providers, but the bandwidth available for purchase from these providers though is not adequate to make available the quality of service being requested by businesses and individuals in the area. Upon completion of the proposed project, broadband services will be available to critical community facilities; including public schools, industrial authority properties, state and local emergency services providers and higher education facilities.

This broadband project directly supports several of the statutory objectives of the BTOP project, including provision of improved broadband access to community facilities and public safety agencies, and stimulating further demand for broadband through economic growth and job creation. The letters of support included with this application clearly demonstrate the breadth of users that await the services to be supplied upon the successful funding and construction of this network. All these potential users indicate that access to sufficient broadband services will enable them to compete in a diversified marketplace; increasing both the number of employees they retain as well as the income they would be able to provide those employees.

The proposed middle mile project traverses a seven-county region, including Wythe, Pulaski, Floyd, Giles, Montgomery, Roanoke, and Botetourt Counties and 2 cities. The route includes eight primary interconnection points located in Pearisburg in Giles County, Dublin and Fairlawn in Pulaski County, in Floyd County, Christiansburg in Montgomery County, near Wytheville in Wythe County, in Botetourt County. Each interconnection point is strategically positioned to serve unserved and underserved areas and to tie into existing open access networks. This network/project will connect to Virginia's open access network at Floyd, Wytheville,



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Christiansburg, and at Exit 150 on I-81. The portion of the route going into Roanoke and Botetourt counties and passing the city of Salem is not part of the proposed service area, but rather serves as critical link to another open access network that was approved for a BTOP grant in Round 1.

The proposed route is currently unserved by open-access, middle mile fiber, and there is no existing continuous fiber. Much of the path is designated as underserved with some pockets of unserved areas.

According to 2000 Census data the proposed route, containing 68,137 households and 1,300 businesses are passed along the project.

The proposed service area includes 59 public K-12 schools, 2 community college campuses, 2 higher education institutions, 7 medical/healthcare facilities, 14 public libraries, 43 public safety facilities, and 41 other government locations.

NRV-ROAN will be operated as part of the Citizens open-access, wholesale carrier network on a nonprofit basis. Services will include an array of point-to-point, private line services ranging from 10Mbps through 10Gbps. Dark fiber, collocation and other services will be offered. Citizens intends to use the fiber combined with MBC and third-party infrastructure to establish high-capacity access to National LambdaRail, Internet2 and other research and development resources.

The proposed middle mile network will be open to all providers with an emphasis on serving economic development, education, health care, emergency response and research needs. As matter of policy, Citizens does not discriminate against any carrier and is open to all interconnection requests. Citizens does not and will not block access, engage in packet-shaping, or implement restrictions on connectivity or bandwidth utilization. Citizens connects to public Internet and peering exchanges in several locations.

The fiber path will be constructed using RUS 1753F-601 (PE90), single-mode, fiber-optic cable, ranging from 96 strands to 240 strands in 12 fiber, loose tube, configuration using armored sheathing. Installation will be direct-buried along roadway rights-of-way using existing Citizens agreements with the Virginia Department of Transportation. Where aerial facilities are needed due to terrain or congestion issues, fiber will be placed in the communications zone of existing



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pole facilities and will utilize existing Citizens pole-attachment agreements with providers. All fiber will be fusion-spliced and will have a maximum of 0.25db of loss per KM. Node facilities will be 10'x12' or larger, pre-cast, concrete structures equipped with 200amp single-phase power, dual HVAC systems, emergency generator backup with low-emission, EPA-rated, LP powered systems and substantial grounding and environmental monitoring systems. Citizens will extend its carrier class, optical transport system over the proposed fiber path. The system will be tied to Citizens' existing network at Floyd, Christiansburg and Wytheville. The deployed system will be initially scalable to 200Gbps. Citizens currently provisions Ethernet over SONET access for carrier customers starting at 10Mbps. Electronics will be powered using redundant DC power, A&B feeds, which will be monitored and managed 24 hours a day, seven days a week, 365 days a year, by Citizens.

Citizens is a full communications provider offering telephone, VoIP, IPTV Video, web hosting, DSL, and Ethernet (FTTP) services. Citizens currently has 4,092 miles of facilities in the region: 247 miles of open access fiber, 135 miles of ILEC fiber, and 3,711 miles of copper plant providing telephone and DSL service.

Citizens is a previous and current recipient of grant funding from the Virginia Tobacco Indemnification Commission to build open access middle mile fiber network in the tobacco producing counties of rural southern and southwest Virginia. NRV-ROAN is a critical link between two similarly funded open access networks, proposed by Bristol Virginia Utilities (BVU) and Mid-Atlantic Broadband (MBC). Between these three entities an open access network spans most of southern and southwest Virginia. In addition to reaching anchor institutions in an underserved region of the state, this proposed project will provide a critical diverse route between Virginia's Open Access Network and the Allegheny Fiber project (Easy Grant # 248, funded by BTOP in Round 1).

The total broadband network cost is \$13,134,843.18. The 20% match (approximately \$2.6 million) will be met in combination by Citizens, NRVNWA, and the Virginia Tobacco Commission. The NRVNWA will provide \$830,000; the Virginia Tobacco Commission will provide \$667,287.05 (specifically for portions in Wythe and Floyd Counties); Citizens will provide \$1,129,681.59 in cash and in-kind services.

Using conservative calculations it is projected that 147 households, 21 businesses, and 28 anchor institutions will have service provided through this project by year 5.



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Broadband usage and employment are strongly linked. A 2007 Brookings Institution report found that "for every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year. For the entire U.S. private non-farm economy, this suggests an increase of about 300,000 jobs, assuming the economy is not already at 'full employment'." (Robert Crandall, William Lehr, and Robert Litan, 'The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data,' Issues in Economic Policy, July 2007.)

**Project purpose:**

The project area is located in the rural New River Valley portion of Virginia on the edge of the Blue Ridge Mountains. The region is rural and mountainous in nature with rocky ridges and deep valleys which make the construction of communications infrastructure challenging. In 2004, The NRVPCD (New River Valley Planning District Commission) formed a Telecommunications Committee to look at broadband in the region. At that time, the Commonwealth of Virginia in recognition of the importance of broadband services made planning funds available for jurisdictions to evaluate their needs for service and implementation of community services. This committee then conducted surveys and the formed the New River Valley Community Broadband Network Plan. The plan identified that the New River Valley does not have the bandwidth available, at affordable prices, to support commerce, education, or the service needs of a 21st Century economy in the region. One survey conducted during the preparation of the Community Broadband Network Plan found that the people and businesses in the Blacksburg area of the Region were not satisfied with the services currently available, Blacksburg being the most connected portion of the Region. Virginia Tech, the Region's largest employer, reported that their faculty and staff living throughout the Region could either not afford or receive the broadband service required to work from home. The situation has not improved since the development of the Network Plan in 2004. Businesses and community facilities within the proposed service area support the deployment of a broadband network to increase their ability to compete in a new marketplace and potentially create new jobs. In some areas of proposed service a provider is available, but the redundancy crucial for companies relying on more advanced technology is not available within the Region. Citizens has met with local school systems and higher education institutions over the past few years attempting to aid them with obtaining higher capacity and more economical broadband connections. Citizens had looked at building a fiber link between the two campuses of New River Community College (NRCC) and also a diverse fiber route to Radford University. Both of these projects could not be justified in the end due to the required capital investment. NRCC



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recently attempted to link their two campuses together using microwave equipment and has had very limited success thus far. Citizens recently responded to an RFP by Montgomery County Public Schools, although they like our proposal for 1Gig connections between schools, the aid to construction required for the proposed solution was cost prohibitive for the school system and therefore was not pursued. The NRV-ROAN project will build fiber to every school in Pulaski and Montgomery counties, to 2 school locations in both Wythe and Giles, between the two NRCC campuses, and a diverse route to Radford University. This project will also provide a diverse route for Virginia Tech by connecting to the Allegheny Fiber Project; Easygrants ID: 248.

Strictly speaking, the Region is not unserved as there are limited broadband providers. The bandwidth available for purchase from these providers though is not adequate to provide the levels of service being requested by businesses and individuals in the project area. The proposed project will make available broadband services to critical community facilities, including public schools, industrial authority properties, headquarters for state and local emergency services providers, and higher education facilities.

The service area for the proposed middle-mile project traverses a region composed of seven Virginia counties: Wythe, Pulaski, Floyd, Giles, Montgomery, Roanoke, and Botetourt counties. The route includes eight primary interconnection points; in Wythe County at the Progress Park Industrial Park, Pearisburg in Giles County, in Pulaski County at the Commerce Park near Dublin and at the intersection of Rte 114 and Rte 11 in Fairlawn, in Floyd County at Citizens Central Office near the town of Floyd, in Montgomery County at the intersection of Rte 114 and Rte 460 and at the Falling Branch Industrial Park in Christiansburg, and in Roanoke County near I-81 exit 150 and Rte 220 overpass. These points are strategically positioned to serve unserved and underserved areas and to tie into the existing open access network.

The path is currently unserved by open-access, middle-mile fiber, and there is no existing continuous fiber. Much of the path is designated as underserved with some unserved and served pockets, as presented herein. The counties of Pulaski and Giles are very rural and specifically up the Rte 100 fiber path. Also, there are small pockets of unserved in Montgomery County that this project will pass through.

Citizens has been approached by several communities in this region asking Citizens to provide service to them. Citizens has explored ways to provide service to these areas and has done so, when economically feasible. Citizens unsuccessfully applied for RUS Community Connect grants in two of the three last mile communities that are proposed in this project. These three communities are unserved and underserved.



