VIRGINIA RURAL BROADBAND PLANNING INITIATIVE

PROGRAM DESIGN

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**Prepared by the
Virginia Department of Housing and Community Development**

The Virginia General Assembly, through the 2007 Appropriations Act, has committed to expanding rural access to broadband technology. Part of this commitment involves the funding of feasibility studies of best last-mile solutions for rural areas. To this end, the Virginia Department of Housing and Community Development has created the Virginia Rural Broadband Planning Initiative (VRBPI).VRBPI is a comprehensive telecommunications planning effort that will allow communities to identify and develop all elements necessary to create a successful community broadband network. Community telecommunications plans include, at the least:

- needs assessments and asset inventory;
- analysis of current and future business and professional uses and applications;
- assessment of community computer literacy and identification of technology education needs;
- determination of need for, and nature of, broadband infrastructure;
- network organization and operation;
- funding strategies; and
- the marketing of a network. .

Program Goal and Objective

The goal of VRBPI is to create strong, competitive communities throughout the Commonwealth by preparing those communities to build, utilize, and capitalize on telecommunications infrastructure.

Objective

The primary objective of the Virginia Rural Broadband Planning Initiative is to ensure community sustainability and competitiveness in the global marketplace via comprehensive planning for broadband deployment. Community sustainability requires the availability of adequate healthcare, quality education, reliable emergency services, competitive service-sector businesses (banks, insurance, etc.), and connectivity at speeds necessary for entrepreneurs to engage and compete globally.

In addition, the plan should address needs and opportunities for residential users to have universal access at high speed with competitive prices. Universal access should not be the primary focus of the planning process. There should be an emphasis placed on collaborations with private-sector providers, to maximize the provision and affordability of services to the community at large.

Eligible Applicants

Any public entity (such as units of local government, planning district commissions), non-profit organization, authority or cooperative which has the

support, direct involvement, and endorsement from the participating local government, and will agree to undertake a comprehensive community telecommunications planning effort is eligible to apply.

Availability of Funds

Virginia Department of Housing and Community Development has received $400,000 in general funds this year for the VRBPI. The Department of Housing and Community Development will utilize $25,000 for administrative costs The remaining $375,000 will be distributed on a first-come, first-serve basis, based on the following eligibility thresholds:

- Must be an eligible entity, as defined above.
- Communities must provide information acceptable to DHCD that identifies them as rural, and without access to sufficient telecommunications services.
- Communities must demonstrate a readiness and capacity to carry out the planning process. A management team, including local officials and community representatives, must be designated.

Application Process

Applications will be accepted on an open basis from November 8, 2006 to June 30, 2007, or until all of the funding is committed.

Application Requirements

Applications must utilize the following format and address the following:

- Cover sheet (a template can be found in Appendix A)

  o Project name;
  o Applicant contact information;
  o Person who prepared this application;
  o Project location;
  o Project funding summary; and
  o Name of locality offering endorsement.
- Provide proof of support and endorsement from the participating local government (signed by the Chief Administrative Officer or Chief Elected Official). Provide the names of local officials and community representatives that will be directly involved as members of the project management team.
- Provide information in support of a designation as a rural community.
- Provide information that documents a need for telecommunications services in the community.
- Applicants must submit a project narrative (description included as Appendix B), to include:
  o Project description and products;
  o Proposed outcomes of the project;
  o Need for the project;
  o Location to be impacted by the project;
  o Readiness to begin the project, and description of other community efforts that relate;
  o Capacity of groups involved to complete a project in a timely fashion.
- Copies of the application should be submitted to the local Planning District Commission to inform them of potential projects.

Project Priorities

Applications will be evaluated based on the following criteria:

- Fiscal stress of endorsing locality in relation to the statewide average;
- Availability of service providers;
- Price of current services;
- Leverage funds, including local match;
- Sufficient evidence to demonstrate rural quality of proposed project area;
- Capacity of eligible entity to carry out the planning process;
- Evidence of broad-based community commitment and readiness to actively engage in a rigorous planning process.

Threshold-based Distribution

All projects will be administered on a performance basis. Upon successful completion of Phase I activities, projects will be eligible for review for Phase II funding.

Phase I Activities

- Upon initial approval of project proposal, a negotiation meeting will be held with the applicant and all responsible parties.
- Following this meeting, applicants will have 30 days to submit a pay-for-performance budget. **There will be 10% of the grant available for administration during Phase I.**
- Upon DHCD approval, a contract will be issued for up to $25,000.
- DHCD will make prompt payments under current contracts pending confirmation that performance expectations are met. DHCD reserves the option of withholding payments for non-performance. DHCD reserves the option of

canceling additional contracts due to non-performance on initial contracts.
- Phase I tasks include:
  - a needs assessment &asset inventory;
  - analysis of current and future business and professional uses and applications;
  - assessment of community computer literacy and identification of technology education needs; and
  - an assessment of the need for, and nature of, investment in broadband infrastructure.

These tasks are discussed in detail in the Community Telecommunications Plan, Appendix C.
Applicants must be willing to completely address all Phase I tasks. This will require a significant commitment

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Commitment Point

- It is at this point that the eligible entity will decide whether to request Phase II funding.
- Applicants will have up to 8 months to complete Phase I activities.

