



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Table of Contents

- A. General Application Information
- B. Executive Summary, Project Purpose, and Benefits
- C. Partners
- D. Congressional Districts
- E. Service Area Details
- F. Community Anchor Summary
- G. Project Benefits
- H. Technology
- I. Project Budget
- J. Historical Financials
- K. Project Readiness
- L. Environmental Questionnaire
- M. Uploads



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A. General Application Information

Applicant Information	
Name and Federal ID for Applicant	
DUNS Number	074746439
CCR # (CAGE)	5L8D5
Legal Business Name	ROCKBRIDGE, COUNTY OF
Point of Contact (POC)	ROBERT CLAYTOR 5404631464 Ext. robert.claytor@gmail.com
Alternate POC	CLAIRE COLLINS 5404634361 Ext. claire_collins@co.rockbridge.va.us
Electronic Business POC	ROBERT CLAYTOR 5404631464 Ext. robert.claytor@gmail.com
Alternate Electronic Business POC	RON ARGENBRIGHT 5404634261 Ext. ron_argenbright@co.rockbridge.va.us

Name and Contact Information of Person to be Contacted on Matters Involving this Application:	
Prefix	Mrs.
First Name	Claire
Middle Name	A.
Last Name	Collins
Suffix	
Telephone Number	540-463-4361



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Fax Number	
Email	dan_grim@co.rockbridge.va.us
Title	County Administrator

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

Project Role	Name	Phone	Email
Secondary Point of Contact	Mr. Daniel R, Grim	5404649656	dan_grim@co.rockbridge.va.us
Other Contact	Dr. R Hunt, Riegel	5402582345	hriegel@rockbridge.net

Environmental Point of Contact

Prefix: Mr. Name: Grim, Daniel Suffix: Telephone Number: 5404649656 Title: Secretary RANA

Organization Classification

Type of Organization	County Government
Is the organization a small business?	No
Does the organization meet the definition of a socially and economically disadvantaged small business concern?	No



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Authorized Organizational Representative	
AOR Name	COLLINS, CLAIRE
Result	Applicant Authorized

Project Title and Project Description

Project Title: Connecting the Dots: Rockbridge Broadband Initiative

Project Description: This is a public/private partnership to build an open access middle mile fiber network. Three providers are committed to offer services to all anchor institutions in the area (schools, public safety, community colleges, medical facilities, libraries and governments) with a shared data center. One provider is committed to last mile connections that will bring broadband access in the region to 95%.

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.
7. This project will deploy Middle Mile broadband infrastructure and the applicant has proposed to contribute 30 percent or more in non-federal cost match.

Comprehensive Community Infrastructure Components



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

Middle Mile

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?

- No

Easygrants ID	Project Title

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

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?

- Yes, Applicant is exempt because it is a unit of a state or local government

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:



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Name	Title	Employer

B. Executive Summary, Project Purpose and Benefits

Essay Question

Executive Summary of the proposed project:

The Rockbridge Broadband Initiative is an innovative public/private partnership that will bring broadband to more than 95% of the community anchor institutions (CAI), businesses, and residents in the countywide service area. Both the incumbent telephone provider and a local competitive phone/Internet provider have signed letters of intent to use the new infrastructure to deliver services. Current broadband use in the Rockbridge area is 41%, and wide areas of the county are unserved or underserved.

To many people, a map of a rural area is a collection of widely scattered dots, suggesting remote areas and isolation. But to those who live there, the dots are homes, businesses and essential services that safeguard the well-being of the communities involved. Real people with real aspirations to be connected with their neighbors, their families and their safety and economic lifelines populate those dots. As new technologies have emerged, however, these lifelines are becoming more sophisticated. If an area cannot equip itself with the technologies that now drive the economy, it will inexorably decline into further isolation and distress. This project proposes to connect those dots with each other and with the wider economic world around them by constructing the backbone of a high-capacity broadband network through which a variety of private service providers can make their services accessible.

To accomplish this, the three local governments (Rockbridge County and the cities of Lexington and Buena Vista), Washington and Lee University, and the two local providers have agreed to work together. The Rockbridge Area Network Authority (RANA) has been created to use broadband to accelerate job creation and business formation. This proposal will build 80+ miles



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of middle mile fiber connecting 53 CAIs, and a shared regional data center will be constructed in partnership with Washington & Lee University, which will be the anchor tenant for 80% of the center. The data center will be the only facility of its type in western Virginia addressing the long standing lack of backhaul and co-location facilities needed to attract and retain businesses and their associated jobs.

Current broadband availability and use is too low to create an economic transformation of the community. This middle mile project will bring “big” broadband 100 megabit symmetric fiber connectivity in the cities of Buena Vista and Lexington and Rockbridge County business and residential corridors. Located at the crossroads of Interstates 81 and 64, the area lies south of Staunton, and north of Roanoke, Virginia. Community anchor institutions consisting of public safety, primary, secondary and higher education, emergency communications, fire and rescue, federal, state and local government offices, libraries, and cultural and recreational amenities will have open network access to broadband under the non-discrimination and interconnections obligations stipulated in the NOFA.

The RANA proposal of a regional fiber-optic network is a critical enabler for the transformation of the area economy from a depressed manufacturing environment to a dynamic entrepreneurial one. Developing an open-access, regional broadband network coupled with the continued creation of a complementary economic development plan will allow the region’s economy to spawn new businesses, generate jobs, create wealth, and at the same time, protect the rural character of our region.

All services to customers will be provided by private service providers and will include Internet access, video, telephone, video conferencing, business applications and multimedia advanced services. RANA’s responsibility is to build, operate and maintain the middle mile components of the network. The service-oriented approach focuses on lowering service provider costs by providing high performance two-way 100 megabit fiber connections through which services can be made accessible to all homes and businesses in the Rockbridge area. Construction of the network is ready to start in sixty days or less with an experienced partner design/build team prepared to submit a competitive proposal when a procurement request for proposals is issued.

The cost of the system is \$9,998,385, with a 30% match of \$2,999,516. The match consists of \$2,500,000 cash from local funds and \$499,516 of in-kind services from Rockbridge County. The deployment of fiber in this project will pass within 500 feet of some 3,240 residences and



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233 businesses. After the connections have been established for the anchor institutions, these businesses and residences will be the first candidates to subscribe to services available over the network. Based on the assumptions for take rates the project consultants have provided, we expect conservatively that at least 30% of the businesses (70) and 35% of the residences (1,026) will receive services through the RANA network within the first two years of operation.

Overall, the Rockbridge area includes 1,480 businesses and 16,379 total housing units. Over a ten-year period, we expect last-mile build outs to extend the network to provide services to the entire area. Assumptions regarding take rates ten years out (80%) show that as many as 1,184 businesses and 13,103 residences will subscribe to at least one service available via the RANA network.

This project addresses all five of the statutory purposes of the BTOP program: It provides middle mile connectivity to at least 95% of the anchor institutions, most of which are in unserved and underserved areas. And in so doing, it establishes the nodes from which last mile connections can be made directly to businesses and residences subscribing to private service providers that have partnered with the RANA. It provides direct access and support to schools, libraries, medical and healthcare providers, institutions of higher learning, and other community support organizations in its middle mile deployment. It includes at least 95% of the public safety agencies, solving decades-old communications difficulties in the first deployment. By providing linkages for last mile connections at relatively low cost throughout the area, it stimulates broadband usage and economic development by providing an infrastructure that will support both incumbent business growth and new business startups.

In addition, the proposal addresses all seven of the comprehensive community infrastructure (CCI) priorities established by the NTIA: (1) At least 95% of the 53 community anchor institutions in this project will be linked; (2) RANA is a public/private partnership of governments, higher education and private business representatives and service providers; (3) The Rockbridge area is economically distressed; (4) Broadband services will enhance the linkages between the community college and all other community service agencies in the area; (5) At least 95% of all public safety entities in the area will be linked; (6) Four service providers have already indicated the intent to provide services on the RANA network, and this number will climb rapidly within three years; (7) And 30% of the project resources consist of local and in-kind contributions, demonstrating the community's commitment to accomplishing the project even in these challenging economic times.



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Capacity, speed, reliability, universal access and cost effectiveness guide the development of the Rockbridge Area Network. The active fiber-rich design of RANA provides ample capacity for virtually any needed bandwidth. The standard residential and business connections will be 100 megabits, using a dedicated connection between the customer and the neighborhood fiber switch. Unlike earlier passive optical networks (PON) that typically share 1 Gigabit of bandwidth among 32 users for an average capacity of 30 megabits, customers using services on the RANA network will not have to share bandwidth with neighbors. This means the network will be able to provide guaranteed quality of service for high bandwidth services like HD TV, and the standard 100 megabit connection is capable of delivering four or five HD channels simultaneously to a household -- something no PON is able to do.

The new partnerships forming as a result of this stimulus funding promise to spur both stabilization and expansion of the Rockbridge area economy. Using estimates recommended by the Council of Economic Advisors, we expect to see some 109 new jobs created, including 70 direct and indirect, and 36 induced job years. In an area with a total population of around 35,000, this is no small matter. When compared with larger and more heavily populated areas, this project will address a major proportion of the communications needs of the area, and facilitate the connection of all of the dots on our community maps.