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This broadband project directly supports several of the statutory objectives of the BTOP project, including its provision of broadband access to community facilities and public safety agencies, while stimulating further demand for broadband with economic growth and job creation. The letters of support included with this application clearly demonstrate the breadth of users that await the services that will be supplied upon the successful funding and construction of this project. All the potential business and anchor users indicate that access to sufficient broadband services will enable them to compete in a diversified marketplace, increase the number of employees they employ, as well as provide competitive wages to those employees.

**Recovery Act and Other Governmental Collaboration:**

**Recovery Act and Other Governmental Collaboration**

Citizens Telephone Cooperative is leveraging state funding from the Virginia Tobacco Indemnification Commission which has aided Citizens with two other open access fiber network projects. Citizens finished construction on a 222 mile open access network in 2008 with \$3,700,500 in funding from the Tobacco Commission. The grant funded 41% of the total project; the other 59% was in fiber assets that Citizens contributed to the project. Currently, Citizens has a grant for \$1,862,000 from the Tobacco Commission to build a 24 mile fiber route to connect to another open access network, Bristol Virginia Utilities (BVU). The construction on this project just started and is scheduled to be completed mid-year 2010. The Tobacco Commission is constrained from providing funds for infrastructure outside the tobacco growing region in southside and southwest Virginia. The Tobacco Commission is funding \$667,287.05 for this project; however the funding is restricted to the portions of the project in Wythe and Floyd Counties. This is the 20% match for these two counties.

Citizens is also partnering with The New River Valley Network Wireless Authority (NRVNW). The NRVNW is a government Authority set up pursuant to the Virginia Wireless Authorities Act (Chapter 54.1, Title 15.2 of the Code of Virginia) with two founding members: Pulaski and Giles Counties. The NRVNW applied in for funds in Round 1 and made it to the Due Diligence stage for BTOP funding. The project submitted in Round 1 was roughly 65 miles and is included in the current 207 mile proposal. The NRVNW is providing \$830,000 in matching funds to be designated specifically for the portions of the network within Pulaski and Giles Counties.

**Fit with BTOP CCI Priorities:**



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The NRV-ROAN (New River Valley Region Open Access Network) will connect underserved areas with existing broadband networks. The proposed middle mile project will provide the bandwidth necessary and access for many community facilities, including but not limited to public schools, higher education campuses, hospitals, regional public safety organizations, as well as economic development projects. The project will connect in multiple locations to Virginia's open access network. This network is made of multiple providers, such as: Mid-Atlantic Broadband Cooperative (MBC), Bristol Virginia Utilities (BVU) and Citizens Telephone Cooperative (Citizens).

The proposed network will connect public schools across jurisdictions, as well as with the local community college and two state-run institutions of higher education. The service area covers school systems in Wythe, Pulaski, Giles, and Montgomery counties, and both campuses of New River Community College. Pulaski County Public Schools is a major user of broadband technology; however with current providers they are unable to afford the bandwidth necessary to utilize more advanced educational technology. Additionally, it can be assumed that students' families are unable to afford the broadband service necessary to utilize these educational technologies, even if adequate bandwidth were currently available.

While not directly within the proposed service area, the construction of the Network will provide access points to connect with the City of Radford public schools, including the high school, middle school, and elementary school facilities. The City already has their schools interconnected via fiber, but this project would facilitate an inter-jurisdictional connection. A connection to the City's network would also provide a link to Radford University, opening access to the many programs offered at this state-run university. A final educational connection between the public school systems with New River Community College would allow students not otherwise able to take dual enrollment course to participate in these opportunities at their own school location.

Economic development and future economic growth and stability are a major focus of the proposed Network. The proposed service area directly covers several major economic development facilities including the Pulaski Industrial Park, Pulaski Corporate Center, Cougar Industrial Park, the New River Valley Commerce Park, and the New River Valley Competitiveness Center, Falling Branch Industrial Park, Mountain View Industrial Park, Progress Park Industrial Park, and Fairview Industrial Park. The New River Valley Commerce Park is planned to develop as Virginia's Nanotechnology Park. This facility will provide space



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for private firms transitioning from research and development at Virginia Tech to production. Connecting Virginia Tech with this new facility will be critical as training needs are identified. Providing adequate broadband services is critical in keeping the region competitive. These businesses provide jobs and salaries that will retain the young people and their skills that are currently transferring out of the region after completing their education.

The service area for this project includes many direct medical facilities, including Giles Memorial Hospital, Pulaski Community Hospital, and New River Medical Center. In addition to the hospitals, the area contains the headquarters for a company providing mobile x-ray and other services, several rescue squads, Regional Emergency Medical Services Inc., Western Virginia EMS, and the Region 4 and 6 offices of the Virginia Department of Emergency Services. Expanded broadband availability should provide these agencies and organizations improved communications and ability to manage emergencies.

**Is the applicant seeking a waiver of the Buy American provision pursuant to section x.Q of the NOFA?**

- No

**Is the applicant delinquent on any federal debt?**

- No

If Yes, justification for delinquency:

**Are you seeking a waiver of any requirement set forth in the NOFA that is not mandated by statute or applicable law?**

- No

**Is the applicant a current recipient of a grant or loan from RUS?**

- No

## **C. Partners**

**Are you partnering with any other key institutions, organizations, or other entities for this project?**

- Yes

If YES, key partners are listed below:



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Project Role: Other  
Name: Byrd, Kevin  
Phone: 5406399313  
Email: nrvpdc@nrvc.org  
Address 1: 6580 Valley Center Dr, Suite 124  
Address 2:  
Address 3:  
City: Radford  
State: Virginia  
Zip Code: 24141  
Organization: New River Valley Network Wireless Authority (NRVNW)  
Organization Type: Other  
Small business: No  
Socially and economically disadvantaged small business concern: No

**Description of the involvement of the partners listed above in the project.**

The New River Valley Network Wireless Authority (NRVNW) is providing \$830,000 in matching funds to be designated specifically for the portions of the network within Pulaski and Giles Counties. The NRVNW is a government Authority set up pursuant to the Virginia Wireless Authorities Act (Chapter 54.1, Title 15.2 of the Code of Virginia) with two founding members: Pulaski and Giles Counties. The NRVNW applied in for funds in Round 1 and made it to the Due Diligence stage for BTOP funding. The project submitted in Round 1 was roughly 65 miles and is included in the current 207 mile proposal. In recognition of this support, Citizens is offering Giles and Pulaski county schools, libraries, hospitals, community colleges, emergency services, health care providers, and other government offices special pricing that is normally only offered to school systems; \$500 per 1Gig VLAN connection. Citizens is also offering symmetrical Internet connections at \$50 per Mbps to all of these entities in Pulaski and Giles counties. Most service providers are charging \$7,500 a month or more for a 45 Mbps internet connection; this special pricing would cost NRVNW members \$2,250 for the same circuit. Also, all installation fees will be waived for these entities, along the fiber routes proposed. This same offer applies to New River Community College which has locations in Pulaski and Montgomery Counties.

## **D. Congressional Districts**

### **Applicant Headquarters**



**Broadband Infrastructure Application  
Submission to NTIA – Broadband Technology Opportunities Program**

|  |   |
|--|---|
| <b>Submitted Date:</b> Easygrants ID: 6848                             |   |
| <b>Funding Opportunity:</b> Broadband Technology Opportunities Program | <b>Applicant Organization:</b> CITIZENS' TELEPHONE CO-OPERATIVE |
| <b>Task:</b> Submit Application - BTOP                                 | <b>Applicant Name:</b> Mr. Dennis Reece                         |

- Virginia

**Project Service States**

Virginia

**Project Service Areas**

Virginia - 9

Virginia - 6

**Will any portion of your proposed project serve federally recognized tribal entities?**

- No

**Indicate each federally recognized tribal entity your proposed project will serve.**

**Have you consulted with each of the federally recognized tribal entities identified above?**

- No

## **E. Service Area Details**

**Is the applicant seeking a waiver for providing less than 100% coverage of a service area?**

- No

|                        |
|------------------------|
| <b>Project Details</b> |
|------------------------|

**Service Area Type:**

Middle Mile



**Broadband Infrastructure Application  
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**Service Area Name:** CHRISTIANSBURG/FLOYD - RTE A  
**Rural Classification of the Last Mile Service Area:**Rural  
**Service Status of the Last Mile Service Area:** Underserved

**If Service Status is "Underserved" please select at least one applicable option from this list.**  
 No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed;

**Total Square Miles in Service Area:** 12  
**Total Population in Proposed Service Area:** 5,758  
**Total Number of Households in Service Area:** 2,375  
**Total Number of Businesses in Service Area:** 100  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 5  
**Unemployment Rate in the Service Area:** 8  
**Median Income in the Service Area:** 42,189  
**Estimated Percentage of Households with Access to Broadband:** 40  
**Estimated Percentage of Households Subscribing to Broadband:** 30

**Service Area Type:** Middle Mile  
**Service Area Name:** CHRISTIANSBURG/FLOYD - RTE B  
**Rural Classification of the Last Mile Service Area:**Rural  
**Service Status of the Last Mile Service Area:** Underserved

**If Service Status is "Underserved" please select at least one applicable option from this list.**  
 The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

**Total Square Miles in Service Area:** 8  
**Total Population in Proposed Service Area:** 4,739  
**Total Number of Households in Service Area:** 2,266  
**Total Number of Businesses in Service Area:** 20  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:**  
**Unemployment Rate in the Service Area:** 9  
**Median Income in the Service Area:** 33,391  
**Estimated Percentage of Households with Access to Broadband:** 90