Phase II Activities

- Eligible entities completing Phase I of the Community Telecommunications Plan can access Phase II funding of up to an additional $50,000. Criteria for evaluating the Phase II request include:

- o Geographic size;
- o Complexity;
- o Community ownership and operation;
- o Any network must be an Open Access Network (one which offers wholesale access to multiple service providers); and
- o Satisfactory completion of **<u>all</u>** Phase I activities.
- Upon DHCD review and approval for Phase II funding, applicants will have 30 days to submit a pay-for-performance budget. **There will be 5% of the grant available for administration during Phase II.**

- Phase II tasks include:
  - o Network organization and operation study, including a business plan;
  - o Explore opportunities for public-private partnerships;
  - o Detailed funding strategies;
  - o Marketing of the network; and
  - o Final Community Telecommunication Plan (including specific implementation projects to begin).

Community Telecommunications Plan

The activities to be addressed during the VRBPI project are outlined in detail in Appendix C. The expectation is that grantees will follow DHCD's guidance, or similar process, in order to produce a successful Community Telecommunications Plan.

Technical Assistance and Monitoring

All projects will be assigned a Community Representative who will provide guidance and technical assistance as needed. All projects will be monitored for contract compliance and financial management at least once during the course of the grant.

Comment Period

Comments were received through October 27, 2006.

Submission requirements

Applications will be reviewed on a first-come, first-serve basis. All submissions must thoroughly address the application requirements. Applicants must submit an original and four copies to the following address:

Department of Housing and Community Development
Todd Christensen
Project Management Office
501 North Second Street
Richmond, Virginia 23219

APPENDIX A – PROPOSAL COVER SHEET

Project Name:_____

Applicant Contact Information:

Locality/Organization Name: _____

Address: _____

Phone/FAX Numbers: _____

Contact Person: _____

Title: _____

Phone/Fax Numbers of Contact: _____

E-mail Address: _____

Person Who Prepared this Application:

Name: _____

Address: _____

Phone/FAX Numbers:_____

E-mail Address: _____

Project Location:

_____

Project Funding Summary:

Source	Amount	Percentage

Total:

Endorsement:

Locality:_____

Chief Administrative Officer or Chief Elected Official

Name: :_____

Address: :_____

Phone/FAX Numbers:_____

E-mail Address: _____

Applicant Signature:

Name: _____

Title: _____

Signature: _____

Date: _____

APPENDIX B – PROJECT NARRATIVE

Project Description and Products

Describe the proposed project. Identify the products that will result from this planning project. Is the project consistent with the VRBPI goal and objective? Does it focus on the expansion or enhancement in the use of telecommunications to improve the economic health of the community? Describe how.

Project Outcomes and Challenges

Detail the specific long-term benefits, or outcomes, of this project. An example of an outcome for a Planning Project is: a determination of the most appropriate telecommunications infrastructure will be completed, leading to the subsequent deployment of recommended technologies. What is the NEED for the project? What problems will be addressed by this project?

Project Location

Indicate which locality (or localities) is (are) covered and, where possible, the specific location to be impacted by the project as defined by place name, boundaries, building, or other features.

Provide a Basic Map

For all projects, provide a map clearly showing roads, significant landmarks, and other relevant identifiers.

Readiness

Why is now the appropriate time for this particular planning project to proceed? What efforts have been made previous to the submittal of this proposal to prepare the foundation for enhanced or expanded telecommunications services in the community? Is it related to other community efforts?

Capacity

Identify the groups (public, private, etc.) or individuals who have been involved in the effort to enhance or expand telecommunications services to the community. Who will be responsible for seeing that this planning project is completed in a timely fashion? What is this person's title, affiliation, and experience with projects of this kind?

Include letters and other documentation from individuals and organizations who will provide direct support in the implementation of the project. This documentation should detail the nature of the support to be provided. Provide a proposed management team to include local officials and community representatives. Include, also, general letters and other documentation from individuals and organizations providing passive support ("we support the idea", "we think this would be useful", and so on).

APPENDIX C - COMMUNITY TELECOMMUNICATIONS PLANNING GUIDE

(October 4, 2006)

Overview

Broadband telecommunications infrastructure consists of the equipment and technology that carries information at high speeds between two or more locations. The Virginia Department of Housing and Community Development (DHCD) views broadband telecommunications infrastructure as an essential public utility in the same regard as public water and sewer service. As such, our aim is to prepare and empower communities by providing technical assistance and financing to enable them to "level the playing field" in order to compete with larger urban communities for economic development and expanded social opportunities through the availability of affordable high-speed internet service in their community.

To assist communities plan for broadband telecommunications DHCD has developed this guide. It is a framework for communities who want to investigate their readiness, capacity, and demand for advanced telecommunication infrastructure. This guide is by no means a final solution and should not be viewed as a substitute for qualified telecommunications expertise to assist communities in planning for broadband. Communities must take a comprehensive approach to telecommunications planning that includes identification of need within the community and the potential impacts

that broadband telecommunications infrastructure would produce.