Project purpose:

The Rockbridge Area is located in west central Virginia. It consists of the County of Rockbridge and the independent cities of Lexington and Buena Vista, as well as two incorporated towns of Glasgow and Goshen. Lexington is located in the approximate center of the county and is an important educational, retail, commercial, and government center. Buena Vista is the industrial and manufacturing nucleus of the area. Predominantly rural, Rockbridge County is bounded on the west by the Allegheny Mountains and on the east by the Blue Ridge Mountains. Interstates 81 and 64 intersect in the middle of the county.

Over the last twenty years, the Rockbridge area has witnessed substantial losses in the number of manufacturers and manufacturing employment, stagnant wages, and a rapidly aging workforce, all of which has called into question the area's continued economic viability. This is evidenced by an unemployment rate that is higher than the state average and an out-commuter population that continues to increase. In response to these challenges, the Rockbridge area has undertaken a series of initiatives in the areas of workforce development, infrastructure improvement, and creation of tax-based incentives for employers.



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The Rockbridge Area Network Authority's (RANA) proposal of a regional fiber-optic network is a critical enabler for the transformation of the area economy from a depressed manufacturing environment to a dynamic entrepreneurial one. Developing an open-access, regional broadband network coupled with the continued creation of a complementary economic development plan will allow the region's economy to spawn new businesses, generate jobs, create wealth, and at the same time, protect the rural character of our region.

RANA has partnered with the Virginia Global Communications System (VGCS), a local service provider, to deploy DSL connections while the fiber network is being built. VGCS provides Internet services to subscribers in the area, as do nine other firms. VGCS fully supports the open access policy of the RANA, and actively encourages other service providers to join in this broadband effort. Building this network represents a true public/private partnership.

In addition to stimulating economic development, RANA will improve access to, and use of, broadband service through the development of a regional fiber-optic middle mile network connecting the area's 53 anchor institutions:

- 5 government administrative offices
- 14 K-12 schools and administrative offices
- 4 libraries
- 3 universities
- 1 community college
- 3 medical and health facilities
- 11 fire departments
- 8 rescue squads
- 2 police departments
- 1 sheriff's department
- 1 E911 dispatch center

The network will provide the foundation for last mile services to become available to all businesses and residences in the Rockbridge area, leveraging private sector partners with low-cost middle mile connectivity.

These linkages are of vital importance: Area emergency services have long suffered unreliable communication systems and equipment. An aging population, increased by the area's growing popularity with retirees, has pushed the average age above 42 years. Upgrades are needed in both emergency services and tele-medical options, as well as broadband capacity to support ongoing communications with families and friends while aging in place. And success in a changing economy requires that the community college, schools and libraries have the resources necessary



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for training and consultative support to ensure that the skills needed for new businesses are available in the workforce.

According to the extensive "Telecommunications Needs Assessment" completed by the consulting firm of Design Nine in October, 2008, the Rockbridge region is predominantly unserved and underserved. Broadband use is at only 41%, which is much too low to implement the economic transformation needed. And the majority of broadband options in the area are unable to attain speeds higher than 2 Mbs.

The construction of the proposed network will connect at least 95% of the anchor institutions identified above. It will also enable fiber connectivity to over 16,300 homes and some 1,480 businesses in the unserved and underserved areas of the region.

Washington and Lee University has agreed to be an anchor tenant for two-thirds of the space in the project's proposed regional data center. Virginia Military Institute has also committed to using space, and several local businesses are keenly interested. This data center will be the only facility of its type in western Virginia, and will provide direct fiber connections to the Equinix Internet exchange facility in northern Virginia via ValleyNet Networks. The Rockbridge area has had substantial difficulty attracting new businesses because of the lack of backhaul and data exchange facilities, and the data center and ValleyNet link solve both problems.

This project addresses all five of the statutory goals of the BTOP program: It provides middle mile connectivity to at least 95% of the anchor institutions, many of which are in unserved (goal A) and underserved (goal B) areas. And in so doing, it establishes the nodes from which last mile connections will be made directly to businesses and residences taking the services of private service providers that have partnered with the RANA. It provides direct access and support to schools, libraries, medical and healthcare providers, institutions of higher learning, and other community support organizations in its middle mile deployment, addressing goal C. It includes at least 95% of the public safety agencies, solving decades-old communications difficulties in the first deployment, thereby addressing goal D. And by providing linkages for last mile connections at relatively low cost throughout the area, it stimulates broadband usage and economic development (goal E) by providing a "pad-ready" infrastructure that will support both incumbent business growth and new businesses.

Recovery Act and Other Governmental Collaboration:

The Rockbridge area, including the cities of Buena Vista and Lexington, has received ARRA funding for education, public safety, and infrastructure. The funded projects offer a substantial opportunity for collaboration with the proposed broadband project in the form of shared trenches for fiber conduit, upgrading emergency services information systems, and enhancing internet



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connectivity for educational purposes. These projects have been incorporated into telecommunications planning to ensure efficient and leveraged use of taxpayer funding.

Education. The Rockbridge area has been allocated ARRA educational funding through three programs. The proposed project area will receive \$2,833,547 from Fiscal Stabilization for repairing and modernizing facilities. \$394,018 will be made available to this area’s education authorities to provide new opportunities for students to use high-quality online courseware to supplement learning. And the Educational Technology Program will fund \$17,074 for integrating technology into the classroom. All three programs lend themselves to improved efficiency and efficient use of federal and state funding. Representation from the local school district on the Telecommunication Management Team will ensure continuing collaboration.

Public Safety. The proposed project will receive \$59,783 from the Byrne Justice Assistance Grant. These funds may be used for information systems that will enhance law enforcement programs such as transferring records. The construction of the proposed network will offer a significantly better opportunity for this funding to achieve its goal.

Infrastructure. The Town of Goshen, located within Rockbridge County, is leveraging funds from multiple state and federal agencies for the Goshen Water System Improvement Project. The project has received \$2,726,000 from the Virginia Department of Health, VDHC and USDA, Rural Development, \$2,026,000 of which is ARRA/Economic Stimulus funding. During the construction period of this project, efforts will be coordinated to place fiber conduit in the exposed trenches in the project area.

The City of Lexington has recently received \$130,000 from the Virginia Department of Transportation, Transportation Enhancement Program to relocate and bury utility wires. The Economic Development District for these communities receives \$70,000 annually from the Economic Development Administration for the strategic planning of economic development initiatives. And the Local Development District of the Appalachian Regional Commission has allotted \$20,000 to these communities for strategic planning, technical assistance, and facilitation services.

A neighboring ARRA project (Allegheny Highlands) has indicated a desire to collaborate with this project as well, citing the redundancy of physical networks as a benefit to both projects for improving reliability of service for all users.



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Fit with BTOP CCI Priorities:

Anchor institutions. At least 95% of the 53 institutions defined as anchors in this project will be linked by the middle mile fiber being installed. Take-rate assumptions show that some 70 businesses and 1,026 residences passed by the fiber will also subscribe to services on the network in the first two years. Due to its accord with the priorities of the Authority and the needs of the community, this CCI priority is met completely.

Public/private partnership. This project incorporates several partnerships with public entities, community services, businesses and private service providers: The Rockbridge Area Network Authority has been incorporated in Virginia. RANA represents a partnership of the Rockbridge County government, the two city governments of Lexington and Buena Vista, Washington and Lee University, and private business representatives. RANA is also partnering with the Virginia Global Communications System, an Internet service provider based within the area. VGCS will be among several service providers utilizing the network for delivering services, and is also instrumental in assisting with planning for last mile connections once the middle mile project has been put in place. This CCI priority is met completely.

Economically distressed area. According to the HEPGIS maps referenced by the CCI proposal guidelines, the Rockbridge area is economically distressed based on the average per capita income being 80% or less of the national average (42 U.S.C. 3161). Further, the Bureau of Labor statistics reports average weekly wages to be 56% of the national average for Buena Vista, 58% for Rockbridge County, and 72% in the city of Lexington for the first quarter of 2009. Although the unemployment rate in the area does not exceed the national average, significant increases in unemployment and underemployment have been seen in the past three years:

The Rockbridge area has gained three new employers creating 55 full-time jobs, but in the same time period, 500 manufacturing jobs were lost to plant closings and relocations. Given the competitive nature of economic development, the lack of broadband availability and capacity has limited efforts to attract new investment. Because the service area for this project includes the entire Rockbridge area, all communities will be served. The project will focus on middle mile installations, providing the nodes necessary for last mile connections within two years. Last mile build-outs by service providers will complete the linkages and offer services within all areas within five years. Based on the definition in 42 U.S.C. 3161, this CCI priority is met.



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Community colleges. The Dabney Stuart Lancaster Community College serves the Rockbridge area. This invaluable resource has been instrumental in developing and providing training in emerging areas, with its most recent offering being a wind turbine service technician program. The community college will be crucial in providing the training and consultative support to ensure that the skills needed to succeed in this changing marketplace will be available to the residents of the area. Broadband services will be critical to that mission, and will enhance the linkages between the community college and all other community service agencies in the area. Three universities, four libraries and 14 K-12 schools will also be linked to the community college by this network. This CCI priority is met.