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**Estimated Percentage of Households Subscribing to Broadband: 40**

**Service Area Type:** Middle Mile  
**Service Area Name:** CHRISTIANSBURG/CLOVERDALE - RTE A  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area: 17**  
**Total Population in Proposed Service Area: 14,363**  
**Total Number of Households in Service Area: 6,208**  
**Total Number of Businesses in Service Area: 210**  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 9**  
**Unemployment Rate in the Service Area: 8**  
**Median Income in the Service Area: 35,584**  
**Estimated Percentage of Households with Access to Broadband: 50**  
**Estimated Percentage of Households Subscribing to Broadband: 30**

**Service Area Type:** Middle Mile  
**Service Area Name:** CHRISTIANSBURG/CLOVERDALE - RTE B  
**Rural Classification of the Last Mile Service Area:** Non-Rural  
**Service Status of the Last Mile Service Area:** Served

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|--|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b> |
|--|

**Total Square Miles in Service Area: 17**  
**Total Population in Proposed Service Area: 19,280**  
**Total Number of Households in Service Area: 7,280**



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**Total Number of Businesses in Service Area:** 170  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:**  
**Unemployment Rate in the Service Area:** 7  
**Median Income in the Service Area:** 42,819  
**Estimated Percentage of Households with Access to Broadband:** 80  
**Estimated Percentage of Households Subscribing to Broadband:** 50

**Service Area Type:** Middle Mile  
**Service Area Name:** CHRISTIANSBURG/CLOVERDALE - RTE C  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

**If Service Status is "Underserved" please select at least one applicable option from this list.**  
 The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

**Total Square Miles in Service Area:** 3  
**Total Population in Proposed Service Area:** 4,593  
**Total Number of Households in Service Area:** 1,825  
**Total Number of Businesses in Service Area:** 6  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:**  
**Unemployment Rate in the Service Area:** 7  
**Median Income in the Service Area:** 49,320  
**Estimated Percentage of Households with Access to Broadband:** 70  
**Estimated Percentage of Households Subscribing to Broadband:** 35

**Service Area Type:** Middle Mile  
**Service Area Name:** BLACKSBURG  
**Rural Classification of the Last Mile Service Area:** Non-Rural  
**Service Status of the Last Mile Service Area:** Served

**If Service Status is "Underserved" please select at least one applicable option from this list.**



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**Total Square Miles in Service Area:** 5  
**Total Population in Proposed Service Area:** 18,222  
**Total Number of Households in Service Area:** 7,704  
**Total Number of Businesses in Service Area:** 15  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 3  
**Unemployment Rate in the Service Area:** 8  
**Median Income in the Service Area:** 28,099  
**Estimated Percentage of Households with Access to Broadband:** 90  
**Estimated Percentage of Households Subscribing to Broadband:** 60

**Service Area Type:** Middle Mile  
**Service Area Name:** CHRISTIANSBURG/WYTHEVILLE - RTE B  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 26  
**Total Population in Proposed Service Area:** 17,002  
**Total Number of Households in Service Area:** 7,472  
**Total Number of Businesses in Service Area:** 188  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 11  
**Unemployment Rate in the Service Area:** 8  
**Median Income in the Service Area:** 33,990  
**Estimated Percentage of Households with Access to Broadband:** 45  
**Estimated Percentage of Households Subscribing to Broadband:** 30

**Service Area Type:** Middle Mile



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| <b>Task:</b> Submit Application - BTOP                                 | <b>Applicant Name:</b> Mr. Dennis Reece                         |

**Service Area Name:** CHRISTIANSBURG\WYTHEVILLE - RTE C  
**Rural Classification of the Last Mile Service Area:**Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 18  
**Total Population in Proposed Service Area:** 9,315  
**Total Number of Households in Service Area:** 4,178  
**Total Number of Businesses in Service Area:** 15  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:**  
**Unemployment Rate in the Service Area:** 12  
**Median Income in the Service Area:** 34,803  
**Estimated Percentage of Households with Access to Broadband:** 40  
**Estimated Percentage of Households Subscribing to Broadband:** 25

**Service Area Type:** Middle Mile  
**Service Area Name:** DUBLIN/PEARISBURG - RTE B  
**Rural Classification of the Last Mile Service Area:**Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 15  
**Total Population in Proposed Service Area:** 7,577  
**Total Number of Households in Service Area:** 3,491  
**Total Number of Businesses in Service Area:** 130



**Broadband Infrastructure Application  
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**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 4  
**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 34,784  
**Estimated Percentage of Households with Access to Broadband:** 40  
**Estimated Percentage of Households Subscribing to Broadband:** 20

**Service Area Type:** Middle Mile  
**Service Area Name:** PULASKI DOWNTOWN  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

**If Service Status is "Underserved" please select at least one applicable option from this list.**  
 The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

**Total Square Miles in Service Area:** 2  
**Total Population in Proposed Service Area:** 2,617  
**Total Number of Households in Service Area:** 1,100  
**Total Number of Businesses in Service Area:** 67  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 1  
**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 33,245  
**Estimated Percentage of Households with Access to Broadband:** 60  
**Estimated Percentage of Households Subscribing to Broadband:** 30

**Service Area Type:** Middle Mile  
**Service Area Name:** RINER/FAIRLAWN  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Served

**If Service Status is "Underserved" please select at least one applicable option from this list.**

**Total Square Miles in Service Area:** 13



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**Total Population in Proposed Service Area:** 16,159  
**Total Number of Households in Service Area:** 6,073  
**Total Number of Businesses in Service Area:** 226  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 2  
**Unemployment Rate in the Service Area:** 10  
**Median Income in the Service Area:** 31,696  
**Estimated Percentage of Households with Access to Broadband:** 60  
**Estimated Percentage of Households Subscribing to Broadband:** 45

**Service Area Type:** Middle Mile  
**Service Area Name:** WYTHEVILLE - RTE B  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

**If Service Status is "Underserved" please select at least one applicable option from this list.**  
 The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

**Total Square Miles in Service Area:** 1  
**Total Population in Proposed Service Area:** 2,009  
**Total Number of Households in Service Area:** 1,049  
**Total Number of Businesses in Service Area:** 44  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 2  
**Unemployment Rate in the Service Area:** 12  
**Median Income in the Service Area:** 23,505  
**Estimated Percentage of Households with Access to Broadband:** 60  
**Estimated Percentage of Households Subscribing to Broadband:** 30

**Service Area Type:** Middle Mile  
**Service Area Name:** WYTHEVILLE - RTE A  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved



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|   |
|---|
| <p><b>If Service Status is "Underserved" please select at least one applicable option from this list.</b><br/>The rate of broadband subscribership for the proposed funded service area is 40% of households or less.</p> |
|---|

**Total Square Miles in Service Area:** 4  
**Total Population in Proposed Service Area:** 3,126  
**Total Number of Households in Service Area:** 1,431  
**Total Number of Businesses in Service Area:** 104  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 2  
**Unemployment Rate in the Service Area:** 12  
**Median Income in the Service Area:** 32,505  
**Estimated Percentage of Households with Access to Broadband:** 70  
**Estimated Percentage of Households Subscribing to Broadband:** 40

**Service Area Type:** Middle Mile  
**Service Area Name:** WYTHEVILLE - RTE C  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <p><b>If Service Status is "Underserved" please select at least one applicable option from this list.</b><br/>The rate of broadband subscribership for the proposed funded service area is 40% of households or less.</p> |
|---|

**Total Square Miles in Service Area:** 4  
**Total Population in Proposed Service Area:** 5,964  
**Total Number of Households in Service Area:** 2,722  
**Total Number of Businesses in Service Area:** 23  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 1  
**Unemployment Rate in the Service Area:** 12  
**Median Income in the Service Area:** 37,828  
**Estimated Percentage of Households with Access to Broadband:** 70  
**Estimated Percentage of Households Subscribing to Broadband:** 40



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**Service Area Type:** Last Mile  
**Service Area Name:** GUNTON PARK  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Unserved

**If Service Status is "Underserved" please select at least one applicable option from this list.**

**Total Square Miles in Service Area:** 5  
**Total Population in Proposed Service Area:** 2,723  
**Total Number of Households in Service Area:** 1,157  
**Total Number of Businesses in Service Area:**  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:**  
**Unemployment Rate in the Service Area:** 12  
**Median Income in the Service Area:** 36,004  
**Estimated Percentage of Households with Access to Broadband:**  
**Estimated Percentage of Households Subscribing to Broadband:**

**Service Area Type:** Last Mile  
**Service Area Name:** DRAPER VALLEY RESORT  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| No fixed or mobile broadband service provider advertises broadband transmission speeds of at least 3 mbps downstream in the proposed funded service area;                                       |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 2  
**Total Population in Proposed Service Area:** 1,229  
**Total Number of Households in Service Area:** 569  
**Total Number of Businesses in Service Area:** 2



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**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:**

**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 28,693  
**Estimated Percentage of Households with Access to Broadband:** 40  
**Estimated Percentage of Households Subscribing to Broadband:** 20

**Service Area Type:** Middle Mile  
**Service Area Name:** DUBLIN/PEARISBURG - RTE A  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 9  
**Total Population in Proposed Service Area:** 7,301  
**Total Number of Households in Service Area:** 2,968  
**Total Number of Businesses in Service Area:** 10  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 2  
**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 36,188  
**Estimated Percentage of Households with Access to Broadband:** 40  
**Estimated Percentage of Households Subscribing to Broadband:** 20