The final product of the planning process will be the development of a Community Telecommunications Plan. The plan should include analyses of existing telecommunications conditions, defining broadband goals and developing action steps to achieve the goals. The desired outcome of this planning effort is to provide a tool for communities to assist in future implementation of the construction of broadband projects that will lead to enhanced educational opportunities, improved medical services, enhanced economic development opportunities, and improved quality of life.

A Community Telecommunications Plan is required in order to apply for implementation financing available through DHCD. DHCD will only invest implementation monies in "Last Mile" broadband connectivity solutions for business, medical and educational facilities, i.e. the final leg of connectivity from a communications provider to a customer.

The information in this guide lists some of the critical components to explore when developing the plan but certainly does not include everything to be covered. A glossary of terms commonly used when discussing

telecommunications in included as *Attachment 1*.

Management Team

The first item to address when starting the planning process is to set up an effective Management Team. This team will provide oversight and direction throughout the planning process including the procurement of and collaborating with consultants and contractors necessary for successful implementation of the broadband telecommunications network. It should be comprised of decision makers and stakeholders representing a cross section of all potential broadband users or beneficiaries. The following is a list of potential fields from which to seek prospective members.

- Local government
- Economic development professional
- Public schools
- Higher education institutions
- Workforce development
- Health care
  - o Hospital
  - o Medical clinics
  - o Private medical practice
- Industry/Manufacturing
- Retail and commercial business
- Small business/entrepreneurs
- Service sector
  - o Banking
  - o Insurance
- Professional
  - o Legal
  - o Engineering
  - o Accounting
- Local telephone provider
- Internet service providers
- Police dept. and emergency services

Another member of the Management Team should be the telecommunications

expert (usually a private consultant) that is hired to assist in carrying out the project. This person should have experience not only in planning and analysis but also telecommunications and technology. The most qualified person or firm that can do a comprehensive job should be procured. A sample Request for Proposals (RFP) for a telecommunications consultant is provided in *Attachment 2*.

It is critical that there is continued involvement from the members of the management team even after the planning process is complete. The members should be committed to continue pursuing achievement of the goals that are identified in the Community Telecommunications Plan.

Needs Assessment

The current status of broadband telecommunications availability as well as the current and future telecommunication needs of the community must be evaluated. Using various methods of assessment tools including surveys, questionnaires, and in-person interviews, the grantee will determine the telecommunications needs and usage in the community (*Attachment 3*). This includes identifying all current telecommunications providers such as the incumbent telephone service carrier and existing internet service providers (ISP), their broadband capabilities, the location of their infrastructure and the current rates they are charging for services. In addition, future plans for broadband deployment by current providers as well as proposed rates, types of services to be offered, technical support and how it all relates to the particular community and the

surrounding region should be determined.

Demand must be assessed. Demand consists of those telecommunication services used and projected to be used by current and future customers. Customer needs must be identified and quantified. In addition, it must be determined to what extent customers are satisfied with their current service, what are their technical support needs, and do they need or want broadband. The assessment should concentrate on the businesses, schools, and health care facilities, identifying the types of applications used and number of employees and users. However, residential areas should not be excluded because there could be several home-based businesses identified. Identifying and quantifying these will reveal the potential for a revenue source for any future publicly owned networks. If a potential user does need broadband, the types of applications they would use, the amount of bandwidth they will need including how many would need a hard-wired, secure connection and what they would be willing to pay for broadband needs to be determined.

The grantee should include in the assessment an income survey to determine low-and moderate income status of potential beneficiaries and/or determine the economic and physical blight of a potential redevelopment area, i.e. a downtown in need of revitalization. Documentation of one or both of these two elements will determine eligibility for future telecommunications planning and implementation efforts for CDBG funding.

Once the data is collected an analysis of the gaps between existing telecommunications services in relation to demand and broadband availability should be performed. Trends in the use of broadband by existing and potential customers as well as any other pertinent trends need to be identified. User rates need to be evaluated to determine affordability. Projections of potential broadband service need to be developed and the community's efforts related to on-going and future regional telecommunication efforts of other entities or communities should be examined.

The data obtained from the assessment should be plotted on a GIS map showing concentrated areas of need in both the business district and surrounding areas, the service providers and their infrastructure, and blighted areas. The data should be so that a determination can be made as to whether there is sufficient critical mass to justify public investment in physical infrastructure that will be self-sustaining.

Asset Inventory
An inventory of a locality's existing assets must be taken. This includes not only the existing telecommunications infrastructure, but other physical assets such as publicly-owned communications towers, trails and rights-of-way, government centers, proximity to major transportation avenues, and the types of businesses located in the community. Identifying what is already owned or readily available access places the community in a better position to plan and build future infrastructure.

Community Education and Training

To expand demand for a broadband network requires effective community

education and training. Broadband education development strategies and end user application identification is key to ensuring the success of a community network. This component should investigate current programs available in the community, denote training gaps, and research and identify potential training partners to provide additional broadband education programs. These partners could include higher education institutions, the Virginia Electronic Commerce Technology Center (VECTEC), Virginia's Center for Innovative Technology (CIT) and other entities that may serve as resources to help communities assess and develop strategies for expanding broadband education program availability. Increasing community awareness and education through local workshops and seminars is one method of building demand.

