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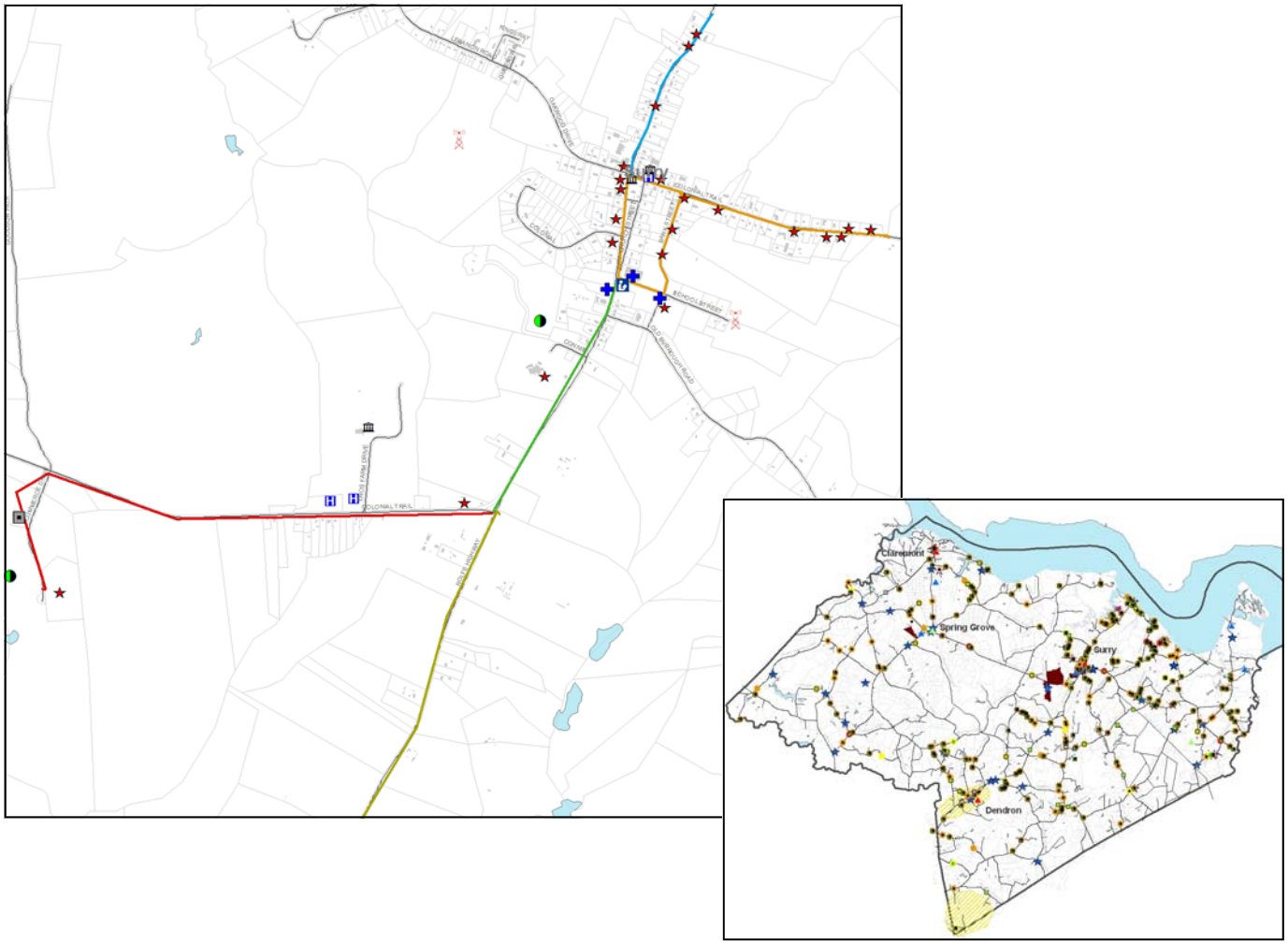


# Community Broadband Planning

## Surry County, Virginia

Phase II Final Report
Implementation Plan
February 20, 2009

**TRANSMITTAL LETTER**

February 20, 2009

Mr. Tyrone Franklin, County Administrator
Ms Rhonda Mack, Grant Administrator
County of Surry
PO Box 357
Surry, VA 23883

RE: Surry County, Virginia Community Broadband Implementation Plan

Mr. Franklin and Ms Mack:

Icon Broadband Technologies (IBT) and Consulting Gateway Corporation (CGC) are pleased to provide this final implementation plan for the proposed Surry County, VA, Community Broadband Network. This plan provides guidance to meet the established project milestones and expectations of the County.

After examining all options and roles for the County to consider and considering funding limitations, it is our recommendation that the County can feasibly meet their stated goal of bringing high bandwidth infrastructure into the County in a phased approach. As the county seat, the Town of Surry is home to the majority of key employers and County facilities. A fiber optic backbone located within the downtown area and augmented by a tower connected to the fiber provides a distribution infrastructure base for meeting the needs of the high bandwidth users and for additionally serving the area wirelessly.

The incumbent wireless provider and wireless companies located outside of the County have expressed interest in serving the residents and businesses in Surry County. With the County's support, providers have indicated they are willing to invest in additional infrastructure to expand their services. By partnering with the private sector the County minimizes its investment and risk yet meets the need to connect government facilities in a high bandwidth network, reduce communication expenditures, and expand services to the citizenry. The State of Virginia encourages rural municipalities to establish partnerships with private providers to encourage and enable broadband service delivery to businesses and the citizenry.