**Service Area Type:** Middle Mile  
**Service Area Name:** CHRISTIANSBURG/WYTHEVILLE - RTE A  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved



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|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 8  
**Total Population in Proposed Service Area:** 5,787  
**Total Number of Households in Service Area:** 2,451  
**Total Number of Businesses in Service Area:** 54  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 1  
**Unemployment Rate in the Service Area:** 8  
**Median Income in the Service Area:** 37,682  
**Estimated Percentage of Households with Access to Broadband:** 50  
**Estimated Percentage of Households Subscribing to Broadband:** 35

**Service Area Type:** Last Mile  
**Service Area Name:** MEADOW VIEW ESTATES  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Unserved

|  |
|--|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b> |
|--|

**Total Square Miles in Service Area:** 7  
**Total Population in Proposed Service Area:** 1,249  
**Total Number of Households in Service Area:** 566  
**Total Number of Businesses in Service Area:**  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:**  
**Unemployment Rate in the Service Area:** 12  
**Median Income in the Service Area:** 34,911  
**Estimated Percentage of Households with Access to Broadband:**  
**Estimated Percentage of Households Subscribing to Broadband:**



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**Service Area Type:** Middle Mile  
**Service Area Name:** FAIRLAWN NRV COMP CENTER  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 1  
**Total Population in Proposed Service Area:** 952  
**Total Number of Households in Service Area:** 454  
**Total Number of Businesses in Service Area:** 4  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 2  
**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 31,685  
**Estimated Percentage of Households with Access to Broadband:** 50  
**Estimated Percentage of Households Subscribing to Broadband:** 30

**Service Area Type:** Middle Mile  
**Service Area Name:** DUBLIN NRCC  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 1  
**Total Population in Proposed Service Area:** 3,157



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**Total Number of Households in Service Area:** 1,396  
**Total Number of Businesses in Service Area:** 4  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 2  
**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 38,886  
**Estimated Percentage of Households with Access to Broadband:** 50  
**Estimated Percentage of Households Subscribing to Broadband:** 30

**Service Area Type:** Middle Mile  
**Service Area Name:** DUBLIN REGIONAL JAIL  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 2  
**Total Population in Proposed Service Area:** 5,055  
**Total Number of Households in Service Area:** 2,015  
**Total Number of Businesses in Service Area:** 40  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 1  
**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 35,127  
**Estimated Percentage of Households with Access to Broadband:** 50  
**Estimated Percentage of Households Subscribing to Broadband:** 30

**Service Area Type:** Middle Mile  
**Service Area Name:** PEAKS KNOB  
**Rural Classification of the Last Mile Service Area:** Rural



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**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 1  
**Total Population in Proposed Service Area:** 1,142  
**Total Number of Households in Service Area:** 512  
**Total Number of Businesses in Service Area:**  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 2  
**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 22,784  
**Estimated Percentage of Households with Access to Broadband:** 40  
**Estimated Percentage of Households Subscribing to Broadband:** 30

**Service Area Type:** Middle Mile  
**Service Area Name:** PULASKI HOSPITAL  
**Rural Classification of the Last Mile Service Area:** Rural  
**Service Status of the Last Mile Service Area:** Underserved

|   |
|---|
| <b>If Service Status is "Underserved" please select at least one applicable option from this list.</b>  |
| No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed; |
| The rate of broadband subscribership for the proposed funded service area is 40% of households or less.   |

**Total Square Miles in Service Area:** 1  
**Total Population in Proposed Service Area:** 1,820  
**Total Number of Households in Service Area:** 935  
**Total Number of Businesses in Service Area:** 8  
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 1



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**Unemployment Rate in the Service Area:** 11  
**Median Income in the Service Area:** 36,272  
**Estimated Percentage of Households with Access to Broadband:** 50  
**Estimated Percentage of Households Subscribing to Broadband:** 30

## F. Community Anchor Summary

| Community Anchor Summary                     |           |
|--|-----------|
| Schools (k-12)                               | 31        |
| Libraries                                    | 1         |
| Medical and Healthcare Providers             | 4         |
| Public Safety Entities                       | 3         |
| Community Colleges                           | 2         |
| Public Housing                               | 0         |
| Other Institutions of Higher Education       | 2         |
| Other Community Support Organization         | 0         |
| Other Government Facilities                  | 11        |
| <b>TOTAL COMMUNITY ANCHOR INSTITUTIONS</b>   | <b>54</b> |
| Historically Black colleges and Universities | 0         |
| Tribal Colleges and Universities             | 0         |
| Alaska Native Serving                        | 0         |



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|   |          |
|---|----------|
| <b>Institutions</b>                         |          |
| <b>Hispanic Serving Institutions</b>        | 0        |
| <b>Native Hawaiian Serving Institutions</b> | 0        |
| <b>TOTAL MINORITY SERVING INSTITUTIONS</b>  | <b>0</b> |

## G. Project Benefits

### Demographics

|  |    |
|--|----|
| <b>Jobs</b>  |    |
| <b>How many direct jobs-years will be created from this project?</b> | 45 |
| <b>How many indirect jobs will be created from this project?</b>     | 45 |
| <b>How many jobs will be induced from this project?</b>              | 50 |

**Methodology used to estimate jobs:**

Direct job-years: 44.87  
 Indirect job-years: 44.87  
 Induced job-years: 50.48

Based on the guidance for estimating jobs from government sponsored programs, this project will produce a total of 140.22 job-years. This was estimated by dividing the entire project budget (\$12.9 million) by \$92,000. Of those 140.22 jobs years produced by government spending, 64% of those (89.74) are direct and indirect jobs. No definite guidance was given for distinguishing between direct and indirect job-years, so that total was split directly in half to obtain those two estimates. The remaining 36% (50.48) of the total job-years produced are considered induced job-years.

**Project Impact:**

The primary purpose of this grant request is to build the middle mile fiber that is needed in this region so that Citizens and other last mile service providers can bring last mile fiber to this region. While this grant does directly build some last mile FTTP in three unserved/underserved areas of Wythe and Pulaski counties; it builds the middle mile fiber that gets close to homes,



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businesses and connects to anchor institutions in the area. Citizens believes this grant will meet all of broadband needs of the community, because the fiber routes built by this grant will be used to then extend last mile fiber as well as to provide access points and affordable transport for other service providers.

This project will have fiber drops at 54 anchor institutions. 17 of these anchor institutions have firmly committed to connecting to the network and hardware for 12 of these institutions are included in the project and is being paid for with designated matching funds. An additional 6 anchor institutions have signed a letter of intent, and another 30 have made informal inquiries. Citizens has connected schools in two counties with 1Gbps VLAN (Virtual Local Area Network) and this has greatly benefited both school systems. In addition, Citizens has direct peering relationships with Virginia Tech, Radford University, and New River Community College with a 2ms latency. This allows for two video classrooms without having to order a special transport circuit. All customers of Citizens including the schools benefit from the peering relationship with higher education institutions in the region.

We have identified 8 service providers that have the potential of using this network and who are already providing service in overall region. One letter of intent has been obtained, thus for two informal inquires. Citizens is already providing wholesale connections and internet services to 7 service providers outside of this projects service area. Currently Citizens is testing wholesaling its IPTV service with 2 service providers. 2 of the potential service providers identified are WISPs (Wireless ISP) and there will be connection points that will allow them to dramatically increase their last mile service area. Wholesale FTTP pricing will be available for service providers to reach customer built to in the last mile sections of this project.

Citizens fully intends on offering residential and business services along the fiber route and will build laterals as can economically justify based on cost and demand. Citizens is a full service provider offering broadband, VoIP, POTS, IPTV, and web hosting & design services. Bundle pricing will be offered to residential and business customers.

**Vulnerable Populations:**

According to the 2000 Census, non-metropolitan counties have higher levels of poverty and larger proportions of disabled and elderly residents when compared to metropolitan areas. In the New River Valley, that equates to approximately 11,925 low-to-moderate income persons, 28,246 disabled persons, and 18,368 elderly persons. The highest proportions of low-to-moderate income families (family income <\$35,000) occur in and around the Towns of Floyd and Pulaski, as well as parts of eastern Montgomery County. The majority of Giles and Montgomery Counties, the central strip of Pulaski County, the southern portion of Floyd County and southern Radford have moderate numbers of families living below the poverty level.



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According to block group data from the 2000 Census, the areas around Merrimac and the Towns of Floyd, Pulaski, Glen Lyn and Rich Creek have the highest proportions of persons over 65. Moderate proportions of persons over 65 occur throughout Giles County, the southern portion of Floyd County, and scattered throughout Pulaski and Montgomery Counties.

Persons with disabilities tend to live in the urbanized areas of the region; in or near the Towns of Pulaski, Christiansburg, Blacksburg, Narrows, and Pearisburg, as well as the City of Radford. These disabilities range from vision or hearing impairment to physical disabilities or even brain injuries. The highest proportion of disabled persons live in the block groups near Merrimac and outside Christiansburg, while the block groups near Pembroke, Narrows, Pulaski, Radford, and Floyd also have considerable numbers of disabled persons per block group.