An example of an excellect course for general broadband education is *Broadband 101-Untangling the Wires* offered by CIT The *Broadband 101* workshop is designed to help broadband novices to understand terminology, attain understanding of technologies, gain awareness of broadband applications, and learn safeguards of network security More specific courses can be designed to help jumpstart community broadband projects by assisting local leaders in understanding the linkages between broadband and economic development.

Business Use and Applications

In addition to education, training programs should also be developed that will increase the potential for people to obtain jobs in fields that utilize broadband. This can be accomplished by first identifying the specific

applications that require broadband to work. Some of these are listed below:

- Data transfer;
- Voice over Internet Protocol (VoIP);
- Video on Demand;
- Online gaming;
- Video conferencing;
- Webcasting;
- Distance Education;
- Online Auctions;
- Video Tele-medicine;
- Agriculture Management; and
- Geographic Information Systems (GIS).

Practical applications that require high-speed connectivity must be cultivated in order to build demand for community-based broadband infrastructure. Part of the planning process must include outlining specialized training on specific courses and skills. The Virginia Community College system and Higher Education Centers offer workforce training to assist individuals in gaining the necessary skills to find jobs in technology and broadband related fields. VECTEC regularly offers mini-courses and seminars on application specific training including website design, internet security, database development, electronic marketing, and search engine optimization.

In conjunction with training and education there should also be emphasis placed on entrepreneurship development. Statistics indicate that 75% to 90% of all jobs created are in small businesses. Broadband availability will provide an opportunity to encourage potential businesses to startup and grow.

Broadband Infrastructure

DHCD only invests in implementation projects that address "Last Mile" connectivity solutions. This component should provide a variety of options for achieving this objective. The planning for this should be "technology neutral", i.e. not skewed to favor one technology over another. In addition, the planning should be based on community needs that relate to economic development, education and health care. Before financing for construction of broadband wiring can be attainable the community must know what its broadband telecommunications needs are and the type of infrastructure needed to best address those needs.

It is likely that a telecommunications professional, typically an engineer, will be needed to prepare the preliminary engineering design for the recommended community network. The engineer should utilize information from the needs assessment and potential users in order to identify elements that could impact the design including specific bandwidth requirements and redundancy needs. The design should outline the type of installation (fiber-optic cable [aerial or buried], wireless or other state-of-the-art technology), identify utility pole attachments, develop network electronics specifications and sites to house them (co-location facility), and include preliminary cost estimates for construction of the proposed solutions. The design should be plotted using GIS mapping showing existing telecommunications infrastructure, public and private rights-of-way, and proposed routes of "Last Mile" solutions. Recommendations to reach outlying areas and remote sites should also be included. Depending on the size of a project area, a phased approach to infrastructure projects may be necessary.

Network Organization and Operation

This component should provide a comprehensive study of the possible structures in terms of organization and ownership for a proposed broadband infrastructure network. All possible scenarios should be investigated including, but not limited to, locality owned and operated networks, public-private partnerships, lease-hold agreements, and cooperatives. Part of this analysis must include research of federal, state, and local regulatory and legal issues. The establishment of standards and rules for usage by entities wanting to use the network, e.g. re-selling bandwidth, decency issues, etc. should be evaluated.

A Business Plan should be developed as part of this component. Identified in the plan should be anticipated legal requirements, operational and maintenance (O&M) requirements and associated staffing necessary to meet O&M requirements and projected operational costs and revenues. A rate structure should be developed that will generate revenue sufficient to cover the expenses associated with maintenance and bandwidth while allowing the entity to sustain itself. Information from potential users should be analyzed to determine the need for training, consultation and technical support and how this will impact the business plan.

In addition, all service providers in the community should be identified and their willingness to be a provider on the network needs to be determined. To facilitate this process and garner interest, user agreements should be obtained by the locality to illustrate the extent of the projected customer base (*Attachment 4*).

Funding Strategies

If it is determined that the need and demand for broadband telecommunications is sufficient to justify installation of a system, it is necessary to examine ways to finance that effort. This evaluation should take into account the availability and relevance of particular financing sources including governmental and private resources. The evaluation needs to assess what various sources of funds can and should pay for, i.e., physical infrastructure, education programs and/or operational support. One recommended strategy for implementation may be to prioritize and phase projects and address how that will impact various funding sources. Communities should be comprehensive in their search for financing to implement potential projects. In addition to Community Development Block Grant (CDBG) and Virginia Rural Broadband Planning Initiative (VRBPI) funds, this evaluation should investigate other known sources of funding including the Economic Development Administration (EDA), the Federal Communications Commission (FCC), the USDA Rural Utilities Service and private foundations. Communities should not limit themselves to searching solely in telecommunications-related organizations. Some government agencies have telecommunication funding that is part of other areas such as health, education and public safety.

Marketing the Network

Another element that is essential to achieving a successful network is marketing. Marketing here refers to showcasing a community's assets, i.e. broadband, in a way that attracts industry and new residents. One way this can be accomplished is to have a good Community Portal or Website. The site content should be updated frequently and relate to every demographic. Information about community events, schools, church schedules, and public meetings are just a few of the things that can be highlighted. The portal can also be utilized as a vehicle for education and training programs such as e-commerce and distance learning.