There is much anticipation surrounding the 2009 economic stimulus bill recently signed into law as the American Recovery and Reinvestment Act of 2009 that will fund at least some broadband infrastructure deployment in rural areas. Surry County was proactive in submitting a request to the Governor's office in December 2008 for funding assistance to complete both the fiber and wireless phases of

broadband implementation, but competition for funding will likely be intense. This implementation plan is intended to use funds in a fiscally responsible manner, balance need with long term sustainability, while taking advantage of cost efficiencies and avoiding long-term debt obligations.

The Phase I capital costs for deploying the fiber backbone and tower in the downtown area have been estimated at approximately $390,000. A typical business plan will also consider the first year's operation cost and future anticipated equipment replacement costs as well. Potential grants and other contributions to finance the project have been identified which would defray an estimated $200,000 of the total project cost. Other grant resources continue to be explored, and the County is well positioned to apply for stimulus funding initially allocated through the Department of Commerce and the NTIA (National Telecommunication and Infrastructure Agency).

IBT and CGC appreciate being allowed to be an integrated partner in this ground-breaking initiative and look forward to continuing to assist Surry County in bringing this important infrastructure to the County.

Sincerely,

Icon Broadband Technologies

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# PLAN SUMMARY

Per 2000 census data, Surry County, VA has a total population of approximately 6,829 divided among 3,294 total housing units. The U.S. Census estimates the 2007 population at 7,089. Thirteen percent (13%) of the population is located within the incorporated towns of Surry, Dendron and Claremont. Approximately 106 businesses were located within the County as of the first quarter of 2008[1] with the majority located within or just outside of the incorporated towns. Many small businesses are operated out of residences and are not included in the Virginia Employment Commission report.

The County has stated its desire to encourage and enable broadband service expansion to Surry County businesses and residents. Economic development and in particular, business expansion and recruitment depends upon high speed communication infrastructure. It is also the County's preference that the provisioning of services should be the responsibility of private providers. This implementation plan is based on the assumption that the County would consider an investment in the necessary infrastructure and seek private provider partners for the provision of the last mile access network and services. The limited availability of established funding resources and the County's desire to avoid long-term debt obligations dictates that this implementation be built in a phased approach to accomplish County objectives.

The recommended solution for expanding broadband availability in the County consists of a fiber optic network reaching high bandwidth users while also supporting wireless services to residents and small businesses. Both can be addressed simultaneously if funding and commitments can be secured. The following summarizes these two (2) phases of network infrastructure deployment.

## FIBER NETWORK IN TOWN OF SURRY

### REASONING FOR PROPOSED SOLUTION

The majority of key businesses, high bandwidth users, and government facilities are located within the limits of the Town of Surry. Business stakeholders have actively participated in the community network planning, seeking high bandwidth alternatives to current T1[2] maximum data infrastructure. Key to future business

[1] Virginia Workforce Connection; 1st Qtr. 2008 (January, February, March) Quarterly Census of Employment and Wages, Sector (2 digit) data for Surry County, Aggregate of all types.
[2] A T1 line is a highly reliable data line over a standard copper connector providing 1.5 Mega bits per second of capacity at a cost in Surry of in excess of $500 per month.

growth in the County is Surry West Business Center, the commercial park located just outside the town limits on the Highway 10 corridor. Additionally Windsor Mills, one of the County's top employers is currently the only tenant in the business park and is seeking additional reliable Internet connectivity options for data and voice. Economic development in the County has stalled due to a lack of communications infrastructure. Placing the fiber optic communication pathway into the Business Park will allow County officials to target recruitment efforts to any and all industries to the County and in particular the underused business park.

Currently high speed data transport via fiber in and out of the County can be accomplished only at the Verizon central offices in Dendron, Surry and Claremont and at the public school complex on Hollybush Road. Current last mile telephone infrastructure is not capable of supporting greater than T1 (1.54 Mbps over copper) increments of connectivity and at costs to subscribers in excess of $500 per line. The County's investment in a fiber solution will allow private providers to serve the high bandwidth needs of government, healthcare, and private businesses located within the county seat of Surry.