Minority groups live throughout the region. According to the 2000 Census, black, Latino and Asian populations exist in various areas. The Asian population is concentrated in the Town of Blacksburg, with additional very small populations occurring in the City of Radford and the Towns of Christiansburg and Pulaski. The black populations are also concentrated within the Towns of Blacksburg, Christiansburg, Dublin, Pulaski and the City of Radford. The Latino population is similarly spread out, with the primary concentration residing in the Town of Blacksburg. By block group, the highest proportion of minorities in the region is less than 20% of any given block group.

| Locality (County/Region)     | Floyd    | Giles    | Montgomery | Pulaski  | Radford  | NRV      | Virginia |
|------------------------------|----------|----------|------------|----------|----------|----------|----------|
| 2007 Median Household Income | \$39,478 | \$41,186 | \$42,029   | \$40,427 | \$24,654 | N/A      | \$59,575 |
| 2000 Per Capita Income       | \$16,345 | \$18,396 | \$17,077   | \$18,973 | \$14,289 | \$17,284 | \$23,975 |
| 2007 Poverty Rate            | 12.90%   | 11.40%   | 19.90%     | 14.10%   | 6.90%    | N/A      | 9.90%    |
| May 2009 Unemployment Rate   | 7.70%    | 9.60%    | 7.10%      | 12.40%   | 9.60%    | 8.80%    | 7.00%    |
| 2006/07 Fiscal Stress        | 77       | 49       | 66         | 58       | 35       | N/A      | N/A      |

Sources: U.S. Census Bureau Fact Sheets; 2000 Census; Virginia Employment Commission.

**Level of Need:**

Southwestern and Southside Virginia have for many years faced dramatic economic hardships. Since the 1980s, the region has lost major industries and their associated jobs, including the textile and furniture industries. Recently, another major industry in the area, automotive, has



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been hard hit, with many residents losing their livelihoods. Rural areas in Virginia are scrambling to find industries and businesses to fill the voids left by these departing jobs. Increasingly, communities are looking toward 21st Century markets, industries and jobs that require adequate broadband services.

Currently, adequate broadband services are not available in the region to meet the needs of potential new employers. In 2004, the New River Valley Planning District Commission conducted a survey of local businesses throughout the region to determine their satisfaction with current telecommunications offerings, as well as their future needs for telecommunications technology. Of the 70 responding businesses, almost 30% were still using dial-up services. As indicated by the respondents, only two services provided bandwidth in excess of 3 Mbps, but at costs of \$1,900 to \$25,000 per month for such services. More commonly, respondents indicated that speeds for broadband-type services ranged from 100 kbps to 2.4 Mbps. Given the lack of services exceeding the definition of broadband and those that do with such prohibitively high costs, it is unlikely that 40% of households are utilizing those services. This is unlikely with the median household income in the low \$40,000s (almost \$20,000 lower than the state median of \$59, 575) and unemployment ranging from almost 10% to 12% in May 2009.

Further evidence of the underserved nature of this area is the expressed dissatisfaction from the surveyed businesses. Of the 15 largest employers responding to the survey (employing 11,646 people), six employers (employing 9,384) were less than satisfied with the speed of their connections. All were already utilizing the fastest service available to them, and those were the best in the region. For example, Virginia Tech has a 622 megabit/second connection, yet that connection was inadequate in 2004 for the growing demands of research and technology transfer uses and applications. Similarly, the public schools in Pulaski have indicated that while they have invested in technology to support their increased bandwidth demands, the systems currently in place will soon be at capacity without the construction of fiber infrastructure.

Citizens is requesting this funding to construct badly needed middle mile infrastructure to meet the needs of current residents, businesses and anchor institutions. Without this crucial middle mile infrastructure, last mile infrastructure and the resulting services to end users will not be available at adequate levels. Unfortunately, given the mountainous terrain in the region, constructing this infrastructure is extremely costly, and with low housing densities, would most likely not be constructed in the near future under normal business conditions. There is simply not



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enough population density in this region to justify the capital costs required to construct a network to adequately meet resident needs.

While this region may not be unserved, it is most definitely underserved for 21st Century needs. Existing broadband infrastructure includes limited fiber route along major transportation corridors (including Interstate 81) provided by Verizon and CenturyLink. Along some of the routes in this proposed project, the only available infrastructure is copper, with the largest bandwidth available being T1 or DS3. There is simply not a competitive landscape in this region to recruit additional last mile service providers to provide competitive broadband access. A true cost comparison of leased versus built fiber is impossible, since incumbents do not have fiber on many of the proposed routes. Where fiber is available, incumbent providers do not offer access to wholesale transport or dark fiber.

For the vast majority of the route in the proposed project, there is no existing fiber, rather only copper facilities are available. The existing infrastructure is 50 to 75 years old with incumbent providers offering minimal services at exorbitant costs.. Adequate broadband bandwidth is not available from incumbent providers to in turn provide services to residents, businesses and anchor institutions. Additionally, the routes proposed in this project were chosen specifically to provide critical divers routes for the existing open access networks. Without these diverse routes, one cut in the fiber network could cause outages across the region, stalling businesses and potentially causing severe impacts to public services.

Citizens currently operates a 222-mile open access fiber network in Southwest Virginia, with an additional 24 miles under-construction. The proposed project is a natural extension of this existing network. Additionally, Citizens has experience constructing and operating a broadband network in this unique region. To complete the proposed project, Citizens will utilize its highly trained staff to provide voice, data, and cable services and hardware. Services will be provided to numerous areas, including from a local office fully staffed with technicians in Fort Chiswell, VA, which is very close to the proposed network location. Unlike incumbent carries, Citizens is a cooperative and thus has no stockholders to report to. Rather than paying on dividends, Citizens take any profit margins and reinvests that money into the network expansion and upgrade and to new services for customers. Earnings are eventually paid back to the cooperative members in the form of capital credits, usually after 10 to 15 years.



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There really is no competitive landscape for the kind of bandwidth that Citizens and other last mile service providers need to bring last mile services. Citizens needs a minimum data pipe of 1 Gigabits to bring its full suite of voice, video and data to these areas. There are two primary carriers in our area that sell bandwidth – Verizon and CenturyLink. It is possible on a few major routes in the region, such as along Interstate 81, to buy bandwidth as large as an OC3, but an OC3 is not enough bandwidth to bring last mile services. However in the rural parts of these seven counties where this grant brings fiber, the biggest bandwidth generally available is T1s (1.45 Mbps) or DS3s (45 Mbps). The incumbent facilities along these rural roads are generally copper and not fiber.

The service area suffers from severe economic problems such as loss of historic core industries. The once predictable industries of furniture, automotive, garment manufacturing, and agriculture are all in decline and the region needs to encourage knowledge based industries into the area to replace jobs. Furniture and Garment manufacturing is basically gone from the area. Rural areas like the southwestern Virginia are scrambling to find solutions to deal with the constant job losses or job downgrades for the region.

The Commonwealth of Virginia conducted a Census of Broadband which produced a map indicating unserved and underserved areas in the state (map found at [http://gismaps.virginia.gov/broadband\\_census/](http://gismaps.virginia.gov/broadband_census/)). From this map, it is clear that while Floyd County in the project area is served by broadband services (specifically Citizens as the ILEC), the remainder of the project is predominantly unserved or underserved. This is primarily due to the low numbers of homes per square miles (as low as 6). Floyd County has an average of 18 homes per square mile, but Citizens (as the ILEC) provides 95% of the county with broadband services with a 60% adoption rate. As it has been economically feasible and justifiable, Citizens has been expanding its network outside of Floyd County since 2006.

Verizon is the largest ILEC in the state, however their business focus has been on introducing FiOS services in major metropolitan areas. Verizon has poured billions of dollars into bringing fiber to the cities and suburbs of the northeast, but they have made virtually no new investments in this region in many years.

Building middle mile fiber can benefit not only local residents, but also have far reaching benefits achieved by partnering and interconnecting to other open access networks. Citizens has partnered with Mid-Atlantic Broadband Cooperative (MBC) and Bristol Virginia Utilities



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(BVU). Because of this partnership service providers can now obtain point to point pricing across all three networks and to major Tier 1 internet hubs, like Equinix in Ashburn, VA. For example Citizens partnered with adjacent rural service providers in North Carolina, Surry Telephone, Skyline Telephone, Wilkes Telephone, and Yadkin Valley Telephone. Through its partnership with MBC, Citizens is now purchasing a large Internet backbone connection at Equinix to be split between the 5 organizations which has dramatically reduced internet backbone costs for all involved. Other synergies have been created by the joint efforts of this partnership, such as attracting data centers to Virginia such as CGI Inc. and Northrop Grumman Corporation located in Russell County. These are both BVU's customers; however it was the access to Tier 1 connection points like Equinix in Ashburn that helped bring them to that area; a circuit to go from Russell County to Ashburn, VA would travel across all 3 networks, BVU, Citizens, and MBC. Just this week, we had a fiber cut caused by a VDOT construction project and it took down the connection between Citizens and BVU temporarily and impacted circuits traveling across all three networks including circuits to Northrop Grumman. Luckily the restoration of the circuits, took less than an hour; however there is a critical need for diverse routing. This middle mile project will not only impact the availability of affordable broadband to the communities it passes through it will serve as a critical diverse route for existing open access networks.

## H. Technology

### Technology Type

**Indicate the technology that will be used to deliver last mile services. The following items were selected:**

Wireline - Fiber-optic Cable

Other:

### Technology Questions

#### Methodology for Area Status:

This application's determination of served/unserved/underserved areas is guided by the Commonwealth of Virginia's recently released map of the same areas.  
[http://gismaps.virginia.gov/broadband\\_census/](http://gismaps.virginia.gov/broadband_census/)



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On May 14, 2009, the Virginia Office of Telework Promotion and Broadband Assistance released a map of fixed and wireless broadband service areas in Virginia, based on various data obtained from 30 Virginia broadband providers under nondisclosure agreements. The first generation map represented the best available broadband service area data in Virginia at the time of the NOFA release.