Public safety entities. All eight volunteer rescue squads and all eleven volunteer fire departments in the Rockbridge area are included as anchor institutions. In addition, a sheriff's department, two city police departments, the regional hospital, a free clinic and the central (E911) dispatch agency for the whole area will be linked.

For years now the rescue squads in the area have experienced unreliable communications systems and equipment, due largely to the mountainous terrain. Better communications that will allow immediate access to other resources are needed. As a result of at least 95% of all public safety entities in the area being linked as anchor institutions, this CCI priority is fully met.

Service providers commitment. One of RANA's partners, the Virginia Global Communications System, is a locally based Internet service provider. VGCS is committed to the goals of the Authority, and fully supports the open access policy the Authority has adopted. VGCS is currently providing DSL connections for businesses and residents throughout the area. When the fiber network has been installed, VGCS plans to shift to providing its services on the RANA network. In addition to VGCS, three other service providers have already indicated the intent to provide services on the RANA network, and it is expected that this number will climb to over 15 within three years. Attested by the letters of commitment in the attachments, this CCI priority is met.

Non-federal cost match. Accomplishing the installation of the middle mile linkages to all of the anchor institutions in the area is estimated to cost \$9.99 million. One of the partners of the Authority (Washington & Lee University) has come forward with \$2.5 million in cash to contribute to the project. In-kind contributions from the other members of the Authority in the form of fiscal agency commitments, GIS staff time and mapping assistance, local jurisdiction



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staff to assist with installation of fiber, community development coordination and proposal preparation costs collectively compose another \$499,516. Thus the non-federal cost match for this project is 30% of the total project costs. This CCI priority is exceeded by over 50%, demonstrating the community’s commitment to accomplishing the project even in these challenging economic times.

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:

Project Role: Sub-recipient Name: Janjic, Dusan Phone: 5404634451 Email: djanjic@rockbridge.net Address 1: 30 Crossing Ln. Address 2: Address 3: City: Lexington State: Virginia
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<p>Zip Code: 24450 Organization: VGCS Organization Type: For-profit Entity Small business: Yes Socially and economically disadvantaged small business concern: No</p>
<p>Project Role: Sub-recipient Name: McAllister, Steven Phone: 5404588942 Email: smcallis@wlu.edu Address 1: 204 West Washington St. Address 2: Address 3: City: Lexington State: Virginia Zip Code: 24450 Organization: Washington and Lee University Organization Type: Non-profit Corporation Small business: No Socially and economically disadvantaged small business concern: No</p>
<p>Project Role: Sub-recipient Name: Ellestad, Jon Phone: 5404623700 Email: jellestad@ci.lexington.va.us Address 1: 300 East Washington St. Address 2: Address 3: City: Lexington State: Virginia Zip Code: 24450 Organization: City of Lexington Organization Type: City or Township Government Small business: No Socially and economically disadvantaged small business concern: No</p>
<p>Project Role: Sub-recipient Name: Clements, J. Phone: 5402618600 Email: jmikelclements75@yahoo.com Address 1: 2039 Sycamore Ave. Address 2:</p>



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Address 3:
 City: Buena Vista
 State: Virginia
 Zip Code: 24416
 Organization: City of Buena Vista
 Organization Type: City or Township Government
 Small business: No
 Socially and economically disadvantaged small business concern: No

Project Role: Sub-recipient
 Name: Collins, Claire
 Phone: 5404631460
 Email: claire_collins@co.rockbridge.va.us
 Address 1: 150 South Main St.
 Address 2:
 Address 3:
 City: Lexington
 State: Virginia
 Zip Code: 24450
 Organization: Rockbridge County
 Organization Type: County Government
 Small business: No
 Socially and economically disadvantaged small business concern: No

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

The Rockbridge Area Network Authority (RANA) is a state-recognized authority created to represent a partnership among four of the major planners and beneficiaries of the fiber network. Three of its five members represent the three jurisdictions in the area: Rockbridge County (population about 21,000, a rural area consisting of primarily agricultural interests and beautiful viewscapes), Lexington (a city, population about 7,000, with two universities and many historical sites), and Buena Vista (a city, population about 6,500, with one university and several manufacturing firms). The fourth RANA member represents Washington and Lee University (a private liberal arts university with a student body of about 1,300), which has offered the majority of the local matching funds for the project. And the fifth member of RANA is a private businessman, representing the perspective of the 1,480 or so businesses in the area. In addition to the members of RANA, the Virginia Global Communications System (VGCS) and its sister firm,



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Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Rockbridge Global Village ISP, is a major partner helping with the planning and procedures adopted by the RANA.

W & L University is contributing the majority of the local matching funds, and proposes to rent to RANA the land on which the data center will be located for a nominal amount each year (\$1.00). It will also help plan and oversee the construction of the data center, and lease 80% of the space in the center. The technical support available through the technology department of the university enriches the resources available to the RANA as well.

Rockbridge County has already begun to pave the way for the infrastructure. The Board of Supervisors passed an "open ditch" resolution calling for the efficient use of any construction or maintenance project in the area by coordinating any open trench or ditch created with the RANA, to determine whether the project's laying fiber ductwork could be accomplished less expensively while the ditch is open. And the three jurisdictions have joined in a collaborative effort to accomplish the creation of this important infrastructure upgrade.

With the exception of the business community representative, all of the primary partners are considered sub-recipients of this project grant. Because the business community will in large part become users of the services available, and pay for those services, they are not considered recipients of the grant funding. The jurisdictions and the university, though, are considered sub-recipients of the grant by virtue of their operation of the infrastructure. Two partners (W & L University and VGCS) are also considered contractors, in that they will be providing services on the network.

A second tier of partners, less involved with the planning, but certain to contribute to the interconnections the RANA seeks to accomplish, consists of all of the anchor institutions identified by RANA as primary links to be established to create a meaningful network from which all further connections can emanate:

- 5 government administrative offices
- 14 K-12 schools and administrative offices
- 4 libraries
- 3 universities
- 1 community college
- 3 medical and health facilities



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

- 11 fire departments
- 8 rescue squads
- 2 police departments
- 1 sheriff's department
- 1 E911 dispatch center

And it is anticipated that nine other service providers currently offering services in the region will join the second tier of partners once the project is initiated.

By including emergency services and medical and health facilities as partners in the first phase of this middle-mile build-out, ongoing training and skill upgrades will become more readily available, bring additional resources directly to the squad headquarters buildings, and lower the overall costs of maintaining the volunteer emergency services so essential to the well-being of the community.

Since the project will provide broadband access to public schools and libraries throughout the region, school systems will be able to reduce textbook costs and rely more heavily on online teaching materials. The school system also expects to be able to reduce telecom costs by at least 15% and to improve bandwidth availability between schools by a factor of at least three by leasing fiber circuits from the RANA project.

This project provides middle mile connectivity to at least 95% of the anchor institutions, most of which are in unserved and underserved areas. And in so doing, it establishes the nodes from which last mile connections can be made directly to businesses and residences subscribing to private service providers that have partnered with the RANA. It provides direct access and support to schools, libraries, medical and healthcare providers, institutions of higher learning, and other community support organizations in its middle mile deployment. It includes at least 95% of the public safety agencies, solving decades-old communications difficulties in the first deployment. By providing linkages for last mile connections at relatively low cost throughout the area, it stimulates broadband usage and economic development by providing an infrastructure that will support both incumbent business growth and new business startups.

Thus, the second-tier partners stand to benefit from this project by either gaining low-cost access to its infrastructure through which they can offer their fee-based services, or by gaining access to



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

a wide variety of services through which they can improve their communications and upgrade the training and resources available to accomplish their various community-oriented missions.

Because this is an open network intended to be equally accessible to all, the same fee schedule will be applied to all service providers for use of the network, and all end users will have the same opportunity to utilize the network infrastructure to receive their selected services.

D. Congressional Districts

Applicant Headquarters

- Virginia

Project Service States

Virginia

Project Service Areas

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



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

E. Service Area Details

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

- No

Project Details

Service Area Type: Middle Mile
Service Area Name: Rockbridge
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;
The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

Total Square Miles in Service Area: 608
Total Population in Proposed Service Area: 35,585
Total Number of Households in Service Area: 12,395
Total Number of Businesses in Service Area: 1,421
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 53
Unemployment Rate in the Service Area: 10
Median Income in the Service Area: 34,976
Estimated Percentage of Households with Access to Broadband: 35
Estimated Percentage of Households Subscribing to Broadband: 14

F. Community Anchor Summary

Community Anchor Summary	
Schools (k-12)	14



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Libraries	4
Medical and Healthcare Providers	3
Public Safety Entities	23
Community Colleges	1
Public Housing	0
Other Institutions of Higher Education	3
Other Community Support Organization	0
Other Government Facilities	5
TOTAL COMMUNITY ANCHOR INSTITUTIONS	53
Historically Black colleges and Universities	0
Tribal Colleges and Universities	0
Alaska Native Serving Institutions	0
Hispanic Serving Institutions	0
Native Hawaiian Serving Institutions	0
TOTAL MINORITY SERVING INSTITUTIONS	0

G. Project Benefits

Demographics



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Jobs	
How many direct jobs-years will be created from this project?	109
How many indirect jobs will be created from this project?	70
How many jobs will be induced from this project?	36

Methodology used to estimate jobs:

RANA is primarily an economic development effort, and expects to contribute to significant job creation. With the development of the RANA network, using the Council of Economic Advisors' methodology, we expect to see some 109 new jobs created. This includes 70 direct and indirect job years, and 36 induced job years.