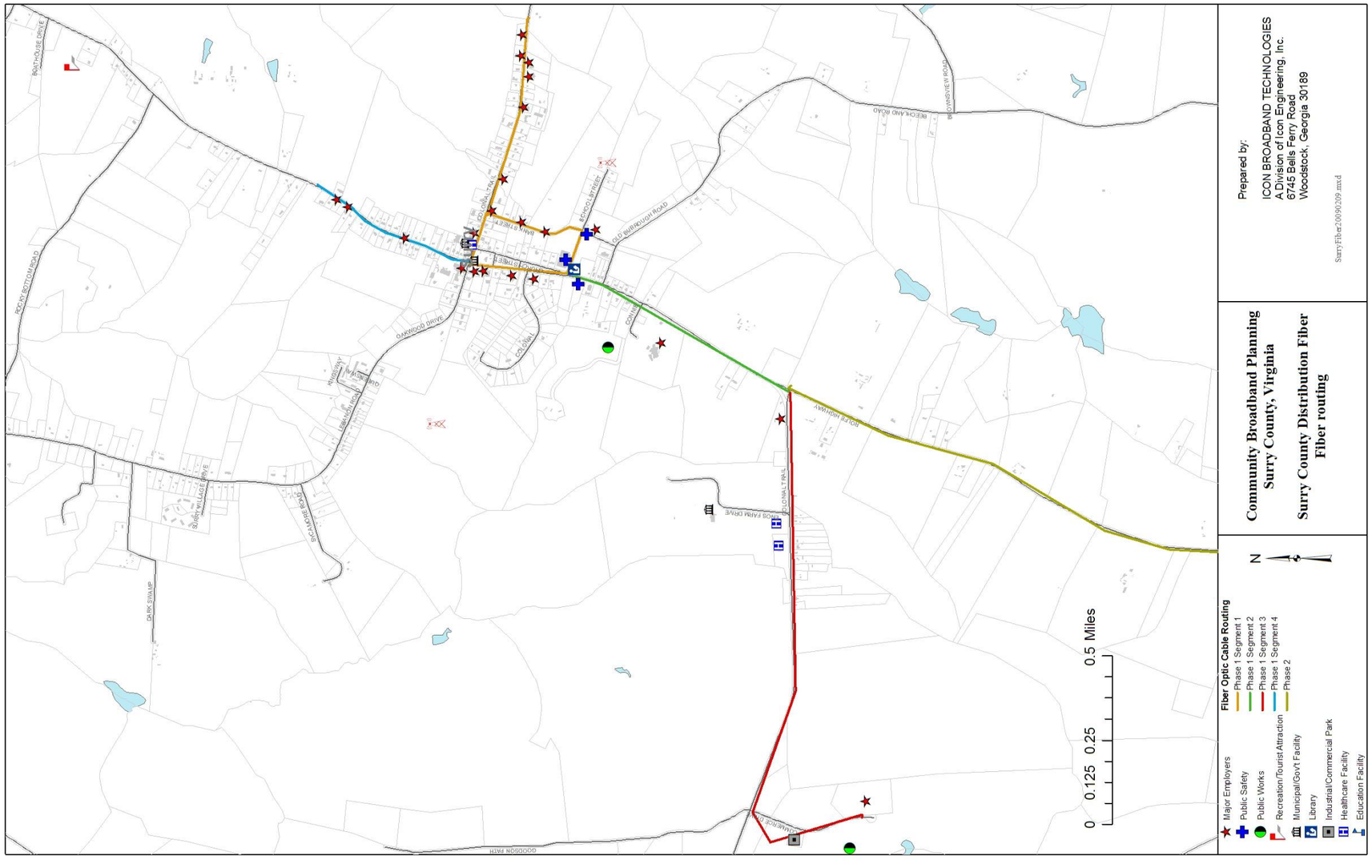
Data backhaul to the Internet is proposed via microwave from the Government Center to providers located outside of Surry County as a cost-effective and timely solution for alternative, less expensive data communications. Network operating equipment is proposed to be located at the government complex on School Street in Surry. The amount of equipment space required is minimal and can be maintained by current County Information Technology staff.

The proposed fiber route reaches the greatest numbers of key stakeholders and high bandwidth users that are attractive to service providers. Establishing a revenue stream as quickly as possible enables the County to begin to allocate funds for deploying to additional areas and customers. County facilities are expected to serve as anchor customers on the fiber to ensure a revenue stream to support operations and to attract service providers.

As additional business growth occurs in the Dendron area fiber could easily be extended south along Rolfe Highway from the intersection of Rolfe Highway and Colonial Trail West and into the Town of Dendron. Likewise, growth occurring between the Towns of Surry and Claremont could support extending fiber further west from the Surry West Business Center to meet high bandwidth needs.

From an economic development standpoint, fiber network availability in the Surry West Business Center is critically important for attracting businesses to the County and to the commercial business park. Should significant funding become available to Surry County, deploying fiber from downtown Surry to the Surry West Business Center is of utmost importance. Based on the limited funding opportunities currently available, a phased fiber deployment is proposed in the increments depicted in the following conceptual network design.

## PHASE I NETWORK DESIGN – DOWNTOWN SURRY



## PHASE I NETWORK DESIGN COMPONENTS

While modifications and adjustments will occur as final network design proceeds, generally the design consists of:

1. One and one-half (1-1/2) miles of backbone/distribution fiber deployed from the Surry County Government Center on School Street, around the downtown court house square and extending out Colonial Trail East to the end of the commercial district (Segment 1). Additional fiber segments are proposed (based on funding availability) extending north on Rolfe Highway approximately 0.5 miles to the end of town, south on Rolfe Highway to Colonial Trail West (Highway 10), and further west to the Surry West Business Center.

2. 100% of the fiber would be deployed underground, with construction confined to the Virginia Department of Transportation (VDOT) right-of-way.

3. The main network equipment would be located in the County's Government Center facility which has backup power for the Emergency Communications Center.

4. Collocation space and equipment located at the County Government Center. Minimal space required in the near term.

5. A passive optical network architecture capable of handling Gigabit bandwidth delivery of voice and data services by multiple providers with video delivery limited to a single provider.

## OWNERSHIP AND ORGANIZATION STRUCTURE

Recommendations in this plan include:

1) County forms Broadband Authority
2) County finances network build through internal funds or grants
3) County retains ownership of network assets
4) Authority leases the network from the County and assumes oversight of network operation and maintenance
5) Public/private partnership with one or more private providers offering services to end users

The Virginia Water and Waste Authorities Act (VA. CODE §§ 15.2-5100 - 5158) allows counties, cities, and towns to form authorities for a variety of purposes. The Act provides that an Authority may: "Install, own and lease pipe or conduit for the purpose of carrying fiber optic cable, provided that such pipe or conduit and the

rights-of-way in which they are contained are made available on a nondiscriminatory, first-come, first-served basis to retail providers of broadband and other telecommunications services unless the facilities have insufficient capacity for such access and additional capacity cannot reasonably be added to the facilities." (Va. Code § 15.2-5114(15)). An Authority may borrow funds, issue revenue bonds, and collect fees for its services, and may contract with parties to accomplish its purposes.