The operational definitions of unserved and underserved are spelled out in the NOFA, but the terms are defined in terms of metrics that go beyond service areas, such as take-rate, % of households served, and highest advertised connection speed.

Because the data held by the state represented service areas and did not address the issue of speed, Virginia Tech eCorridors collaborated with VGIN to incorporate additional data elements. eCorridors collected data from an interactive web-based map they developed in-house, which enables its users to mark their location on a map and then associate it with the results of a free open-source speed testing utility. These data points were used to create a spatial statistical model that predicted broadband speeds in each census block.

speeds  $\leq$  200Kbps were classified as unserved; 200Kbps  $<$  predicted speeds  $<$  768Kbps were classified as underserved, and predicted speeds  $\geq$  768Kbps were classified as served.

VGIN performed a quality assurance check against the service data provided by the broadband vendors. This data was provided to the Commonwealth of Virginia, with VGIN as the data custodian, under a nondisclosure agreement, and as a result, could not be used directly to create a map. Data provided by the vendors varied in spatial accuracy, so VGIN chose to use only the most accurate data, provided by vendors as latitude/longitude coordinates of customers, during the verification process.

From the result of the spatial join process, VGIN was able to estimate the population served by broadband within each block by multiplying the number of vendor points by the average household size of 2.54 individuals per household (average household size obtained from Census Bureau website). With the population served by broadband within each block now available, an estimate of the percent served could be calculated using the census population attribute within each polygon.

The new map containing VGIN's recoded blocks was then presented to the service providers for review. VGIN revisited the original data underlying the first generation map, and when geocoded



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address point data was taken into consideration along with the latitude/longitude data that was used in the first round of QA/QC, a representation of broadband served/unserved/underserved areas emerged that was met with approval from all stakeholders.

**Description of Network Openness:**

Citizens first opened up its regional fiber network after receiving a grant from the Virginia Tobacco Commission in 2005 to build an open access fiber network to bridge MBC and BVU's similarly funded fiber networks. These three entities and a few others are all part of Virginia's open access fiber network.

Citizens has a successful track record with open access networks and has partnered with MBC and BVU on numerous occasions to provide wholesale circuits across Virginia. Current direct and indirect providers using Citizens' open access network include: MBC, BVU, JetBroadband, Cox Communications, nTelos, Comcast, Professional Networks, KDL, and the WiredRoad. In partnership with MBC, Citizens has created a fiber ring with several North Carolina cooperatives such as Surry Telephone Membership Corporation, Skyline Telephone Membership Corporation, Wilkes Telephone Membership Corporation, and Yadkin Valley Telephone Membership Corporation to share internet backbone connectivity and to reduce their costs. Also through this partnership with MBC, Citizens is providing a 10Gig circuit for Virginia Tech as a diverse internet connection.

Citizens connects to the Equinix facility in Ashburn, VA for one of its backbone internet connections through Virginia's open access network and its partnership with MBC. Citizens has a second internet connection through its connection with Cox Communications in Roanoke, VA.

Citizens also has direct peering with high education institutions in the region: Radford University, Virginia Tech, and New River Community College. This allows its customers and the local schools to have optimal access to video classroom and distance learning resources.

The proposed middle-mile network will be open to all providers with emphasis on serving economic development, education, health care, emergency response, and research needs. As a matter of policy, Citizens does not discriminate against any carrier and is open to all interconnection requests.



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As a primarily Layer 1 optical transport provider, Citizens does not and will not block access, engage in packet shaping, or implement restrictions on connectivity or bandwidth utilization. MBC provisions either wavelength or Ethernet circuits over our SONET network infrastructure at the STS-1 level, thus ensuring that when a telecom provider buys 100Mbps of transport services, they have a dedicated 100Mbps pipe for their services.

Citizens does have an acceptable use policy for its direct internet customers and complies with the DMCA (Digital Millennium Copyright Act). These policies are found at <http://citizens.coop/terms/index.shtm>

**System Design:**

The fiber path will be constructed using RUS 1753F-601 (PE90), single-mode, fiber-optic cable, ranging from 96 strands to 240 strands in 12 fiber, loose tube, configuration using armored sheathing. Installation will be direct-buried along roadway rights of way using existing Citizens agreements with the Virginia Department of Transportation. Where aerial facilities are needed due to terrain or congestion issues, fiber will be placed in the communications zone of existing pole facilities and will utilize existing Citizens pole-attachment agreements with providers. All fiber will be fusion-spliced and will have a maximum of 0.25db of loss per KM. Node facilities will be 10'x12' or larger, pre-cast, concrete structures equipped with 200amp single-phase power, dual HVAC systems, emergency generator backup with low-emission, EPA-rated, LP powered systems and substantial grounding and environmental monitoring systems. Citizens will extend its carrier class, optical transport system over the proposed fiber path. The system will be tied to MBC's existing network at Floyd, Christiansburg and Wytheville. The deployed system will be initially scalable to 200Gbps. Citizens currently provisions Ethernet over SONET access for carrier customers starting at 10Mbps. Electronics will be powered using redundant DC power, A&B feeds, which will be monitored and managed 24 hours a day, seven days a week, 365 days a year, by Citizens.

All schools in each school system will be offered VLAN (Virtual Local Area Network) connectivity. Citizens has already done this type of deployment for 2 school systems, Floyd County and Wythe County Schools. Each school has a 1Gig VLAN connection. Both school systems are using this connection for data, internet, video, and VoIP phone systems. Citizens has a direct peering relationship with Virginia Tech, Radford University, and New River Community College which allows for low latency (2-3 ms) connections and supports video classrooms.



**Broadband Infrastructure Application  
Submission to NTIA – Broadband Technology Opportunities Program**

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|--|---|
| <b>Submitted Date:</b> Easygrants ID: 6848                             |   |
| <b>Funding Opportunity:</b> Broadband Technology Opportunities Program | <b>Applicant Organization:</b> CITIZENS' TELEPHONE CO-OPERATIVE |
| <b>Task:</b> Submit Application - BTOP                                 | <b>Applicant Name:</b> Mr. Dennis Reece                         |

Is the applicant seeking a waiver pursuant to section IX.C of the NOFA so as to sell or lease portions of the award-funded broadband facilities during their life?

No

## I. Project Budget

| Project Budget |                       |                  |
|----------------|-----------------------|------------------|
|                | Federal Grant Request | Match            |
| Last Mile      | 1,011,475             | 252,869          |
| Middle Mile    | 9,496,400             | 2,374,100        |
| <b>Total</b>   | <b>10,507,875</b>     | <b>2,626,969</b> |

**Project Budget Total:** \$13,134,844

**Match Percent:** 20.0%

**Projects Outside Recommended Funding Range:**



| Outside Leverage   |   |
|--|---|
| <b>Applicant is providing matching funds of at least 20% towards the total eligible project costs?</b> | Yes   |
| <b>Matching cost detail</b>  | The New River Valley Network Wireless Authority (NRVNW) is providing \$830,000 in matching funds to be designated specifically for the portions of the network within Pulaski and Giles Counties. The NRVNW is a government Authority set up pursuant to the Virginia Wireless Authorities Act (Chapter 54.1, Title 15.2 of the Code of Virginia) with two founding members: Pulaski and Giles Counties. The funds will be used strictly for infrastructure and equipment including electronics at designated anchor institutions to provide a 1 Gig Virtual Local Area Network (VLAN) between locations. For |



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|   |   |
|---|---|
|   | <p>example: Pulaski County Public Schools will all be interconnected using a 1Gig VLAN.</p> <p>The Virginia Tobacco Indemnification Commission is providing \$667,287.05 in matching funds specifically to meet the 20% non-federal match for the portion of the proposed network in Wythe and Floyd counties. This will be used for all infrastructure and equipment in those two counties. This project will connect to the open access network in these two counties that the Tobacco Commission has already aided in funding.</p> <p>Citizens Telephone Cooperative will be providing the remaining \$1,129,681.59 in match with a combination of funds and in-kind services. Citizens will provide engineering labor valued at \$525,000 or 4% of the total cost of the project. Some engineering will be outsourced as well, based on our last few contracts for similar fiber projects engineering cost run between 9% and 18% of the total project. The remaining \$604,681.59 of match will be provided by Citizens.</p>   |
| <b>Unjust enrichment</b>                                  | Citizens Telephone Cooperative is not receiving, nor has it applied for, any Federal Support for non-recurring costs in the area it is seeking an award.  |
| <b>Disclosure of federal and/or state funding sources</b> | <p>Citizens Telephone Cooperative has requested state funding from the Virginia Tobacco Indemnification Commission in the amount of \$667,287.05 for the 20% match requirement in Floyd and Wythe Counties for this BTOP project.</p> <p>Citizens Telephone Cooperative had received a prior grant from the Virginia Tobacco Indemnification Commission in the amount of \$3,700,500 for an open access fiber project that included fiber routes in Montgomery, Floyd, Carroll, Grayson, and Wythe counties; total project cost was \$8,519,500. The proposed BTOP project will tie into this network in Wythe, Floyd, and Montgomery counties.</p> <p>Citizens Telephone Cooperative had applied for RUS Community Connect grants for Max Meadows and Locust Hill areas of Wythe County, but was declined due to the number of applicants and availability of funds.</p> <p>Citizens Telephone Cooperative is receiving e-rate funds for schools served in Floyd County and Wythe County.</p> <p>No other state or federal funding has been received or requested in the</p> |