In a project such as this, with economic development as its purpose, and business infrastructure at its core, we are more optimistic about the number of induced jobs that will be created, but use the recommended methodology for now in the hopes that our estimates are conservative.

The rationale for using the methodology recommended by the Council of Economic Advisors is, in our view, sound:

"In estimating the job-years created by direct government spending, agencies will be asked to use the simple rule that \$92,000 creates one job-year....The rule's key virtue is its simplicity and conservatism. Because it is derived to be consistent with the macroeconomic jobs estimates, it minimizes discrepancies between the aggregate jobs estimates and those agency by agency. Also, since the main focus of the agencies will be on actual reporting of jobs created and retained, this simple procedure minimizes the resources devoted to the early job estimation.

Simple Rule for Estimating Job-Years Created by Government Spending

- \$92,000 of government spending creates 1 job-year
- 64% of the job-years represent direct and indirect effects
- 36% of the job-years are induced effects"

Project Impact:

Over the past three years, the Rockbridge County area has gained three new employers creating 55 full-time jobs, but in the same time period, 500 manufacturing jobs were lost to plant closings and relocations. Manufacturing as a percentage of employment has decreased from 37% to 25%. Given the competitive nature of economic development, the lack of broadband availability and capacity has limited efforts to attract new investment. Because the service area for this project includes the entire Rockbridge area, all communities will be served. The project will focus on middle mile installations, providing the nodes necessary for last mile connections within two years. Last mile build-outs by service providers will complete the linkages and offer services within all areas within five years.



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

The Rockbridge area has witnessed substantial losses in the number of manufacturers and manufacturing employment, stagnant wages, and a rapidly aging workforce, all of which has called into question the area’s continued economic viability. This is evidenced by an unemployment rate that is higher than the state average and an out-commuter population that continues to increase. In response to these challenges, the Rockbridge area has undertaken a series of initiatives in the areas of workforce development, infrastructure improvement, and creation of tax-based incentives for employers.

The Rockbridge Area Network Authority’s (RANA) proposal of a regional fiber-optic network is a critical enabler for the transformation of the area economy from a depressed manufacturing environment to a dynamic entrepreneurial one. Developing an open-access, regional broadband network coupled with the continued creation of a complementary economic development plan will allow the region’s economy to spawn new businesses, generate jobs, create wealth, and at the same time, protect the rural character of the region.

The proposed network will provide the foundation for last mile services to become available to all businesses and residences in the Rockbridge area, leveraging private sector partners with low-cost middle mile connectivity.

To this end RANA has partnered with the Virginia Global Communications System (VGCS), a Competitive Local exchange Carrier (CLEC) and its sister company Rockbridge Global Village ISP, to deploy DSL connections while the fiber network is being built. VGCS provides Internet services to subscribers in the area, as do nine other firms (CenturyLink; Verizon; nTelos; BARC; Comcast; Earthlink; RevNet; ShenTel/ValleyNet; and Hughes). VGCS fully supports the open access policy of the RANA, and actively encourages other service providers to join in this broadband effort. Building this network represents a true public/private partnership with at least one of the area’s service providers, and it is expected that the others will join once the fiber goes in the ground.

In addition to stimulating economic development, RANA will improve access to, and use of, broadband service through the development of a regional fiber-optic middle mile network connecting the area’s 53 anchor institutions:

5 government administrative offices



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

- 14 K-12 schools and administrative offices
- 4 libraries
- 3 universities
- 1 community college
- 3 medical and health facilities
- 11 fire departments
- 8 rescue squads
- 2 police departments
- 1 sheriff's department
- 1 E911 dispatch center

The construction of the proposed network will connect at least 95% of the anchor institutions identified above. It will also enable fiber connectivity to over 16,000 homes and more than 1,400 businesses in the unserved and underserved areas of the region.

For years the rescue squads in the area have experienced unreliable communications systems and equipment, due largely to the mountainous terrain. Better communications that will allow immediate access to other resources are needed, and this need is expected to grow rapidly: The area witnesses significant popularity among retirees, which has produced a population aging faster than normal. By 2030, it is expected that more than 20% of the entire population in the Rockbridge area will be above retirement age, creating a greater need for safety and emergency support, recreational options, medical consultations, and real-time teleconferencing. At least 95% of all public safety entities in the area will be linked as anchor institutions..

By including emergency services and medical and health facilities in the first phase of this middle-mile build-out, ongoing training and skill upgrades will become more readily available, ensure standardization of training across the diverse squads, bring additional resources directly to the squad headquarters buildings, and lower the overall costs of maintaining the volunteer emergency services so essential to the well-being of the community..

Since the project will provide broadband access to public schools and libraries throughout the region, every child in the RANA service area will have broadband access to study materials and online learning resources. The school system will be able to reduce textbook costs and rely more heavily on online teaching materials because of equality of access. The school system also



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

expects to be able to reduce telecom costs by at least 15% and to improve bandwidth availability between schools by a factor of at least three by leasing fiber circuits from the RANA project.

This project addresses all five of the statutory goals of the BTOP program: It provides middle mile connectivity to at least 95% of the anchor institutions, most of which are in unserved and underserved areas. And in so doing, it establishes the nodes from which last mile connections can be made directly to businesses and residences subscribing to private service providers that have partnered with the RANA. It provides direct access and support to schools, libraries, medical and healthcare providers, institutions of higher learning, and other community support organizations in its middle mile deployment. It includes at least 95% of the public safety agencies, solving decades-old communications difficulties in the first deployment. By providing linkages for last mile connections at relatively low cost throughout the area, it stimulates broadband usage and economic development by providing an infrastructure that will support both incumbent business growth and new business startups.

The deployment of fiber in this project will pass within 500 feet of some 3,240 residences and 233 businesses. After the connections have been established for the anchor institutions, these businesses and residences will be the first candidates to subscribe to services available over the network. Based on the assumptions for take rates the project consultants have provided, we expect conservatively that at least 30% of the businesses (70) and 35% of the residences (1,026) will receive services through the RANA network within the first two years of operation.

Overall, the Rockbridge area includes 1,480 businesses and 16,379 total housing units. Over a ten-year period, we expect last-mile buildouts to extend the network to provide services to the entire area. Assumptions regarding take rates ten years out (80%) show that as many as 1,184 businesses and 13,103 residences will subscribe to at least one service available via the RANA network.

Vulnerable Populations:

The total population of the area is 35,585, with a little over a third in the two cities. The area has a labor force of 17,572, with 1,230 unemployed and an estimated 1,977 underemployed. Of those who are employed, over 2,000 commute to jobs outside of the area. An aging population, increased by the area's growing popularity with retirees, has pushed the average age above 42 years. Upgrades are needed in emergency services and tele-medical options, as well as broadband capacity to support ongoing communications with families and friends while aging in place.



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Of those over the age of five, approximately 2,900 have physical disabilities and 1,300 have sensory disabilities. The rise of assistive technology has led to many breakthroughs for these populations, and the availability of fiber connections promises still greater improvement in the services available for those with disabilities.

Of the population aged 25 and older, more than one in 10 residents of Lexington has less than a ninth grade education; rates are even higher in Rockbridge County (14.8%) and Buena Vista (16%).

According to the HEPGIS maps referenced by the CCI proposal guidelines, the Rockbridge area is economically distressed based on the average per capita income being 80% or less of the national average (42 U.S.C. 3161). Further, the Bureau of Labor statistics reports average weekly wages to be 56% of the national average for Buena Vista, 58% for Rockbridge County, and 72% in the city of Lexington for the first quarter of 2009.

The RANA network will support a variety of home-based medical and diagnostic monitoring devices, and RANA already has a commitment from Steeplechase Networks to offer both the home medical devices and the accompanying monitoring service to residences on the network. The lower cost of bandwidth and access to higher speed connections will allow the local hospital to increase utilization of telemedicine and distance medicine diagnostic services that require high-speed connections. Better access to specialists at teaching hospitals like the University of Virginia Medical Center will help lower transportation costs, provide for quicker diagnosis of medical conditions, and reduce the potential for medical error. Inclusion of the area's free clinic as one of the anchor institutions will increase the availability of these emerging essential services to our most vulnerable citizens.

The RANA network will also help address workforce retraining issues by making broadband-enabled distance learning courses available throughout the county. Improved access to online GED classes, skills training, and college courses will enable the region to more quickly develop a 21st century workforce. Adults will have the capability to acquire new skill sets that will allow them to work from home (which usually requires a broadband connection). Distance learning from home is particularly important for those trying to take classes at night or who have young children.