It is recommended that the County establish a county-wide broadband authority as authorized by Code of Virginia, §15.2-5431.1 et seq. (Wireless Service Authorities Act). The Authority can acquire, construct, improve, enlarge, operate or extend any project providing qualifying communications services under the provisions of the Act. The Authority can also borrow money and issue revenue bonds that do not constitute debt of the local governing body to finance the project. This business plan assumes the County would retain ownership of the assets and lease the network to a Broadband Authority for operation.

The exact role and responsibilities of the Broadband Authority will depend on whether the Authority is serving the constituents as a “provider of last resort”, or simply overseeing the management and governance of the network operated by a private provider. If the Authority is serving customers directly, then the Authority must be treated as any other service provider using the open access network. The Authority (or private provider operator) would be responsible for funding and building the last mile customer access portion of the County’s distribution network. Some of the benefits of the County and Authority separating ownership of facilities include the following:

- By the County owning the infrastructure and leasing it to the Authority, the county maintains some control and input into Authority matters to ensure county objectives are met
- By the County owning the fiber optic network, they will have a valuable asset to borrow against and enhance their credit rating
- By the County owning the fiber optic network, they will be able to further advance economic development initiatives which are a primary county objective
- By the County owning the fiber optic network and the Authority leasing the infrastructure, the structure creates a capability to transfer monetary payments between the two entities
- By the County and Authority owning separate facilities, the obligations of the county regarding debt service are lessened and the county is somewhat shielded from Authority operations in terms of risk management.

If the Authority is not a service provider, then the primary role of the Authority will be overseeing the operations and governance of the network for the County. The County and/or Authority are authorized to form a public/private partnership under the Virginia Public-Private Education and Facilities Act of 2002, amended in 2008 to include communications infrastructure projects. The project may be initiated one of two ways: the County may solicit proposals from private entities (§ 56-575.4(B)),

or private entities may request approval for an unsolicited proposal (§ 56-575.4(A)). At least two (2) private providers expressed interest in operating the network, as well as providing backhaul of data traffic in and out of the county and providing Internet access to subscribers.

## PHASE I FIBER NETWORK COSTS AND FUNDING PLAN

The largest part of the project cost is associated with the construction of the outside plant fiber optic cable (distribution network) utilized to carry the data traffic between the end user (access network) and the network operations center. The recommendation for deployment in this plan is to place the fiber underground, buried in conduit along VDOT right-of-way.

As an alternative, fiber could be attached to existing utility poles owned by either the electric utility (Dominion Power) or the incumbent telephone provider (Verizon). Dominion Power indicated they would consider a County request to attach to their poles, but would not confirm whether such a request would be approved or at what recurring cost (pole attachment fees). Verizon stated they would not allow the County to attach fiber to their poles. The situation changes when the contracting agency is a Broadband Authority which is authorized by the State to provide broadband services. Under those conditions there is an obligation by the utility or telephone provider to allow the Authority to attach so long as certain requirements are met. Before either of these entities will allow a County Broadband Authority to attach to their poles, they will conduct a survey which identifies the costs associated with modifying the existing poles (make-ready) to allow for additional attachments (fiber optic cable) in a manner which does not jeopardize safety, is in compliance with the National Electric Safety Code requirements, or impede their primary purpose, the delivery of power or telephone services. The final decisions as to what make-ready is required are open to some interpretation and are ultimately determined by the incumbents. Those upgrades would be borne by the County's project, but the modifications would actually be implemented by the incumbents. Should the County be authorized as a service provider by the Virginia Corporation Commission, Verizon would be forced by federal law to allow access but at rates of their choosing (within reason). Either pole owner could also require a great amount of make-ready work be completed prior to attaching – work which would be completed on their timetable. For these reasons, it is recommended the County work with VDOT and place fiber underground. Underground fiber is also less prone to damage by weather and other external events.

The new fiber infrastructure costs are more straightforward:

- Outside Plant Labor – the costs to install the new fiber and associated hardware and splice fibers together where necessary
- Permitting – the costs to prepare documents and obtain permission to use road rights of way
- Outside Plant Hardware – costs of fiber optic cable, splice closures, conduit, and vaults

Final Design and Construction Management – Layout of the fiber, locations for closures, fiber splicing details, bid management, construction management, development of specifications, bid evaluation and review

Install Fiber Drops and ONTs – A connection has to be made to each new customer when they elect to take service incorporating a Optical Network Terminal (ONT), the network gear located at each premise taking services to the network. These costs will vary with the number of customers taking service and will extend from year to year as new customers are added.

| **Phase I, Segment 1 – Fiber Project Costs** | | |
|---|---|---|
| Outside Plant Labor | $ | 76,354 |
| Make Ready and Permitting | $ | 8,050 |
| Outside Plant Materials | $ | 51,142 |
| Network Gear | $ | 78,200 |
| Design, Bid Preparation and Evaluation, Construction Management | $ | 64,022 |
| Microwave Transmitter and Tower | $ | 95,450 |
| Install Last Mile Fiber Drops and ONTs | $ | 12,075 |
| Last Mile Fiber and ONT Premise Equipment | $ | 4,485 |
| | | |
| **Total Phase I, Segment 1 (downtown Surry)** | **$** | **389,778** |

Service providers are looking for the County to make an investment to facilitate broadband services in the County due primarily to low housing densities and the absence of multiple large businesses. To service providers, the benefit of a public-private partnership is the ability of the County to potentially obtain grants for start-up, more favorable funding terms and conditions, and longer return on investment expectations which accommodates removing the cost barrier of the private sector in expanding networks. The County must be careful however, to maintain a neutral marketing position, since Virginia law does not allow promotion of a private service provider's services.