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|                              |  |
|------------------------------|--|
|                              | proposed service area.   |
| <b>Budget reasonableness</b> | <p>Citizens believes that all of the proposed costs for this grant are reasonable. Citizens has built over 222 miles of fiber in recent years, much of it funded by grants and is currently constructing a 24 mile route with the aid of a grant. Citizens has always used good purchasing practices for both the materials and the construction labor of fiber projects.</p> <p>The estimates used to predict the cost of the fiber routes being built by this grant are based upon historical data that Citizens has regarding the cost of building fiber in this region. Citizens believes the experience we have in fiber builds assists us in accurately assessing the cost of fiber construction.</p> <p>Citizens has projected that the cost for aerial and buried fiber in the region can be built for an average of \$55,643 per mile. Again, Citizens has built significant fiber in 2009 and into 2010 and knows that this is a reasonable and achievable cost.</p> <p>Citizens construction is done under competitive bids and Citizens has worked with numerous contractors over the years depending upon which one would provide the best price.</p> <p>This proposal also includes three other components: Network &amp; Access Equipment, POP sites, and Customer Premise Equipment. Citizens currently uses equipment provided by Infinera, Nortel, Cisco, and Occam and based on past experience, will contract with these companies for the purchase of electronics.</p> <p>Citizens will go to competitive bids to construct the POP sites. These are small buildings that are constructed to house the electronics and to give a place for last mile providers to connect to the network. Citizens has built POP sites in the past and we feel that our estimate of \$80,000 per site is a good estimate for cost of the building, land, generators, and power equipment to be housed at the sites.</p> <p>Citizens will use our current vendors to purchase all ONT equipment and Set-Top Boxes for FTTH builds. Looking for the products we need at the best price is what led us to the vendors we are using.</p> <p>Citizens believes the budget we have proposed is adequate to complete the project as proposed. We believe that we will be able to get fixed</p> |



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|                                     |  |
|-------------------------------------|--|
|                                     | <p>price contracts from fiber construction companies that will guarantee that the project will be finished at a negotiated price and timeline. Citizens also believes that all of the budgetary numbers within the grant request are consistent across all of the forms and narrative.</p>   |
| <p><b>Demonstration of need</b></p> | <p>The primary reason that Citizens is requesting this middle mile grant is so that the last mile fiber can be built to residents, anchor institutions and businesses in these areas. While this grant is primarily to build middle mile fiber, without these routes, much of this area will not get last mile fiber. As can be seen by this grant request, the cost of middle mile fiber is expensive and Citizens cannot raise the money commercially to invest in middle mile fiber.</p> <p>Southwest Virginia is rural and rugged. It costs more per mile to build along our narrow and winding roads than it does in a lot of the rest of the country. There also is far less demand for large bandwidth transport that can help pay for middle mile fiber because there are very few large businesses or data users in the region.</p> <p>Verizon is the largest ILEC in the state; however their FiOS is focused in on major metropolitan areas. Verizon has poured billions of dollars into bringing fiber to the cities and suburbs of the northeast, but they have made virtually no new investments in this region in many years. One cannot blame them because they get a much bigger economic bang for their buck when they spend money in the densely populated areas like Washington DC, Philadelphia, Boston and New York City. In this rural region of Virginia, the numbers of home per square mile is as low a 6 per mile.</p> <p>Unlike large incumbent carriers, Citizens is a cooperative. Citizens does not have stockholders to report to that are concerned about their rate of return. Citizens takes the margins they make and reinvest it in the network, new services, and to expand into unserved and underserved areas. As a cooperative, Citizens first responsibility is to it's incumbent area and they must use excess cash to keep this area in compliance with FCC regulations around broadband requirements. Also, as a cooperative, the earnings for a particular year are eventually</p> |



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|  | <p>paid back to the members in form of capital credits, which is usually on a 10-15 cycle.</p> <p>Citizens believes that if this project is not funded at this time, it will not be funded for a very long time, if ever. Citizens has built virtually all of its existing middle mile network using grants from the Virginia Tobacco Indemnification.</p> <p>Our Net Present Value analysis shows a difference of value with and without the grant of \$8.29 million (-\$9.01 million without the grant and -\$0.72 million with the grant. The grant we are requesting is \$10.5 million, which is slightly greater than the difference in Net Present Value. This shows that the government will be making a good investment with this grant.</p> <p>The pricing in this project is consistent with our pricing for anchor institutions along our current fiber route. We feel that we bring tremendous value to anchor institutions by bringing them vastly more bandwidth than they have available elsewhere and we expect to be compensated for that service. Our pricing will not change if awarded this grant.</p> |
|--|--|

**Funds to States/Territories**

| States   | Amount of Federal Grant Request |
|----------|---------------------------------|
| Virginia |                                 |

**Funds to States/Territories Total:** \$10,507,875

## J. Historical Financials

| Matching Funds | 2007 | 2008 | 2009 |
|----------------|------|------|------|
|                |      |      |      |



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|   |            |            |            |
|---|------------|------------|------------|
| <b>Revenue</b>                              | 8,399,777  | 9,958,475  | 11,840,470 |
| <b>Expenditures</b>                         | 8,403,094  | 8,678,762  | 8,053,270  |
| <b>Net Assets</b>                           | 17,569,803 | 21,163,834 | 15,131,292 |
| <b>Change in Net Assets from Prior Year</b> | 463,367    | 3,594,031  | 6,032,542  |
| <b>Bond Rating (if applicable)</b>          |            |            |            |

## K. Project Readiness

### BTOP Organizational Readiness

Citizens Telephone Cooperative is prepared to implement, manage, and operate the advanced, open-access middle mile network that is proposed. Citizens is a non-profit cooperative operating as a telecommunication provider and wholesale provider, and our company currently manages a broadband network comprised of more than 4,000 miles in facilities in Southwestern Virginia.

Our senior management team, along with our project team members, have over 125 combined years of experience in the telecommunications field. We also has an eight member Board of Directors dedicated to Citizens' regional economic development mission that provides governance and policy decisions corresponding to Citizens' activities.

Citizens Telephone Cooperative, Inc. has provided communications service for nearly 100 years. Its origin dates back to 1914, when Citizens Mutual was formed and started providing telephone service in Floyd County, VA. In 1953, Citizens Mutual merged with two other telephone mutuals to form Citizens Telephone Cooperative (Citizens). Citizens is a full service provider offering telephone, VoIP, IPTV Video, web hosting, DSL, and Ethernet (FTTP) services. Citizens currently has 4,092 miles of facilities in the region: 247 miles of open access fiber, 135 miles of ILEC fiber, and 3,711 miles of copper plant providing telephone and DSL service.

Citizens is a previous and current recipient of grant funding from the Virginia Tobacco Indemnification Commission to build open access middle mile fiber network in the Tobacco producing counties of rural southern and southwest Virginia. Citizens Open Access Network is a critical link between two similarly funded open access networks; Bristol Virginia Utilities (BVU)



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and Mid-Atlantic Broadband (MBC). Between these three entities an Open Access Network spans most of the southern Virginia.

Citizens, as a successful, existing wholesale carrier, is well qualified to carry out the full implementation and ongoing operational support requirements. Citizens has a fully operational network that has been up and running for over 95 years and has a comprehensive understanding of billing, customer care, network operations, network maintenance, financial reporting, and overall management. Citizens' ability to integrate this projects operation into the daily operations of Citizens is not an issue. Citizens will establish a team to track grant activities, revenues, expenses for assurances of auditing and government transparency requirements. As Citizens has been a grant recipient from the Virginia Tobacco Commission for broadband network deployment, we understand the requirements of separate accounting and accountability for the project expenditures and take this responsibility very seriously. Citizens' existing partners are anxious for this project to be completed, as it will enable their services to be expanded to other unserved and underserved markets in Virginia.

**Construction and Vendor Contracts**

Citizens will be utilizing Class A contractors to perform all the construction required for the placement of the proposed NRV-ROAN fiber facilities, equipment, and communications huts. Contractors will be selected from an existing list of approved companies that are licensed to work in the State of Virginia. In the past 10 years Citizens has contracted with 5 different contractors on projects of this type and size. The construction contract will be awarded to one prime contractor through a bid process that requires bid bond, performance bond, proof of insurance, and a financial statement. The contractor will be required to have experienced staff and adequate equipment to accomplish tall the construction requirements and meet all design specifications of the project. Citizens will be utilizing resources from a qualified Engineering Firm to perform several functions in the NRV-ROAN fiber project. The engineering firm will be selected from an approved list of firms that Citizens is currently using or have used on past projects and is licensed to work in the State. The Engineering Contract will be awarded through a bid process that requires proof of insurance, financial statement, and engineering qualifications. The selected firm will be involved in many aspects of the project including Contract Administration, route design, and staking, right of way acquisition, inspection services, facility and network testing, permit process, and coordination with localities and utilities.

**Customer Base**



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Citizens Telephone Cooperative only has customers in 3 of the 7 counties: Wythe, Floyd, and Montgomery. Citizens Telephone Cooperative does have more customers in Floyd and Wythe counties than listed below; however they are outside the proposed service area and proposed project.

**Wythe County:**

Residential Services: 43  
Businesses: 7  
Schools: 6  
Government: 6  
Service Providers: 5

**Floyd County:**

Residential Services: 125  
Businesses: 9  
Schools: 3  
Medical/Healthcare: 3  
Emergency Services: 1  
Libraries: 1  
Government: 3  
Service Providers: 3

**Montgomery County:**

Residential Services: 0  
Businesses: 5  
Schools: 0  
Libraries: 1  
Emergency Services: 2  
Higher Education: 1  
Government: 5  
Service Providers: 5

**Licenses, Regulatory Approvals and Agreements**



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Due to Citizens' considerable experience in operating and managing a telecommunications network (last mile and middle mile), few licenses and agreements will be needed for successful implementation and operation of the project.