Level of Need:



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

As a region, the Rockbridge County Area is in a period of economic transition with an uncertain outcome. The area is one of incomparable rugged beauty at the junction of Interstate 81 and Interstate 64. This project, creating widespread availability of high performance broadband in the region, will play an important role in helping define the area's future economic success.

With respect to broadband availability, wide portions of the county remain completely unserved while other portions of the county are underserved. Loss of analog cell phone service leaves some areas even more isolated. This project is sorely needed to address such a gap.

According to the comprehensive "Telecommunications Needs Assessment" completed for the Rockbridge Area Network Authority (RANA) in October, 2008, the Rockbridge region is predominantly unserved and underserved. Broadband use is at only 41%, which is much too low to implement the economic transformation needed. And the majority of broadband options in the area are unable to attain speeds higher than two megabits per second (Mbs). All areas with broadband utilize either copper wire or wireless technology with an apparent upper limit in bandwidth between 1 Mbs and 2 Mbs.

While there are at least 10 providers of Internet service in the region, service areas are spotty and scattered, and do not interconnect by any network cabling. And none provides the bandwidth needed to bring a competitive edge to the Rockbridge area. Several such companies (CenturyLink; Verizon; nTelos) indicate that they have laid some fiber in the area, but they have expressed reluctance to work with the public sector to leverage their deployment, and will not share information about the locations and extent of their cables.

Bandwidth needs have been growing by 25% to 50% per year for the past decade, and show no signs of slowing. The FCC thinks bandwidth needs will near 80 Mbs by 2015. Foreign countries that already have 100 Mbs networks already report congestion in some markets. DSL, wireless and cable modem services are inadequate for future needs. These delivery modes are capable of providing up to 1.5 to 2 megabits of bandwidth, putting them out of contention for delivering rapidly expanding services. The challenge for the RANA is to ensure that the county and the two cities have a telecommunications infrastructure in place that will be able to handle the bandwidth projected by the FCC.

The vision for the project is "big" symmetric broadband (100 Mbs connections) to every home, business, and institution in the county, using an open access business model to increase competition and lower the cost of service. It is important to note that RANA will sell no services to business or residences, and so does not compete with the private sector. All private sector service providers, including incumbents, have been invited to use the RANA infrastructure to deliver their services.



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Financially, the system will be sustainable because the low cost of marketplace entry encourages service providers to offer new and innovative services at attractive prices. We believe that within five years, the network will have a minimum of fifteen service providers offering more than forty kinds of specialized services.

Furthermore, the project presents an opportunity for the three local governments to provide effective and efficient delivery of services to citizens and businesses, to support the data and emergency communications needed for first responder, public safety, fire and rescue agencies and to help localities monitor and manage threats to community safety in this spacious county. Ultimately, when the last mile connections are addressed after this first phase of the build-out, every business in the Rockbridge County area will have affordable access to as much bandwidth as it needs.

This project has been guided by a Network Management Team since its inception in 2008. In addition to representatives of the three jurisdictions, members of the team included representatives from four incumbent providers in the area, including the Virginia Global Communications System (VGCS), CenturyLink, nTelos and BARC.

RANA has partnered with the VGCS, a Competitive Local Exchange Carrier and its sister company Rockbridge Global Village ISP, to deploy DSL connections while the fiber network is being built. VGCS provides Internet services to subscribers in the area, as do nine other firms (CenturyLink; Verizon; nTelos; BARC; Comcast; Earthlink; RevNet; ShenTel/ValleyNet; and Hughes). VGCS fully supports the open access policy of the RANA, and actively encourages other service providers to join in this broadband effort. Building this network represents a true public/private partnership with at least one of the area's service providers, and it is expected that the others will join once the fiber goes in the ground.

Network Openness. The Rockbridge Area Network Authority (RANA) will operate the system as an entirely open network, and will provide open access transport to any service provider that meets RANA's publicly available technical qualifications. The system will provide a fully automated end to end service delivery that can support any number of service providers and services. The network management software is capable of supporting dozens of services providers and hundreds of services.

The RANA is fully committed to the nondiscrimination and interconnection policies and principles as described in Section V.C.2.c of the NOFA. As a public enterprise, the Authority is fully committed to the four principles in the FCC Internet Policy statement. The network was expressly designed to allow users access to the services of their choice, to be able to attach any appropriate device to their network connection, and to give users a choice of providers, applications, and services.



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Affordability. In our planning, we have evaluated affordability on three dimensions: availability (a service may be available but not affordable), price (price of new services compared to existing incumbent services), and variety (new and innovative services offered).

Availability. The RANA network will ultimately provide access to 100-megabit fiber connections to at least 95% of all homes and businesses in the area. These 100-megabit connections are provided at no charge to the end user if the premise purchases services on the network. Based on previous studies of fiber deployments, the RANA expects to see the cost of services either less than or equal to incumbent costs for such services now. And the provision of an equitable and low-cost access to the fiber network for private service providers should spur the entry of more providers, providing more services, to the mix

Price. In our review of more than twenty community fiber projects in the U.S., we were not able to identify a single instance where the price of services increased compared to existing incumbent offerings. What we did find is that the cost of Internet access tended to be about the same or around 5% less than incumbent offerings, but bandwidth typically increased, and of special note is that on the RANA network, all Internet service offerings will be able to provide symmetric bandwidth. That is, a three-megabit Internet access package will be able to provide 3 Mbs downloads and 3 Mbs uploads. TV packages also tend to be priced at or near typical cable TV packages, and are often somewhat less than satellite TV offerings. Telephone services typically go down sharply. Homes moving from a landline phone service to a voice over internet protocol (VoIP) phone service see typical price reductions of 25% to 40%. Businesses see price reductions on phone service from 40% to 80%. Mature open access networks report that as more providers enter the marketplace, downward price pressure is placed on all services, but this is a gradual process.

Variety. Our open access, open services model is unique because it makes many services that were unavailable at any price both available and inexpensive. Steeplechase, a service provider already committed to coming on the network, offers inexpensive emergency alert services for monitoring and supporting elderly people trying to live independently or who may be home alone during work hours. Without these new IP-based services delivered over the RANA network, the only equivalent option would very expensive in-home health care providers (e.g. visiting nurse, etc.). Other services also become less expensive and more available, like computer backups, because the provider can attach their servers to the local RANA network -- no expensive Internet backhaul is required.

The open access business model is based on a revenue share paid for each service. As more customers are added, revenue increases proportionally. This is fundamentally different from the



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

business models used by incumbent providers, which rely on selling bandwidth, not services-- profits are maximized when their customers do not use the services.

Every RANA fiber connection will have a capacity of at least 100 Mbs; enough to handle the delivery of as many services as a customer might wish to buy. As customers use more services, each service generates more revenue, which guarantees that funds will be available to operate and expand the network. This approach has been used successfully in other communities; some networks are more than five years old and have dozens of providers and 100+ services available. Wireless. RANA is not planning wireless in its initial deployment, but the underlying infrastructure can support wireless extensions. The DSL portion of the network will reach more than 90% of all homes not served by the fiber build-out. Capacity, speed, reliability, universal access and cost effectiveness guide the development of the Rockbridge Area Network.

The active fiber-rich design of RANA provides ample capacity for virtually any needed bandwidth. The standard residential and business connections will be 100 megabits, using a dedicated connection between the customer and the neighborhood fiber switch. Unlike earlier passive optical networks (PON) that typically share 1 Gigabit of bandwidth among 32 users for an average capacity of 30 megabits, customers using services on the RANA network will not have to share bandwidth with neighbors. This means the network will be able to provide guaranteed quality of service for high bandwidth services like HD TV, and the standard 100 megabit connection is capable of delivering four or five HD channels simultaneously to a household--something no PON is able to do.

Governance and Management. The Rockbridge Area Network Authority is authorized by statute with a five member board. The Authority is chartered to provide broadband transport and related services in the cities of Lexington and Buena Vista and Rockbridge County. Each of the three localities has a board member, the fourth is from Washington & Lee University, and the fifth member is chosen by the Board from the business community. If funded, the Authority will hire a Director who will report to the Board. The County has offered to serve as the fiscal agent for the Authority until it is large enough to take on this task. The Authority will use outside consultants and contractors as needed.

This project cannot be implemented without federal grant assistance due to severe economic conditions in the region, falling local revenues and declining funds from the Commonwealth of Virginia. The three jurisdictions are presently not in financial condition to invest capital funds in a fiber optic telecommunications system for the region. If attempted, the project would need to be scaled back and constructed in phases that would not accomplish the desired build out.

Without federal assistance, the area would likely become less competitive in economic and community development.



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

H. Technology

Technology Type

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

Wireline - xDSL

Wireline - Fiber-optic Cable

Other:

Technology Questions

Methodology for Area Status:

In 2008 the Rockbridge Broadband Management Team conducted an extensive market survey using both Web-based surveys and an equivalent paper survey for the Rockbridge-Lexington-Buena Vista service area that comprises the RANA service area. The team conducted an extensive advertising campaign to raise awareness of the broadband survey using a variety of distribution venues, including newspaper articles, personal appearances at community meetings, extensive email notification, and community Web sites. Special effort was made to widely distribute the paper surveys to ensure that those with dial up or no Internet access were both aware of the broadband survey and had easy access to fill out and return the surveys.