While the County's Solicitor should be consulted for assurance of compliance with Virginia utility regulation and public procurement requirements, typically there are two (2) approaches used by Authorities to solicit service provider use of the network. In the first approach, the Authority adopts set fees and rate tariffs that apply to any and all service providers that want to use the network. Essentially all anticipated scenarios (voice, video, data applications) should be addressed. The network could be available for dark fiber lease (for transport) or lit fiber (for customer access). The service providers may use wireless or wireline technologies. This approach makes sense when multiple service providers have expressed interest in utilizing the network.

If no providers ultimately offer to provide services, a Request for Proposal (RFP) could be issued to find a provider. This scenario would allow the Authority the ability to respond as a "provider-of-last-resort" if no potential service providers step

forward without the perception that there was no open and transparent solicitation for competition. While the Authority should also be able to serve under the first scenario of set rate tariffs, operating the network as well as offering services in competition with other providers provides at the least the appearance of a conflict of interest. Under this second scenario, it is recommended either the County govern the use of the network or outsource it (thru the issuance of an RFP) to a third party. One objective of this second approach is to allow the service provider more input on what terms and conditions they would consider utilizing the network, allowing for true collaboration for public/private benefit.

The first phase fiber network proposed would require minimal operation and maintenance oversight on the part of County personnel. Space required is also minimal, contained within one rack at the Government Center where emergency backup power is available. As an alternative to operation by the County (Broadband Authority), an RFP for private provider services could be initiated but at additional costs not included in this implementation business plan. Should a local provider elect to provide network operation and management services, the County's equipment could be placed in the operator's facilities located within reasonable distance of the fiber.

Internet transport services are proposed to be achieved securely and cost-effectively via microwave to a provider located outside of the county. Costs are included in the implementation business plan for a tower and microwave equipment located within the Town of Surry and connected to the fiber network. Wireless points of presence (POPs) are located in Windsor, Wakefield and Emporia. Providers located at these POP facilities are members of the Mid Atlantic Broadband Cooperative utilizing a carrier-neutral fiber optic transport network at competitive rates. The incumbent wireline provider in Surry County has declined to participate in network planning to date, but may be amenable to providing competitive pricing for connectivity at the time service is desired.

## LAST MILE SOLUTIONS

### FIBER TO THE PREMISE

County facilities and businesses with higher bandwidth needs located within approximately 500 feet of the proposed Phase I fiber can be served directly with fiber to the premise (FTTP). Connectivity could be provided by the Broadband Authority, or a private provider leasing access on the County fiber network. Utilizing either passive optical network gear or a point to point wide area network scheme, the network would be capable of providing customers a minimum of 100 megabit per second (100 Mbps) connectivity. As an open access network, multiple providers could provide services to customers by simply interconnecting their network with the County fiber and paying a per-customer access fee – far less expensive than building new infrastructure on their own. This plan conservatively anticipates approximately seven (7) municipal facilities and three (3) businesses to be served initially with direct fiber services.

The fiber distribution network as proposed can feasibly serve subscribers located within approximately 500 feet of the fiber by a drop connection from the fiber network (assuming a reasonable and customary service contract period). Serving large bandwidth customers via fiber that are located farther from the fiber network may make sense on a case-by-case assessment, depending on their bandwidth requirements. Wireless or some other wireline technology would be alternatives to serving directly with fiber. The proposed network route was developed to pass as many businesses and county facilities as possible with the least amount of fiber.

Included in the network capital costs for proposed fiber network are the premise installation and equipment requirements to serve seven (7) anchor customers. Additional numbers of business customers are projected at various subscriber levels (bandwidth amounts) to be served via direct fiber connections.

The following table details customer facilities located within reach of the Phase I fiber deployment, also indicating those facilities targeted for future phases of construction. The key customers identified include municipal facilities, healthcare, major employers[3] and known businesses located along the proposed fiber path. Facilities located significant distances from main thoroughfares and from other potential business subscribers are not feasible to serve from fiber (except for very high bandwidth customers) and should be included in wireless last mile network planning.

| | | PHASE I FIBER SEGMENT | | | |
|---|---|---|---|---|---|
| CUSTOMER TYPE | KEY CUSTOMER | 1 DOWNTOWN & COLONIAL TRAIL EAST | 2 SOUTH TO COLONIAL TRAIL W | 3 WEST TO BUSINESS PARK | 4 ROLFE HWY N OF COLONIAL TRAIL E |
| Municipal | County Administration | X | | | |
| Municipal | Sheriff's Dept (PSAP) | X | | | |
| Municipal | District Court | X | | | |
| Municipal | Circuit Court | X | | | |
| Municipal | Surry Volunteer Fire Dept | X | | | |
| Municipal | Surry Volunteer Rescue Squad | | X | | |
| Municipal | Surry Town Hall | X | | | |
| Municipal | Town of Surry Pumping Station | | X | | |
| Municipal | Surry West Pumping Station | | | X | |
| Municipal | Surry Parks & Recreation | | | X | |
| Municipal | Surry Animal Control/Public Works | X | | | |
| Municipal /Healthcare | Surry Health Department | | | X | |