A community broadband network is also an economic development tool that can assist in recruiting new businesses from outside the community. A majority of companies wanting to locate or expand make their first cuts from how much current information there is on the community portal. In addition to standard information such as physical infrastructure and population, websites that showcase a sense of community and high quality of life will attract and keep good employers.

A good publicity campaign should be a part of your overall marketing effort. In addition to a good community portal the media can be a big help. Invite the newspaper and television to meetings and allow them to draft a story that publicizes the hard work of a community broadband initiative. A concentrated push to get the word out to local citizens will act as a catalyst to boost attendance at education and training events as well as increase use of the community portal.

Conclusion

While the material contained in this guide is not all inclusive, it is intended to provide basic information to help communities begin the process of developing a broadband telecommunications strategy. The most

difficult challenge is overcoming fears of the unknown, getting out of the current comfort zone and embracing something new. Once citizens realize the benefits that can be gained from such an effort, it will move the community forward to remain on par with other localities in the 21st century.

ATTACHMENT 1 - TELECOMMUNICATIONS GLOSSARY

The following is a list of definitions for commonly used telecommunications terms. These definitions were collected from the Federal Communications Commission and other broadband telecommunications sources.

Backbone - The part of a communications network that connects to the commodity internet and handles the major traffic. It employs the highest-speed transmission paths and typically covers the greatest distance for a regional network. Smaller networks are connected to the backbone via short-haul fiber lines and/or a variety of "last mile" technologies.

Bandwidth - The capacity of a telecom line to carry signals. The necessary bandwidth is the amount of spectrum required to transmit the signal without distortion or loss of information. High bandwidth networks are able to carry more types of data simultaneously than low bandwidth networks.

Bit - A single piece of binary information, a 1 or a 0, represented in electric circuits by a connected circuit or a disconnected circuit respectively. The speed of Internet connections are measured in bits per second, which is to say, the total number of ones or zeros transmitted in a second. As the speed of Internet connections has increased, bits are becoming more commonly addressed as Kilobits (1,000 bits) (Kilobits per second – Kbps), Megabits (1,000,000 bits) (Megabits per second – Mbps), and even Gigabits (1,000,000,000 bits) (Gigabits per second – Gbps).

Broadband - Broadband is a descriptive term for evolving digital technologies that provide consumers a signal switched facility offering integrated access to voice, high-speed data service, video-on-demand services, and interactive delivery services.

Byte - In the prevalent computing paradigm, 8 bits compose one byte, whereas bytes represent a single character like the letter 'a.' The size of computer files is often measured in bytes, indicating the total number of characters in that file. Given that file sizes are increasingly large, larger orders of magnitude are often used such as Kilobytes (KB) (1,000 bytes), Megabytes (MB) (1,000,000 bytes), Gigabytes (GB) (1,000,000,000 bytes), and even Terabytes (TB) (1,000,000,000,000 bytes).

Cable Modem - A service that delivers broadband internet connectivity over television cable lines.

Co-location Facility - A room or building of an organization where network equipment owned by a customer or competitor can be placed.

Dark Fiber - Dark fiber refers to unused fiber-optic cable. Often, companies lay more lines than what's needed in order to curb costs of having to do it again and again. The dark

strands can be leased to individuals or other companies who want to establish optical connections among their own locations. In this case, the fiber is neither controlled by nor connected to the phone company. Instead, the company or individual provides the necessary components to make it functional.

DSL (Digital Subscriber Line) - Broadband internet service delivered over telephone wires, but separate from telephone service. One can utilize DSL while on the telephone.

DSx (Digital Signal) - A classification of digital circuits. The DS technically refers to the rate and format of the signal, while the T designation refers to the equipment providing the signals. In practice, "DS" and "T" are used synonymously; for example, DS1 and T1, DS3 and T3.

Ethernet - The protocol which governs the transmission of packets on a LAN.

Fiber-optic Cable - Optical fibers that are used for communication transmission. Made of very thin strands of glass they carry signals via beams of light and have nearly unlimited capacity.

Gigabit - This refers to 1,000,000,000 bits of binary information, 1s or 0s, represented in electric circuits by a connected circuit or a disconnected circuit respectively.

Gigabits per second (Gbps) - The data transmission rate of 1,000,000,000 bits of binary information per second.

Internet - The public information network which transmits packets of data across the world allowing networks of computers to communicate with one another.

Internet Protocol (IP) - The standard by which internet packets are composed and addressed.

ISP (Internet Service Provider) - An organization that provides connectivity to the Internet. Many also offer related services such as web page hosting, on-call support, training, etc. Small internet service providers (ISPs) provide "dial-up" service via modem and ISDN while the larger ones also offer dedicated ethernet (ethernet service is offered with a wide range of transmission speeds and other added features depending on the level of sophistication of the ISP and the market demand).

Kilobit - This refers to 1,000 bits of binary information, 1s or 0s; represented in electric circuits by a connected circuit or a disconnected circuit.