The results of the survey showed that significant portions of the county are both unserved and underserved. 20% of businesses in the county and the two cities (Lexington and Buena Vista) are still on dial up. 38% of residents are still on dial up. These percentages are based upon those who have access to Internet service.

The survey also showed that 36% of the county is totally unserved, with no terrestrial broadband service option. It is in these areas where RANA's plan to extend DSL service is focused.

Description of Network Openness:



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

The Rockbridge Area Network Authority will maintain its fiber infrastructure as an entirely open network. RANA will transport any service that meets RANAs’s publicly available service provider minimum qualifications. The Layer 3 network is designed to transport multiple services from multiple providers simultaneously, and will be capable of supporting dozens of service providers and hundreds of services.

RANA is fully committed to the nondiscrimination and interconnection policies and principles as described in Section V.D.3 of the NOFA.

- The RANA network adheres to the principles contained in the FCC Internet Policy statement (FCC 05-151, 8/5/2005). As a public enterprise, RANA is fully committed to the four principles in this document. The network is expressly designed to allow users access to the services of their choice, to be able to attach any appropriate device to their network connection, and to give users a choice of providers, applications, and services.
- The Layer 3 approach does not favor any lawful Internet applications and content over others. Each service offered is provisioned as requested by the provider. No monitoring, filtering, priority adjustment, router table adjustments, or other alterations to the negotiated QoS takes place on the network.
- RANA will maintain a publicly accessible Web site where fiber leasing management policies and pricing are already available. The Authority will have a standard contract available publicly that is used for all service providers on the network.
- RANA will also maintain on its Web site an Acceptable Use policy that outlines RANA policy for dealing with illegal or harmful content.
- The network is connected to the Internet via individual service providers, each of which provides Internet access to their own customers. Customers using RANA who are unhappy with one provider are free to terminate their contract and purchase services from any other provider attached to the network.
- Service providers are free to interconnect with other providers at the RANA collocation facility in Lexington, Virginia, where at least three providers have committed to collocate.

The RANA Broadband Authority will be fully compliant with all nondiscrimination and interconnection requirements where it is technically feasible.

System Design:



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

This stimulus request is for 100% fiber construction, which will include both fiber switches for middle mile CAI connections and DSL Access Modules (DSLAMs) to support extending DSL to more than 95% of the service area. No funds will be spent on copper-based access cable; instead, customers requesting DSL service where fiber is not yet available will be connected using existing copper cable from the incumbent provider. This is a unique partnership between RANA, the incumbent, and a local competitive provider to achieve broadband availability everywhere. The stimulus funding will build 75 miles of new middle mile fiber connecting more than 225 CAIs and businesses.

Fiber has been chosen for the middle mile network expansion because potential customers on the network are asking for Gigabit connections; three universities and the community college have indicated the need for a minimum of Gigabit circuits. Washington and Lee University plans to put a supercomputer in the regional data center, and W&L expects to need 10Gig circuits to support research within two years. Fiber provides the bandwidth, speed, and reliability need to support education, public safety, and business applications in the region. Fiber is a stable long term asset that has usable life of 30+ years compared to wireless equipment which is typically replaced every four to five years.

Core Network

The RANA core network will consist of two collapsed fiber rings, one traversing the county north/south and the other crossing the county east/west. The core network will use Gigabit Ethernet between core routers on the network. The long term plan for the core network is to have more than eight fully redundant fiber rings to provide high reliability for critical applications and services on the network. The new fiber middle mile construction will consist of 288 fiber single mode cables.

Service providers attach their servers and inject their services onto the network at pre-defined switches attached to the core network. Once a service has been defined in the network management system, the service can be automatically provisioned and delivered to any connected customer anywhere on the network.

RANA Regional Data Center

RANA intends to build a super energy efficient green data center that meets green energy standards. The regional data center will be built in Rockbridge on land owned by Washington and Lee University. As part of this effort, W&L is contributing \$2.5 million for the construction



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

of a 7,500 square foot data center with 2,500 square feet of dedicated data center floor space. In return for the cash contribution, W&L will have exclusive use of 2,000 sq. ft. of data center space and 2,500 sq. ft. of administrative and office space.

Interconnection and Service Provider Co-location

Because RANA will be a service-oriented transport network, Internet backhaul is handled independently by each service provider that sells Internet access. The RANA co-location center in Lexington will give local service providers access to more than two dozen competitive Internet backhaul providers via ValleyNet, an existing north/south regional fiber network that runs through Rockbridge County.

Distribution Network

Middle mile fiber cabinets contain a fiber patch panel and one or more fiber switches connected in a ring configuration with dual 1 Gigabit uplink ports and 24 symmetric 100 megabit fiber ports. The switches include both switching and routing functions and provide support for the sophisticated Layer 3 service-oriented provisioning. For the DSL portion of the distribution network, some DSL switch locations will be connected by RANA fiber, but most DSL locations (25) will be connected by leased and bonded T1 lines. The DSL switch huts will be located adjacent to existing incumbent switch locations to keep cross connect costs low. As fiber is extended into more areas of the county, the same huts will be re-used to locate fiber switches.

Fiber Access Network

Drop cables are typically spliced to a feeder cable in a nearby splice closure, and feeder cables are terminated in a fiber switch port in the nearest cabinet. An inexpensive Customer Premise Equipment switch provides customer access to the network--a 100 megabit fiber uplink and up to 8 copper RJ45 Ethernet ports. CPE are available in several different configurations, including a "combo" switch that provides 6 Ethernet ports and 2 ATA RJ11 ports for direct connection to analog telephones.

Capacity, speed, reliability, cost effectiveness

The fiber rich design of the RANA network provides ample capacity for virtually any needed bandwidth. The standard residential and business connections are symmetric 100 meg circuits. This means the network is able to provide symmetric guaranteed Quality of Service for high bandwidth services like HDTV, and the standard 100 meg connection is capable of delivering



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

Submitted Date:		Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program		Applicant Organization: ROCKBRIDGE, COUNTY OF	
Task: Submit Application - BTOP		Applicant Name: Mrs. Claire A. Collins	

four or five unicast HD channels (via IP) simultaneously to a household as well as business class services to any home or business.

Upgrade path

RANA’s core network can be upgraded incrementally as demand increases by increasing the number of logical rings, by upgrading switches, and the single mode fiber can support not only GigE but 10Gig, 40Gig, and DWDM per wavelength circuits.

As bandwidth demand in a neighborhood or rural area increases over time, switch uplinks can be easily upgraded by placing multi-port routers into the neighborhood cabinets and giving switches or ring configurations of switches dedicated router ports--effectively extending the core network into the neighborhood. It is important to note that different parts of the network can be upgraded incrementally and in pieces as required.

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	0	0
Middle Mile	6,998,869	2,999,516
Total	6,998,869	2,999,516

Project Budget Total: \$9,998,385

Match Percent: 30.0%

Projects Outside Recommended Funding Range:

- This project is within the total project budget range recommended in the NOFA.

Outside Leverage



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Applicant is providing matching funds of at least 20% towards the total eligible project costs?	Yes
Matching cost detail	<p>Cash matches</p> <p>a) Party providing the match: Washington and Lee University b) Amount provided: \$2,500,000 (25%) c) Type of funding: Grant match d) Use of the funding: Infrastructure e) Key financing terms and conditions: Memorandum of agreement including occupancy of 80% of the co-location data center and lease of land to RANA on which the center is built, at \$1.00 per year.</p> <p>a) Party providing the match: Virginia Global Communications System b) Amount provided: \$47,000 (0.47%) c) Type of funding: Grant match d) Use of the funding: Infrastructure e) Key financing terms and conditions: Grant approval</p> <p>In-kind matches</p> <p>a) Party providing the match: Rockbridge County b) Match value: \$452,516 (4.53%) c) Nature of the contribution: Cost allocation for use of workforce, administrative support and use of county equipment. d) How the contribution qualifies as an eligible cost under BTOP eligible cost rules: Labor costs associated with activities related to the construction, deployment, or installation of facilities required to provide broadband service, and qualifying pre-application costs are eligible costs. e) If the contributor is not the applicant, a description of any benefits the contributor will derive from the project: The contributor is a</p>