[3] Major Employers as defined by the Virginia Employment Commission (see Surry County profile, VA WorkConnect)

| | | Phase I Fiber Segment | | | |
|---|---|---|---|---|---|
| Customer Type | Key Customer | 1 Downtown & Colonial Trail East | 2 South To Colonial Trail W | 3 West To Business Park | 4 Rolfe Hwy N of Colonial Trail E |
| Healthcare | June Tunstall, MD | X | | | |
| Healthcare | Horizon Healthcare | | | X | |
| Non-profit | Surry Public Library | X | | | |
| Major Employer | Addison's | X | | | |
| Major Employer | Poindexter Law Office | X | | | |
| Major Employer | Surry House Restaurant | X | | | |
| Major Employer | Anna's Pizza | X | | | |
| Major Employer | Surry Co Farm Bureau | X | | | |
| Major Employer | Surry Hair Studio | X | | | |
| Major Employer | Faison Law Office | X | | | |
| Major Employer | Surry Drug Co | X | | | |
| Major Employer | EVB Bank | X | | | |
| Major Employer | BB&T Bank | X | | | |
| Major Employer | Johnson Bros Fertilizer | X | | | |
| Major Employer | Saver's Market | X | | | |
| Major Employer | Colonial Farmhouse Restaurant | X | | | |
| Major Employer | Zoom's Inc | X | | | |
| Major Employer | Dollar General Store | X | | | |
| Employer /Service Provider | 380 Communications /Mil-Sat | X | | | |
| Major Employer | S.W. Edwards Co. | | X | | |
| Major Employer | Surry Equipment Co. | | | X | |
| Major Employer | Windsor Mill Corp. | | | X | |
| Major Employer | Surry Furniture Co | | | | X |
| Major Employer | Surry Provisions | | | | X |
| Major Employer | Farmer's United | | | | X |
| Major Employer | Farmer Joe | | | | X |
| **Total** | | **25** | **1** | **6** | **4** |

## WIRELESS

The most cost-effective method of providing Internet access to greater numbers of residents and small businesses is through wireless technology. In addition to hosting microwave equipment for Internet transport, the proposed 160 foot tower is intended to also accommodate the network gear for wireless Internet access offered by a private provider. This plan assumes the County will own the tower and provide access for private provider investment in the wireless equipment in return for a per-subscriber access fee. Private providers participating in the Community Broadband Planning effort expressed interest in providing services with financial support from the County for start up. Should private provider investment not

materialize, the County or Broadband Authority will own the tower and be positioned to purchase the equipment to serve additional citizenry should funding become available. The tower could also provide a revenue source for the County.

End user wireless equipment costs are typically passed on to the consumer in the form of installation fees and/or equipment lease fees, and often in the neighborhood of $200-$400 per customer. This required investment by the consumer, especially in low to moderate income residential areas or for small businesses often impedes widespread adoption, resulting in a much longer return on investment. Further compounding the per-subscriber capital investment is the typical limited equipment lifetime of approximately seven (7) years.

To motivate wireless technology end-users, the County should discuss with VDHCD funding a pilot program to initially share in the cost of customer premise equipment. Any program must focus on the highest percentage of low to moderate income (LMI) areas and an eligibility program can be set-up for customers meeting household income criteria established by the Virginia Community Development Block Grant Program. Qualifying customers could, for example, be offered a discount coupon for one-half the customer premise equipment cost. If such a program was established for the first 200 customers assuming $400 premise equipment cost and using a $200 discount example, the funding request to VDHCD would total approximately $40,000. Additionally, pilot program participants should be required to commit to a minimum contracted period of service with penalties assessed for early termination to recover costs.

Should the Broadband Authority elect to serve as the wireless provider of last resort, a wireless subscriber cost recovery and expansion program should be created to accommodate future subscribers and support continued wireless service subscription. An expansion program might consist of a small percentage of the revenue from the pilot program budgeted towards continuing to offer additional discount coupons to new customers.

Currently, this plan assumes private provider delivery of wireless last mile services and as such no investment in wireless equipment is included in the business planning.

The business plan assumes that much of the revenue to cover operations would come from allowing wireless providers to backhaul data from a County owned tower to their facility. The agreements with such providers are key to a successful deployment and should be agreed upon before the network is constructed.

## IMPLEMENTATION STEPS AND TIMELINE

**Four Weeks: Board Decision to Proceed and Fund Implementation**

It is recommended the County retain ownership of the fiber optic network backbone and lease its use to a newly formed county-wide broadband authority which will assume the responsibilities of financing and overseeing the construction of last mile access networks to be used to serve the end-use customers, as well as be the "provider of last resort" where there are not at least two functionally equivalent services being offered.

The County Board of Supervisors would pass a resolution authorizing the County Solicitor to prepare an ordinance authorizing the following actions for which there will be the incurrence of expenditures for:

1. The formation of a County-wide Broadband Authority;
2. The County hereby establishes its official intent that Obligations be issued to finance certain costs of the Project, any property functionally related and subordinate thereto and other related expenditures, including without limitation issuance costs, debt service reserve funds and working capital reserve funds, in an amount not to exceed $_____. The County hereby adopts this declaration of official intent under Treasury Regulations Section 1.150-2 and declares that the County intends to
   reimburse itself or its designees with the proceeds of the Obligations for Expenditures made on, after or within 60 days prior to the date of the adoption of this Resolution, except that Expenditures made more than 60 days prior to the date of the adoption of this Resolution may be reimbursed as to certain *de minimis* or preliminary expenditures described in Treasury Regulations Section 1.150-2(f) and as to other expenditures permitted under applicable Treasury Regulations.
3. The County Administration to contract with a network design firm to complete the planning, design and specifications for the construction, equipping and deployment of the Surry County, VA Community Telecommunications Network Project;
4. That the County has certain funds available which may be used temporarily for the purpose of paying such Expenditures for the Project, pending the issuance of the Obligations; and (c) that it is

anticipated that the Obligations will be issued for the purpose of financing the Project.

## Fifteen Weeks: Final Network Design

The County should commission a telecommunications engineering network design firm for completion of the fiber optic network backbone design, specifications and bid documents. The following generally describes typical design and construction approaches, and typical project components. For a project of this type either a point-to-point or passive optical network design will most probably be selected.

### Final Design Project Components:

- Prepare Final Design, Quantity Calculations, Final Cost Estimate
  - After the preliminary design is accepted by the network owners, final design, specifications and conditions and terms would be completed for solicitation through a Request for Bid (RFB) (if a design build approach were utilized, a conceptual RFP could be issued which would lead to selection of the successful bidder who would both design and build the plant).