Kilobits per second (Kbps) - The data transmission rate of 1,000 bits of binary information per second.

Last Mile - A term that refers to the final leg of delivering connectivity from a service provider to a customer.

Local Area Network (LAN) - A network of computers within short distances of one another, such as within an organization.

Megabit - 1,000,000 bits of binary information, 1s or 0s; represented in

electric circuits by a connected circuit or disconnected circuit.

Megabits per second (Mbps)
- The data transmission rate of 1,000,000 bits of binary information per second.

Network - A system of interlinking
computers, each with the capability to communicate with each other.

Open Access Network - A
broadband telecommunications network that allows for wholesale access to multiple service providers.

Packet - Data on the internet is
transmitted in baskets of information called packets which includes where the data came from, where the data is being sent, what type of data is being transferred, and the data itself.

POP (Point of Presence) - The
point at which a line from a long distance carrier (IXC) connects to the line of the local telephone company or to the user if the local company is not involved. For online services and Internet providers, the POP is the local exchange users dial into via modem.

Quality of Service (QoS) - A
measure of performance for a transmission system that reflects its transmission quality and service availability.

Ring – Fiber-optic networks are often
composed of large organically shaped rings of fiber. The ring formation creates redundancy, such that if the ring is broken at one point, all subscribers will still have service, the traffic will simply be routed a different way while the break is repaired.

T1 - A 1.544 Mbps point-to-point
dedicated, digital circuit provided by the telephone companies. The monthly cost is typically based on distance. A T1 is the typical connection used in campus and office building networks. T1 carries both voice and data.

T3 - A 44.736 Mbps point-to-point
dedicated line provided by the telephone companies.
A T3 line provides 672 64-Kbps voice or data channels.

Videoconferencing - A means of
communicating in clear audio and video with individuals dispersed throughout the globe. Video conferencing over a fiber-optic internet connection allows greater video and audio quality than is available with copper-based internet connections while also allowing a larger number of participants in a videoconference.

Voice-over-IP (VoIP) - The
process of converting traditional phone conversations into digital data that can be transmitted via the Internet. VoIP allows phone calls to be routed over the Internet rather than the traditional phone system and provides substantial cost savings and increased audio quality.

Wi-Fi - Wireless Fidelity refers to the
transfer of data using wireless transmitters and receivers which use unlicensed radio spectrums. Wi-Fi equipment is now included in portable computers, handheld devices and smart phones.

ATTACHMENT 2 - SAMPLE RFP

Request for Proposals
For Telecommunication Planning Services
In Conjunction With The
(fill in name) **Community Broadband Planning Project**

Project Description

The Town of _____ is soliciting proposals from qualified firms to assist with a planning project for community-based broadband telecommunications. The successful consultant will undertake a comprehensive approach that includes identification of need within the community and the potential economic and social impact that new broadband telecommunications infrastructure would produce.

This project will result in the production of a Community Telecommunications Plan containing a needs assessment, broadband education and application development strategies, "Last Mile" connectivity solutions, preliminary engineering and construction cost estimates, organizational and operational recommendations for future network implementation projects, and funding strategies for potential projects. The desired outcome of this planning effort is to provide a tool for communities to assist in future implementation projects that will lead to enhanced educational opportunities, improved medical services, additional economic development opportunities, and improved quality of life.

This project is funded through a grant from the Virginia Department of Housing and Community Development and local resources. The project will be implemented by a project management team, consisting of locality officials, staff from the Planning District Commission, local business, medical and educational entities, regional economic development partners, and local telecommunications providers. The team will provide oversight and direction to the consulting entity selected.

Timeframe

All project activities must be completed no later than _____.

Scope of Services

A Community Telecommunications Plan is the product that will be produced through this project and will include the following:

1. **Needs Assessment**
   Includes gathering information on the current telecommunication needs and usage in the community, perform a gap analysis of existing telecommunications services in relation to demand and broadband availability, identify trends in use of broadband by existing and potential customers as well as any other pertinent trends, examine user

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rates, develop projections of potential broadband service, and examine how the community's efforts relate to on-going and future regional telecommunication efforts.

2. **Broadband Education Development Strategies and End User Application Identification**
   To build demand for broadband the community must have good community education and training programs. This element will investigate current programs available in the community, denote training gaps, and research and identify potential training partners to provide additional broadband education programs. In addition, the consultant will identify common and customer specific broadband uses and applications and assist the community in developing a strategy for expanding their availability.

3. **Last Mile Connectivity Solutions**
   "Last Mile" connectivity refers to the connection between the end user and the internet. This element should provide a variety of options for achieving this objective based on community needs and tie-in to the areas of economic development potential, education, and health care. Recommendations to reach outlying areas and remote sites should also be included.

4. **Preliminary Engineering Design and Cost Estimates**
   Develop a preliminary design of a broadband telecommunications network outlining the type of installation (fiber-optic cable [aerial or buried], wireless, or other state-of-the-art technology), identify rights-of-way, network electronics specifications, and include preliminary cost estimates for construction of the proposed solutions. This element also includes GIS mapping of the following: a) existing telecommunications infrastructure, b) areas of need, and c) proposed infrastructure routes of "Last Mile" solutions (base mapping will be provided).