The following will NOT be required for this project:  
Tower Leases, Equipment Leases, Building Leases, FCC Authorizations, State Authorizations, Video Franchise Agreements, Leasing of Local Loops.

The following will be required:  
Land Leases/Purchases - Citizens plans to obtain long-term easements from the County owned land that the new node facilities will be placed. Citizens has successfully completed that process with 9 other counties/cities and will use that same process for the new land leases.

Rights of Way – Citizens has an executed, ongoing Memorandum of Understanding with the Virginia Department of Transportation for use of their right of way for the entire state. We will not be required to renegotiate another agreement, as our existing agreement will cover this project.

Railroad Crossing - There are 3 rail crossings for this project. Citizens has successfully completed crossing permits with the railroad owner for 3 other crossings in the state. Citizens will follow our standard permit procedure for this activity.

Environmental – there will be several rivers, streams, and wetland areas to negotiate along the proposed route that will require a joint permit from VMRC, DEQ, and Army Corps.

**SPIN Number**

Citizens' Telephone Cooperative: 143001405

## **L. Environmental Questionnaire**

### **Project Description**



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The proposed NRV ROAN project is 207 mile fiber installation that will basically follow the I-81 and route 11 corridor from the Town of Wytheville east through Pulaski, Montgomery, and Roanoke counties and end at route 220 in Botetourt county. The project will also consist of a route from the Town of Floyd and follow route 8 to Christiansburg. Another route will run from the Town of Dublin north on route 100 to the Town of Pearisburg. The construction will consist of 90% buried fiber along existing Virginia Department of Transportation (VDOT) right of way using the outer portion of road shoulder or median and placed at a minimum depth of 30 inches. The remaining 10% will be aerial construction using existing utility poles or placing new poles within the VDOT right of way.

The proposed buildings will pre-fabricated concrete structures measuring 12' X 16" placed on concrete pad and footer. The huts will be placed in a 20' X 20' fenced area located on county owned or obtained private property. All code required erosion and sediment control measures will be enforced on these construction processes.

Citizens is in the process of submitting all the necessary environmental information to the appropriate Federal, State, and Local agencies as required by the NTIA infrastructure grant and the National Environmental Act. Uploaded with the grant information is a list of agencies that are being ask to respond on potential impact to the environment.

**Property Changes**

The NRV ROAN project consist of 207 miles of buried fiber-optic cable that will be installed along VDOT rights-of way by a combination of direct buried ( plowing ), trenching, or directional boring. The cable will be installed at depth of 30" in previously disturbed shoulder or median areas on the right of way. The maximum width of any excavation method would be 12" in width. There will be no in stream work allowed on this project. All rivers and streams will be crossed by directional bore or aerial insert. The aerial cable will be attached to previously installed, incumbent owned poles. Approximately 10% of the proposed construction will be aerial were restricted corridor will not allow for buried construction. Aerial construction will utilize existing utility poles which requires minimal land disturbance.

The maximum disturbed area for the site preparation and foundation installation for the pre-fabricated buildings is 400 sq. ft. Any buildings installed on VDOT right-of-way must have a separate permit from VDOT and must be approved in conjunction with the localities. All buildings and lots must conform to local zoning ordinances and land use requirements. Each building location requires a local building and electrical permit and an E-911 address be obtained prior to construction.



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Citizens files an annual Erosion and Sediment Control plan with the Department of Conservation and Recreation to cover all linear underground construction and site work under 10000 sq.ft.

**Buildings**

The buildings will be 12' x 16' x 7' pre-fabricated concrete designed for communication applications. The pad requirement for the buildings is 14' x 16'. The buildings will be located on public, local government, or private property. All locations will be permitted and have unique E911 addresses. The maximum required property requirement is 20' x 20'.

The linear construction for the fiber-optic cable installation will be located within previously disturbed public rights-of-way.

**Wetlands**

The proposed NRV ROAN project construction routes will cross the New River once and the Roanoke River once. Several streams and tributaries of these two rivers have also been identified along the routes, therefore Citizens is submitting a joint application permit with Virginia Marine Resources Commission, Department of Environmental Quality, and Army Corps of Engineers for approval to cross these locations. In accordance with the National Environmental Act, Citizens will submit all necessary maps and environment applications to the proper local, state and Federal agencies, including the U.S. Fish and Wildlife Services. Once the review is complete, the U.S. Fish and Wildlife Services will issue an approval letter. The buried cable installation will take place in previously disturbed areas along VDOT rights-of-way, with the aerial fiber being installed on existing poles or applicant installed poles in VDOT right-of-way.

Some of the Wetland maps will be uploaded with this application. A full report with maps and documentation will be uploaded upon completion of the wetland review. ( Upload attachment “ A “ )

**Critical Habitats**

The proposed project crosses several creeks and rivers that contain endangered species. There will be no in stream disturbance by construction on this project which will result in little or no impact to the environment of these areas. Stream and river crossings will be accomplished by aerial installation on existing utility poles or by directional bore where terrain conditions allow. No state, national forests or national game preserves are located within the proposed project area. The New River is a designated scenic river that will be crossed using an existing aerial crossing.



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Uploaded with the grant is a list of the endangered species identified within the 7-county region, where this project is proposed (Upload Attachment Doc. “B “). Citizens will submit all the necessary environmental applications and information to local, state, and Federal agencies for acknowledgment and approval letters.

**Floodplain**

Floodplain areas should be minor within the proposed project area. There will be minimal impact on the floodplain region for both 100 and 500 year floodplains. The proposed construction techniques are non invasive and will create no significant disturbance to the surrounding floodplain areas.

Preparation of maps showing the projects locations within the 100 and 500 year floodplains in each effected county will be prepared post NTIA application. Citizens will coordinate will local and state agencies to determine project impact for identified floodplain areas and submit documentation including FEMA NFIM maps per the NTIA grant requirements.

Some of the floodplain areas have been identified and will be uploaded with the application (Upload Attachment doc. “C “). A full report with maps and documentation will be submitted as soon as the review process is completed.

**Protected Land**

The proposed Citizens NRV ROAN project will be submitted to the State Historic Preservation Office for review. The three (3) proposed questions as indicated on the questionnaire will be submitted with our application to SHPO. No part of this project is located on or near any tribal lands.

**Coastal Area**

The proposed Citizens NRV ROAN project is not located within the boundaries of a coastal zone management area. The project is located within the mountains of rural southwestern, Virginia.

**Brownfield**

None of the proposed NRV ROAN project is located within a “brownfield site”. No toxic, hazardous or radioactive substances will be encountered or produced by this project. The buried fiber infrastructure will be located along VDOT highway rights-of-way, with the small



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percentage (10%) of aerial fiber located on previously installed utility poles. Below is a list of identified brownfield sites that are located in the project area.

All of the brownfield areas have been identified and will be uploaded with the application (Upload Attachment document "D").



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**Uploads**

The following pages contain the following uploads provided by the applicant:

| Upload Name                                      | File Name  | Uploaded By   | Uploaded Date |
|--|--|---------------|---------------|
| Service Offerings and Competitor Data            | upload_template_CCI_Service_Offerings_Competitor_Data_NRV-ROAN.xls | Reece, Dennis | 03/25/2010    |
| Network Diagram                                  | network diagram.pdf  | Reece, Dennis | 03/26/2010    |
| Build Out Timeline                               | timeline_nrvroan.doc   | Reece, Dennis | 03/26/2010    |
| List of Community Anchors and Points of Interest | upload+template++CCI++Anchor+Detail+and+POI (1).xlsx               | Reece, Dennis | 03/26/2010    |
| Management Team Resumes and Organization Chart   | resume and org chart.pdf   | Reece, Dennis | 03/26/2010    |
| Historical Financial Statements                  | Historical Financial Statements.pdf                                | Reece, Dennis | 03/24/2010    |



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| <b>Task:</b> Submit Application - BTOP                                 | <b>Applicant Name:</b> Mr. Dennis Reece                         |

|                          |   |               |            |
|--------------------------|---|---------------|------------|
|                          |   |               |            |
| Budget Narrative         | budget narrative.pdf  | Reece, Dennis | 03/26/2010 |
| Detailed Budget          | upload+template++CCI++Detailed+Budget_Final.xlsx                          | Reece, Dennis | 03/26/2010 |
| Pro-forma Forecast       | upload+template++CCI+-+Pro+Forma+Financial+Projections_NPV_Final (1).xlsx | Reece, Dennis | 03/26/2010 |
| Subscriber Estimates     | upload+template++CCI++Subscriber+Estimates_Final.xls                      | Reece, Dennis | 03/26/2010 |
| Dashboard Metrics        | upload+template++CCI+-+Key+Metrics+Dashboard-1.doc                        | Reece, Dennis | 03/26/2010 |
| Service Area Data        | upload template - CCI Service Areas (1).xls                               | Reece, Dennis | 03/26/2010 |
| Network Maps             | NRV - ROAN DRAWINGS.pdf   | Reece, Dennis | 03/26/2010 |
| BTOP Certifications      | BTOP Authentication and Certifications.pdf                                | Reece, Dennis | 03/24/2010 |
| SF-424 C and D           | SF-424C.pdf   | Reece, Dennis | 03/26/2010 |
| Supplemental Information | A-E.pdf   | Reece, Dennis | 03/26/2010 |



**Broadband Infrastructure Application**  
**Submission to NTIA – Broadband Technology Opportunities Program**

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