- Address Right-of-Way / Easement and Permit Issues
  - While railroad and public right-of-ways may be used, attachments to private utility poles, use of conduit or inner duct, plowing-in and boring, and other facilities will need to be addressed. Permitting in the initial phase is likely to be minimal.

## Ten Weeks: Solicit Bids, Interview Firms, Award Contract

Standard public procurement policies should be followed for the solicitation of bids and award of contract. A list of bidding documents and process are outlined as follows:

### Bidding/Contract Award

- Bidding Documents
  - A complete set of bidding documents will need to be developed that typically would include:
    - Advertisement
    - Plans and Construction Specifications
    - Terms and Conditions
    - Pricing Sheets
    - Performance, Maintenance Bonds and Insurance Requirements
    - Liquidated Damages (if used)

- Addressing Materials/Equipment Quality Standards and Warranties ( It is understood that electronics are not part of the scope of this RFP or construction phase)
- Change Order Process
- Testing Requirements
- As-Built Requirements
- Payment Request Drawdown Schedules
- Construction/Implementation Contracts

- Plans and Specifications
  - The duplication and distribution of plans and specifications for distribution to bidders.

- Pre-bid Meeting
  - A pre-bid meeting is strongly suggested to address questions, concerns and identify if any addendums have been issued and need to be responded to.

- Bid Receipt, Tabulation, Bond Compliance and Award Recommendation
  - Once all the bids are received, bids are tabulated, bid compliance is confirmed, references are checked, and a recommendation for award is provided to the network owners.

**Six - Eight weeks: Material Procurement and Project/Construction Management Services**

It is not uncommon for the procurement of materials to take 30-90 days or longer. While waiting for materials to be delivered on-site, there are a number of project issues that can be addressed such as make-ready work, set-up of a project staging area, and establishing project administration procedures such as the handling of payroll and expense reimbursements, inspection and other quality control measures, required deliverables such as as-built plans, warranties, and material shipping documentation for quantity verification. The following addresses these issues in greater detail.

## Construction Management

- Project Mobilization / Staging Area
  - One of the first steps upon signing the contract and authorizing the Notice to Proceed is to have a secured staging area for the contractor so as to mobilize equipment, park vehicles, trailers, etc. Given the size of the initial segment of this project, 1.5 miles, a large amount of space will probably not be required.

- Material and Equipment Ordering / Purchase Order Compliance
  - The earliest date feasible to order material and equipment needs to be identified early in the process because procurement of some equipment and

materials require a considerable lead time. From a quality and cost control measure, as materials and equipment are received, specification compliance and quantity verification should be performed.

- Payroll and Expense Reimbursement Processing
  - Even though Virginia is a Right-to-Work state funding sources and public procurement laws may require prevailing wage compliance. Through-out the project payroll and expense reimbursement requests will need to be reviewed for compliance with the bid, confirmation of work complete or materials received, and recommendation made for payment.

**Two weeks: Network Construction**

Throughout the project, it is recommended to have an owner's representative present for on-site construction/installation observation to ensure quality controls are met.

It is not unusual that some adjustments required during construction/installation and therefore the project representatives would want to ensure accurate as-built plans are prepared and that final quantities are confirmed for verification for final payment. Depending upon the season, an additional two weeks may be needed to allow for holiday breaks in construction activity.

**Two weeks: Testing, Punch List, Corrections and Project Close-out**

After the infrastructure is built, testing will need to be performed and a punch list created for correction of items prior to issuing the final completion notice. Upon completion of the project and satisfaction of the punch list, retainage will need to be released, warranties collected, operations and maintenance manuals distributed and contractor demobilization reviewed for acceptable site condition.

Integrated with the outside plant construction contracts will be a second RFP for electronics and subsequent procurement of this equipment and other ancillary hardware. The objective will be to have the electronics installed and staff trained as soon as possible so that customers near the central office can receive service as soon as possible.

# ORGANIZATION STRUCTURE & GOVERNANCE

## OWNERSHIP

The County is explicitly authorized to construct and own communications infrastructure, and to borrow funds and lease access to other municipal entities and private companies. The Governor's office and the Virginia Legislature has clearly communicated their position that communication infrastructure is considered a *utility* as critical for a community's growth as water and wastewater systems. The County has access to low-cost loans and potential grant funding to implement the fiber distribution network (Phases I and II) that private providers have not stepped forward to build. By retaining ownership of the network after construction, the County will own a valuable asset that can be leveraged for future economic development initiatives and incentives. Additionally, the County will retain control of this asset to ensure proper maintenance and direct future phases of expansion in accordance with residential and business growth in the County.

While Virginia law clearly authorizes municipalities to own and operate communication networks, with certain restrictions and limitations, it is important to establish a clear separation of responsibilities between operation and service delivery, and maintenance of the physical infrastructure (County asset). An additional separation is recommended to place all aspects of the communication business venture under a Broadband Authority for accountability. The Broadband Authority would be tasked with managing the County-owned infrastructure.

The County should clearly retain ownership of the distribution fiber. Connections to service providers should be made through collocation facilities where the physical connections are made via equipment (cross-connect).