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

	member of the applicant organization (RANA), and will receive only the benefits of an improved business climate within its borders.
Unjust enrichment	The RANA project has not applied for and has not received any Federal support for non-recurring costs in the proposed service areas described in this application.
Disclosure of federal and/or state funding sources	The RANA project has not applied for and has not received any Federal or State funding including, Universal Service Funds, in the proposed service areas described in this application.
Budget reasonableness	<p>Construction Average cost per mile for this middle mile effort is \$76,290. This is comparable to similar projects that have built middle mile fiber along busy four lane state highways (most of the route of this work are two different mostly four lane state highways). All construction work will be bid out using open and competitive bidding, and we expect given the current economic conditions, that our actual price per mile will be much lower than our projected cost per mile. Informal requests for fiber construction costs suggest that 15% to 20% savings on labor costs and construction work may be likely. No last mile construction is included, so there is no cost per household estimate.</p> <p>Fiber The fiber drop cable uses a two wavelength (two lambda) single fiber design. This approach uses two different frequencies of light on the same fiber--one for upload traffic, and one for download traffic. This cuts the cost and size of fiber cables compared to older drop designs that use two fibers per connection.</p> <p>CPE The customer premise equipment item is \$325. This is an average price for fiber CPE. This item includes a symmetric 100 megabit single mode, single fiber uplink,two copper RJ11 telephone ports to allow customers to plug analog phones directly into the unit without requiring the purchase of an ATA adapter, and six RJ45 100 megabit copper Ethernet ports. CPE purchases by the project are limited to the projected number of middle mile connections (175), so no CPE is being stockpiled for later use. This keeps the cost per CAI lower and allows the project to take advantage of typical year to year price reductions for this kind of equipment.</p> <p>Distribution Fiber Switches</p>



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

	<p>The fiber switches deployed for middle mile service are enough to connect the projected CAIs and no more. This keeps the cost per connection low. The 24 port switches cost \$5400, or about \$225/port for the two lambda, single fiber design. These switches have dual GigE fiber uplink/downlink ports that enable the creation of redundant local rings.</p> <p>DSL Access Modules DSL equipment costs are based on current quotes from vendors. The cost per port is \$104, and enough equipment has been purchased to connect 768 subscribers. The competitive local provider has indicated they regularly experience take rates in excess of 50% when introducing DSL to an unserved area.</p> <p>Capacity The entire distribution and access network in the last mile service areas are engineered to support 100 megabits of bandwidth to CAIs and businesses. While there is much promotion centered around Gigabit to the premise, Gigabit to the premise raises cost substantially. Our analysis of existing traffic and bandwidth use on the network show no evidence of the need to provide Gigabit to the premise. The single mode fiber will support selective delivery of GigE and 10Gig circuits as needed, but it much less expensive to provide that capacity on a case by case basis, rather than across the entire customer base.</p>
Demonstration of need	<p>The project cannot be done without federal grant assistance. Private sector service providers have long tried to develop a business model that could cover the costs of building the broadband infrastructure required to serve western Virginia and provide a reasonable rate of return but have been unable to do so using their existing business models. Their reluctance to build out to rural residents and businesses shows that there is simply too much geography to cover and too few subscribers to make deployment work without the investment of public funds, coupled with an entirely different business model.</p> <p>The Net Present Value Analysis illustrates this problem. There is approximately a \$5 million gap between a BTOP funded proposal and a project without BTOP funding. Our financial modeling shows that a</p>



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

	<p>loan structure would not work to finance this project and close this gap. In the first three years of the effort, when take rates are still relatively low, the debt load (interest plus principal) plus fixed and variable operating expenses make it very difficult to move the project into the black. The availability of BTOP funding allows the project to cover basic operating expenses in the early years without the additional burden of debt payments. The BTOP funds allow the project to achieve positive net income in the first year and to maintain positive cash flow year by year.</p> <p>It is important to note that RANA is adopting a business model that is different from the traditional closed network used by incumbents. Our open access business model is structured to share a single high performance network among multiple service providers, which lowers overall costs of all providers, and thereby reducing the price of services for community anchor institutions (CAI), businesses, and residents. The traditional incumbent model requires a substantial capital investment for each provider, which raises costs for customers and limits the ability of the provider to make investments in rural areas.</p> <p>RANA is not offering any free services or discounted services. A single rate sheet will be used to assess revenue share payments for all providers using the RANA network. The use of a single shared network will achieve significant cost savings to CAIs without discounting because of the shared business model.</p> <p>The RANA partners have each been able to provide some limited support, but the majority of the support from the jurisdictions will be in the form of in-kind labor and administrative support. The Virginia Global Communication System is providing some funding and support in the form of DSL connections during the period of project construction. And although Washington and Lee University has contributed \$2.5 million to the project, all of these sources combined comprise just 30% of the amount needed for successful deployment of</p>
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**Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program**

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

	the network.
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Funds to States/Territories

States	Amount of Federal Grant Request
Virginia	6,998,869

Funds to States/Territories Total: \$6,998,869

J. Historical Financials

Matching Funds			
	2007	2008	2009
Revenue	37,852,248	45,883,533	44,789,359
Expenditures	32,106,929	38,351,789	37,428,890
Net Assets	15,460,799	18,541,818	26,073,605
Change in Net Assets from Prior Year	5,745,319	7,531,784	7,360,469
Bond Rating (if applicable)			

K. Project Readiness

BTOP Organizational Readiness

Governance and Management

The Rockbridge Area Network Authority is authorized by statute with a five member board. The Authority is chartered to provide broadband transport and related services in the cities of Lexington and Buena Vista and Rockbridge County. The three localities have a board member, the fourth is from Washington & Lee University, and the fifth member is chosen by the Board from the business community. If funded, the Authority will hire a Director who will report to the



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Board. The County has offered to serve as the fiscal agent for the Authority until it is large enough to take on this task.

Capacity to Expand and Grow

The open access business model is based on a revenue share paid for each service. As more customers are added, revenue increases proportionally. This is fundamentally different from the business models used by incumbent providers, which rely on selling bandwidth, not services. Every RANA fiber connection will have a capacity of 100 megabits or 1 Gigabit; enough to handle the delivery of as many services as a customer might wish to buy—each service priced to reflect the value of the service and the bandwidth used. As customers use more services, each service generates more revenue, which guarantees that funds will be available to operate and expand the network.

Sales

RANA customers are service providers. The providers advertise, sell, and bill their customers directly, and pay a revenue share to the Authority. The Authority does not sell any business or residential services, so sales activity will be limited to public awareness and general marketing and awareness.

Operations

Network operations and network management functions will be outsourced to a qualified firm. Fault monitoring and Network Operations Center work will be performed by NOC staff during normal work hours, and out of hours monitoring will be performed by NOC staff and/or automated monitoring tools that can page, text, and call NOC and Authority staff in the event of outages.

Maintenance and Installation

Outside plant maintenance will be outsourced to a qualified area firm. Rockbridge County plans to train public works crews in fiber installation and maintenance, and will provide services to the Authority at a pre-negotiated rate.

Provisioning

The network will use a sophisticated management system that provides automated end to end Layer 3 (IP) service provisioning. The system uses PacketFront software that supports dozens of service providers and hundreds of services. The automated provisioning lowers the cost incurred by providers when adding a new customer and the system provides a rich diagnostic and troubleshooting environment for providers. Once a service has been defined by RANA staff in the management system, new customers can begin receiving the new service almost immediately.

Billing Support



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Customers are billed directly by the service provider, so the Authority has only a small number of monthly bills.

Construction and Vendor Contracts

The Rockbridge Area Network Authority has a letter of agreement from the experienced design and build team of Thompson & Litton who are ready to begin work as soon as an award is made. The Thompson & Litton team consists of five firms all geared toward efficiently and effectively completing broadband network projects. They have the capacity to plan, design, and construct these infrastructure networks in short timeframes and help the Authority plan to operate the network over the long term. RANA has a procurement process in place to begin immediately upon notification of a grant award. The letter from Thompson & Litton shows that at least one consortium is committed to responding to our RFP, and is ready and able to begin work immediately.

The letter is posted as supplemental attachments.

Customer Base

With initial fiber route deployment 3,473 residences and businesses will have the immediate opportunity to subscribe to new services along with our 53 community anchor institutions. With Virginia Global Communications Systems as partner in this effort this project has the ability to access the entire Rockbridge area by providing DSL service with fiber backhaul to the regional data center.

Over the first three years of the project, more than 80% of the businesses (1497 establishments) in the Rockbridge-Buena Vista-Lexington area that comprises the RANA service area will have access to high speed broadband. For residential access, the combination of expanded DSL service and fiber availability along the middle mile routes will bring high speed broadband access to more than 95% of households (13,973 households).

Licenses, Regulatory Approvals and Agreements

The Authority has a letter from the Virginia Department of Transportation agreeing to help expedite any needed permits for the project. Washington and Lee University is asking \$1.00 per year rent from RANA for use of space in the new data center. Rockbridge Global Village has agreements with local service providers that will allow them to cross connect into their systems. The local governments will help expedite any permitting that would be needed. No local zoning approval will be required.



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

The letter from VDOT will be added as supplemental information.

SPIN Number

L. Environmental Questionnaire

Project Description

The proposed project described in this application is linear in nature terminating at a regional data center to be constructed on the property of Washington and Lee University. All construction activities will consist of installation of buried fiber cable to be placed within the existing Virginia Department of Transportation (VDOT) right-of-way, with the exception of the buried fiber cable that connects the regional data center to the main fiber cable in the right-of-way adjacent to the University's property.