5. **Organization and Network Operation Options**
   This element should provide a comprehensive presentation of the possible organizational/ownership structures for proposed broadband infrastructure networks – including but not limited to (as allowed by Virginia Law) owner/operator, public-private partnerships, lease-hold agreements. All options should include potential staffing requirements, legal requirements, maintenance, and budgeting estimates. In addition, the consultant should identify all service providers in the community and investigate their willingness to be a provider on future network projects.

6. **Funding Strategies for Future Implementation Projects**
   Provide information on the availability and relevance of potential funding sources for any future projects that arise from the recommendations in the Plan. This includes governmental sources, foundations, and private resources.

Proposal Contents

1. Statement of Qualifications

All respondents must submit a written Statement of Qualifications to include information about the respondent directly related to each of the Selection Criteria. All information should be submitted succinctly.

2. Proposal

Respondents must provide an explanation of how they propose to accomplish the project outcome within the stated timeframe.

Selection Process

The Town of _____ will appoint a Selection Committee to review and evaluate all proposals submitted by firm's responding to the RFP. The proposals will be evaluated and ranked based on the Selection Criteria. The Town of may ask top ranked firms to attend a presentation interview as part of the evaluation process. Firms invited to interview should be prepared to have general discussions on non-binding estimates of cost to provide requested services.

At the conclusion of the evaluation process the firms will be ranked in priority order with the highest ranking firm being selected to negotiate a contract with the Town of _____. If a contract satisfactory to both parties cannot be negotiated, the Town will then enter into negotiations with the next highest ranking firm and so on until an agreement is reached.

Selection Criteria

The respondents will be evaluated on the following criteria:
1. The Consultant's understanding of the intended project outcome, i.e., what the intended end product is to be and what the project is intended to accomplish.
2. The Consultant's proposed approach for achieving the outcome.
3. The scope of specific services the Consultant intends to provide including how the Consultant proposes to involve the Grantee in the planning and design process and the Consultant's overall approach to the project.
4. Any potential problems the Consultant perceives with the project as proposed.
5. Professional qualifications and experience of the individuals the Consultant will assign to provide the planning and engineering services.
6. Knowledge of Federal and Virginia telecommunications laws.
7. Knowledge and familiarity with the Management Team process.
8. Capacity of the Consultant to perform the work within the given time limitations, taking into consideration the current and planned workload of the firm.
9. Names, addresses, telephone numbers, and e-mail addresses of clients for whom the Consultant has performed projects of a similar type and size within the last 5 years.

Submittal

Respondents should submit five (5) copies to the address below no later than 2:00 p.m. ET, April _____ , 2006 to:

Mr. _____
Town Manager
Town of_____
P. O. Box
_____, Virginia
999-999-9999
(e-mail address)

Minority and/or female-owned businesses are encouraged to apply.
The Town of _____ is an equal opportunity employer and does not discriminate on the basis of race, color, creed, national origin or against faith-based organizations.

SAMPLE RFP ADVERTISEMENT

Request for Proposals
Telecommunication Planning Services

The Town of _____ is soliciting proposals to assist with the planning of a community-based broadband telecommunication project. This project will result in the production of a community telecommunications plan containing a needs assessment, broadband education and application development, last mile connectivity solutions, preliminary engineering and cost estimates, organizational and operational recommendations, and funding strategies for future implementation projects. Persons interested in receiving a copy of the full RFQ may contact Mr. _____, Town Manager, P.O. Box _____, 999-999-9999. Deadline for submittal of proposals is 2:00 pm ET, April _____, 2006. Minority and/or female-owned businesses are encouraged to apply. The Town of _____ is an equal opportunity employer and does not discriminate on the basis of race, color, creed, national origin or against faith-based organizations.

ATTACHMENT 3 - SAMPLE SURVEY

Broadband Telecommunications Survey

1. **Name of Organization**: _____

2. **Contact Person**: _____

3. **Street Address:** _____

4. **City:**_____   **State:** <u>Virginia</u>   **Zip**_____

5. **Phone: (   )**_____   **Website:**_____

    e-Mail: _____

6. **Total number of employees** _____
    Total number of computer users _____

7. **Type of organizational activities conducted at this facility:**

    ☐ Government
    ☐ Education (Primary & Secondary)
    ☐ Business and Economic Development
    ☐ Non-profit
    ☐ Medical (health care)
    ☐ Higher Education
    ☐ Internet Access Service Providers
    ☐ Other
    (_____)

8. **Does your organization have an Internet Connection?**   ☐ Yes   ☐ No

    If YES, what type, cost, and speed per month?
    ☐ Dial-up   Cost $_____   Speed_____
    ☐ ISDN Line   Cost $_____   Speed_____
    ☐ DSL Line   Cost $_____   Speed_____
    ☐ Cable Modem   Cost $_____   Speed_____
    ☐ Wireless   Cost $_____   Speed_____
    ☐ T1 Line   Cost $_____   Speed_____
    ☐ Satellite   Cost $_____   Speed_____
    ☐ Other, please specify_____
    ☐ Don't Know