The linear portion of this project stretches approximately 75 miles throughout the following jurisdictions; the County of Rockbridge, the Cities of Lexington and Buena Vista, and the Towns of Glasgow and Goshen. The fiber cable will be buried using trenching and micro-trenching techniques employed to reduce the disturbance in the VDOT right-of-way. Depending on the amount of right-of-way available, the fiber cable shall either be installed beneath the road itself, between the road and any parallel ditch-line, or in a median if available.

The regional data center will be located on a site that has previously been cleared and is currently being used as a laydown yard for construction activities which occur on the Washington and Lee University campus. This area is commonly referred to as "The Boneyard" and will accommodate the building, outside storage, and parking lot for the proposed data center.

Property Changes

Linear Construction:

The linear construction and installations related to this project will take place in the previously disturbed ground of the existing VDOT right-of-way. Construction methods will include narrow trenching, vibratory plow, and horizontal directional drilling (boring). Trenching will be done with a ditch witch or similar equipment and the resulting trench will measure from 8-12 inches



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

wide by approximately 36 inches deep. Use of new micro-trenching techniques will greatly reduce this estimated footprint. Approximately 75 miles of fiber cable will be installed during this phase of construction.

Data Center Construction:

The construction of the data center will take place on property owned by Washington and Lee University commonly referred to as "The Boneyard". The Boneyard is located in an area that has previously been cleared and has traditionally been utilized as a construction lay down site, construction debris transfer station, construction recycling transfer station, and temporary storage area for grounds materials such as mulch. The County's zoning district for this site is R-1. This zoning classification allows for schools and school related activities and public utilities. None of the proposed construction or installation activities shall occur on any federal lands.

Buildings

Linear Construction:

Linear construction and installation in the project area will take place in the already disturbed VDOT right-of-way, alongside roads in Rockbridge County and other jurisdictions within. Small utility cabinets will be placed in the right of way where necessary and will generally be placed in proximity to where other utility cabinets already exist.

Data Center Construction:

Construction of the data center will take place on property owned by Washington and Lee University commonly referred to as "The Boneyard". The Boneyard has traditionally been utilized as a construction lay down site, construction debris transfer station, construction recycling transfer station, and temporary storage area for grounds materials such as mulch. A private roadway currently leads to The Boneyard. The regional data center will be a one story building of approximately 5500 square feet, with parking and outside storage of approximately 7500 square feet.

Wetlands

In determining the presence and proximity of construction related activities to any wetlands in the area, the most current wetland maps and data from the U.S. Fish and Wildlife Service's National Wetland Inventory were studied and reviewed. The construction and installation activities associated with the linear portion of this project includes 5 bridge crossings which go over rivers and creeks that have been classified as "riverine wetlands" by the USFWS. All



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

construction and installation activities taking place at bridge crossings will either be attached to the side or underneath of the bridge. There are 2 wetlands adjacent to the project area classified as “freshwater pond wetlands”, but are not within the VDOT right-of-way. There are no wetlands present in the construction site of the data center.

Although there are wetlands identified on the National Wetlands Inventory map near the project area, it has been determined that there will not be any short-term or permanent impacts to these wetlands. In the event that a new wetland is identified, the appropriate Federal, State, and Local permitting process will be followed.

Critical Habitats

A review of the U.S. Fish and Wildlife Service’s species reports resulted in four (4) species listed within Rockbridge County. The status of those four (4) species are as follows: two (2) are in recovery, one (1) is threatened, and one (1) is endangered.

A review of the U.S. Fish and Wildlife Service’s critical habitat data shows no critical habitats within the project area or within the political boundary of Rockbridge County.

Additional spatial analysis was performed using threatened and endangered species data collected by the VA Dept. of Conservation and Recreation and the VA Dept. of Game and Inland Fisheries. The analysis resulted in eight (8) locations near the right-of-ways along the 75 mile linear portion of this project. The data provided for this analysis was buffered to protect the exact location of these threatened or endangered species, so the agency responsible for these locations will need to be consulted further prior to construction. Because this linear portion of this project will occur in the previously disturbed VDOT right-of-way, no adverse impact to any of these species is expected.

See supplemental attachment: USFWS_SpeciesReport.pdf

Floodplain

In determining the presence and proximity of construction related activities to any floodplains in the project area, the most current floodplain maps and data from the Federal Emergency Management Agency (FEMA) were studied and reviewed. The construction and installation activities related to the linear portion of this project will occur in the previously disturbed VDOT right-of-way, and will not adversely impact any floodplain which the existing road and right-of-way passes through. All construction and installation activities taking place at bridge crossings, will either be attached to the side or underneath of the bridge.



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

The construction site for the regional data center is not located within the FEMA floodplain, and is at approximately ¼ mile from the closest existing floodplain boundary.

Protected Land

None of the proposed construction or installation activities shall occur on any tribal lands.

SHPO Responses:

1. The proposed project appears to be located in the immediate vicinity of eight archaeological sites that have been determined eligible for the National Register of Historic Places or are considered potentially eligible and would require further survey to determine their eligibility conclusively in terms of the National Register criteria. The sites are as follows:

- 44RB0039- prehistoric; potentially eligible; (map 7)
- 44RB0236- historic; potentially eligible; (map 12)
- 44RB0308- historic; potentially eligible; (map 12)
- 44RB0451- prehistoric; eligible; (map 15)
- 44RB0462- prehistoric; eligible; no report cited on form; (map 15)
- 44RB0021- prehistoric; potentially eligible; 1978 (map 6)
- 44RB0482- historic; potentially eligible; (map 5)
- 44RB0510; 117-0010- historic; potentially eligible; (map 5)

The project corridor lies within or adjacent to the Washington and Lee Historic District, a National Historic Landmark. However, any effects on the district from the construction process will be temporary in nature with no permanent impact. The boundaries of the district are shown in blue hatching on map 5.

2. There will be no project impact, use, or alteration of any structure 50 years of age or older. Please refer to the supplemental information documents.

Coastal Area

In determining whether or not this project was located within a Coastal Zone Management Area, the staff at the National Oceanic and Atmospheric Administration (NOAA) and the Virginia Dept. of Environmental Quality’s Coastal Zone Management Program were contacted. Both agencies confirmed that this project is not within any CZMA, and current maps and data show a linear distance of over 70 miles from the closest CZMA boundary.

Brownfield



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

In determining whether this project is located within a brownfield site(s), the recommended U.S. Environmental Protection Agency’s mapping and listing tool was used. The search found no brownfield sites existing at any location(s) where construction and installation activities are proposed.



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

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	RANA-CCI-Service-Offerings-Competitor-Data.xls	Collins, Claire	03/25/2010
Network Diagram	RANA-Network-Diagram.pdf	Collins, Claire	03/25/2010
Build Out Timeline	RANA-CCI-Build-Out-Timeline-Attachment.pdf	Collins, Claire	03/25/2010
List of Community Anchors and Points of Interest	CCI Anchor Detail and POI Attachment.xls	Collins, Claire	03/25/2010
Management Team Resumes and Organization Chart	Management Team Resumes and Organizational Chart.pdf	Collins, Claire	03/23/2010
Government and Key Partnerships	Government and other Key Partnerships.pdf	Collins, Claire	03/25/2010
Historical Financial Statements	RANA_CCI_Historical Financial Statements.pdf	Collins, Claire	03/26/2010
Budget Narrative	RANA-CCI-Budget-Narrative.doc	Collins, Claire	03/26/2010



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

Submitted Date: Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: ROCKBRIDGE, COUNTY OF
Task: Submit Application - BTOP	Applicant Name: Mrs. Claire A. Collins

Detailed Budget	RANA-CCI-Detailed-Budget-Attachment.xls	Collins, Claire	03/25/2010
Pro-forma Forecast	RANA-CCI-Pro-Forma-Financial-Projections.xls	Collins, Claire	03/25/2010
Subscriber Estimates	RANA-CCI-Subscriber-Estimates-Attachment.xls	Collins, Claire	03/25/2010
Dashboard Metrics	RANA-CCI-Key-Metrics-Dashboard.doc	Collins, Claire	03/26/2010
Service Area Data	RANA-CCI-Service-Areas.xls	Collins, Claire	03/25/2010
Network Maps	RANA-Network-Map.pdf	Collins, Claire	03/25/2010
BTOP Certifications	Authentication and Certification.pdf	Collins, Claire	03/23/2010
SF-424 C and D	SF424 C D Forms.pdf	Collins, Claire	03/25/2010
Supplemental Information	Additional Government and other Key Partnerships.pdf	Collins, Claire	03/25/2010
Supplemental Information	Environmental VADHR_Protected Lands.pdf	Collins, Claire	03/26/2010



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

Submitted Date:		Easygrants ID: 6689	
Funding Opportunity: Broadband Technology Opportunities Program		Applicant Organization: ROCKBRIDGE, COUNTY OF	
Task: Submit Application - BTOP		Applicant Name: Mrs. Claire A. Collins	

Supplemental Information	Virginia Department of Transportation letter of support.pdf	Collins, Claire	03/26/2010
Supplemental Information	ThompsonLitton letter for Construction.pdf	Collins, Claire	03/26/2010