9. How satisfied are you with the speed of your current service? (Choose one)

☐ Not at all satisfied
     Need More ☐   Could use less ☐

☐ Somewhat satisfied
     Want more ☐   Could use less ☐

☐ Satisfied

☐ Very Satisfied

10. Check all applicable uses of the Internet needed for your organization now and/or in the near future

- e-Mail: now ☐   future ☐
- Browsing/research: now ☐   future ☐
- Voice over IP: now ☐   future ☐
- Teleworking at home: now ☐   future ☐
- Banking: now ☐   future ☐
- Web site for marketing/
-    advertising/information: now ☐   future ☐
- Placing orders: now ☐   future ☐
- Making payments: now ☐   future ☐
- Receiving orders/payments: now ☐   future ☐
- Customer/employee services: now ☐   future ☐
- Education/Training: now ☐   future ☐
-
- Audio streaming/audio
-    on demand: now ☐   future ☐
- Video streaming/video
     on demand: now ☐   future ☐
- Videoconferencing: now ☐   future ☐
- Transfer large files: now ☐   future ☐
- Network storage/backup: now ☐   future ☐
- Communications between
     home office site and
     remote sites: now ☐   future ☐
- Monitor & control for security,
-    alarms, health, processes, etc.:   now ☐   future ☐
- Disaster Recovery/Avoidance: now ☐   future ☐
- Other _____   now ☐   future ☐

11. Would you be willing to pay more for faster, higher quality Internet access?
    ☐ Not at all willing
    ☐ Somewhat willing
    ☐ Very willing
    ☐ Not sure

12. How important do you think Internet technology will be for the success of your company over the next five years?

☐ Not important   ☐ Somewhat Important   ☐ Very Important

13. How difficult is it to find personnel with the needed computer, software, and Internet skills from the local area?

☐ Very Difficult   ☐ Somewhat Difficult   ☐ Not Difficult

14. How difficult is it to find and provide the appropriate training for employees in computer, software and Internet applications?

☐ Very Difficult   ☐ Somewhat Difficult   ☐ Not Difficult

15. If you need better, more affordable, services at your location, please indicate below:

☐ Telephone   ☐ Internet/data   ☐ TV

Broadband Internet

Broadband is not a system or a technology, but rather refers to speed and capacity (bandwidth) of a network connection. Broadband in this context refers to high-speed Internet connections that are always connected (no dial-up) to very high-speed networks, enabling super-fast downloads and uploads. Broadband networks have the potential to dramatically change, enhance, and transform the types of applications and services currently available through today's narrowband Internet. A broadband network can provide customers with a choice of service providers and services.

16. Given the definition above, do you believe your organization would benefit from an affordable broadband Internet connection?   ☐ Yes   ☐ No

17. If you answered yes to the question above, briefly state what is affordable and at what speed?

18. Who is your local dial-tone telephone service provider?

_____

Who is your long-distance telephone service provider?

_____

19. Who is your Internet Service provider?

_____

20. Who is your cable/satellite TV provider?

_____

What other telecommunication needs do you have that were not covered in this survey:

_____

_____

_____

_____

Thank you for your time and cooperation in completing this survey. This information is valuable to the preparation of the _____Telecommunications Plan and the region's economic future.

If you have questions, please contact_____ at (xxx) xxx-xxxx
Please email your completed survey to XXX at XXXX or fax to
(xxx) xxx-xxxx by June xx, 2006.

ATTACHMENT 4 - SAMPLE USER AGREEMENT

Town of _____
Community Broadband Network

The Town of _____ has been awarded a Community Improvement Grant to provide assistance to the commercial businesses in Town. Under this grant, the connection will be provided free of charge, after which you will then be a customer of the Town of _____ and subject to a monthly charge for service.

SERVICE

Broadband Internet (10mbps Ethernet Connection) $_____ (month)

Please indicate below whether or not you wish to have these services provided:

☐ **Yes**, I accept a connection to the _____Community Broadband Network, that will provide my business with high-speed internet access. I understand that I will receive a monthly bill for the service.

☐ **No**, I do not accept.

IMPORTANT: If you are renting. This agreement must be signed by the Owner of the Property.

OWNER: By my signature below, I, as the owner of this property, authorize the Town of _____ to connect this structure to the Community Broadband Network including installation of a service line to the main cable. I also grant permission to the Town's Construction Contractor and other agents, to enter my property for the purpose of constructing and inspecting said construction of said Fiber-Optic service line work. This permission is predicated on the basis that the contractor will restore my property to a condition equal to or better than when the work commenced. If the work to be performed is only for construction of a Fiber-Optic Service Line, no additional documentation of my authorization is necessary. If the work to be performed includes construction of any other kind, my signature on an additional contract will be required prior to the commencement of work.

WARNING: Section 1001 of Title 18 of the U.S. Code makes it a criminal offense to make willful false statements or administer to any Department or Agency of the U.S. as to any matter within its jurisdiction.

Occupant   Owner (if different)

Name _____ .   Name _____ .

Signature _____ .   Signature _____ .

Name _____ .   Name _____ .

Address _____ .   Address _____ .
_____ .   _____ .
_____ .   _____ .

Date _____ .   Date _____ .