## OPERATION

Operation of the network consists of these primary functions:

| Function | Tasks | Recommended Responsible Party |
|---|---|---|
| Infrastructure Administration and Management | Administrative tasks relative to maintaining all agreements and inventorying of physical assets; overseeing processes and procedures for network operation and third party contracts; accounting for all Authority activities | Broadband Authority |
| Physical Infrastructure | Perform repairs to fiber optic | Broadband Authority |

| | | |
|---|---|---|
| Maintenance | cable as needed, run drop fiber to customer premises for new service, oversee construction of extensions of distribution network during future phases | – Provide service or contract to outside firm (outsource) |
| Equipment Maintenance | Repair or replace networking equipment at all municipal facilities (including schools) and the network operation centers (Court Street and PTS/Tech Park) | Broadband Authority – Provide service or contract to outside firm (outsource) |
| Distribution Network Operation | Oversee bandwidth management, maintain Internet access, service provider and customer connectivity | Third Party Operator |
| Distribution Network Administration | Negotiate/develop use agreements, service provider collocation, billing for access, right of way agreements, vendor contracts | Third Party Operator |

## DEVELOPMENT OF AGREEMENTS

Constructing and operating the community network will require a number of agreements be developed. The following highlights these agreements and touches on some of the items to be addressed within each agreement.

### NETWORK OPERATIONS MANAGEMENT AGREEMENT

The County may currently have the staff and expertise to manage the network once built. A typical solution is to contract with a third party with previous experience to manage the network. Local service providers may also be interested in providing these services. The following are some of the issues to be addressed within the Network Operations Management Agreement:

- Bandwidth responsibilities which includes managing and allocating subscribed bandwidth to customers and across the network
- Compliance with Customer Privacy and Personal Property Rights
- Customer billing and collection
- Operations budget preparation and monitoring
- Customer and provider technical support/Back-office support
- Enforcing Quality of Service (QOS) responsibilities
- Oversee maintenance and emergency repair of the network

## NETWORK MAINTENANCE AND EMERGENCY REPAIR AGREEMENT

The network manager may not be the party to do the actual maintenance and emergency repair in the event the network goes down. Typically such responsibilities are contracted with a local contractor or service provider that has technical field crews and equipment who will respond within a contracted period. Examples of issues typically included within this agreement are as follows:

- Stocking of equipment and infrastructure parts and materials critical to bring the network back up within a short period of time that cannot wait to be ordered and delivered
- Periodic inspection of the outside plant for areas of concern such as loose attachment hardware, low sag of the cable, condition of splice enclosures and handhole vaults, signs of tampering with the network by other utilities or vandals
- Depending on the reliability needs of major customers, Quality of Service (QoS) agreements may require an emergency repair response within no more than 2 hours of being notified with the intent of bringing the network back-up as soon as possible (within 4-6 hours). Quicker response and repair may be needed depending on the services being provided across the network (such as voice communications), as well as end-use customers (such as federal government and emergency response agencies). In the future, redundancy design and options should be considered as funding becomes available and/or through continuing discussions with incumbent providers.

Quite often the same contracted party for maintenance and emergency repair will be the same party contracted to perform customer hookup and disconnect services. This introduces a variety of items to address such as established levels of responsibilities between the network and the homeowner, right-of-way and easement matters, underground utility locations, care, handling and conduit while on private property, etc.

## NETWORK ACCESS AGREEMENT WITH SERVICE PROVIDERS

Agreements with service providers using the community network will need to be developed. A variety of issues to be addressed include:

- Clear delineation and understanding of responsibilities
- Compliance with Customer Privacy and Personal Property Rights
- Maintenance and emergency repair coordination and responsibilities
- QoS Standards
- Fees for use/lease
- Compliance with federal, state and local laws
- Network co-use conduct and notification

### POLE ATTACHMENT / TRENCH USE AGREEMENT

Use of other owned facilities such as exiting poles, conduit, trenches, etc. is usually handled one of two ways; either through a joint use agreement if the County owns similar facilities that are needed by the other owners of such facilities or through annual payments. There are federal guidelines and requirements on establishing fair and reasonable fees through the calculation of developed formulas, as well as when such attachments cannot be denied. Examples of issues addressed in a Pole Attachment or trench use agreement include:

- Location of cable placement
- Responsibilities for Make-Ready work and repair
- Parameters set as to accessing infrastructure
- Ownership tagging/identification of infrastructure
- Sag allowances and depth placement in trenches with appropriate cover and overall compliance with the National Electric Code requirements

Unless changes are made to utilize utility poles rather than deploying underground, pole attachment agreements will not be an issue.

### CONTENT AGREEMENTS

Content agreements will be specific to the particular content being acquired. For example typically bandwidth might require a redundant path be available in the event the main feed goes down; TV programming would address franchise agreements and fees as well as Public, Educational and Government (PEG) channel provisions; voice would require 5-9s (99.999%) reliability and handling of 911 calls.

### WIRELESS BROADBAND AUTHORITY ORDINANCE

An ordinance will need to prepared and approved by the county governing board to establish a Wireless Service Authority (Broadband Authority). Steps and issues that will need to be addressed include:

| | |
|---|---|
| ▪ Advertisement for public hearing and of the ordinance | ▪ Appointment of Authority members |
| ▪ Conduct a public hearing | ▪ Budget of the Authority |
| ▪ Incorporation filing of the authority | ▪ Employees of the Authority |
| ▪ Establishing Authority by-laws | |

## GOVERNANCE PLAN

A Governance Doctrine will need to be developed to guide the Network Management in getting started and continue with the on-going development and

expansion of the government owned network, applications and services provided off the network. While many of the steps to planning for communications interoperability traditionally initially focused on public safety issues, most are applicable throughout the ongoing Governance of the network and applicable for other government-use of the network. The communications open access network should be thought of as much more of a comprehensive government owned network that might include applications associated in meeting the general public's at large interest such as transportation, telemedicine, utility SCADA systems, wireless PDA support / video streaming, and public health inspection, as well as individual customer needs such as Internet connectivity, TV, telephone services, home and business security, and off-site data storage.

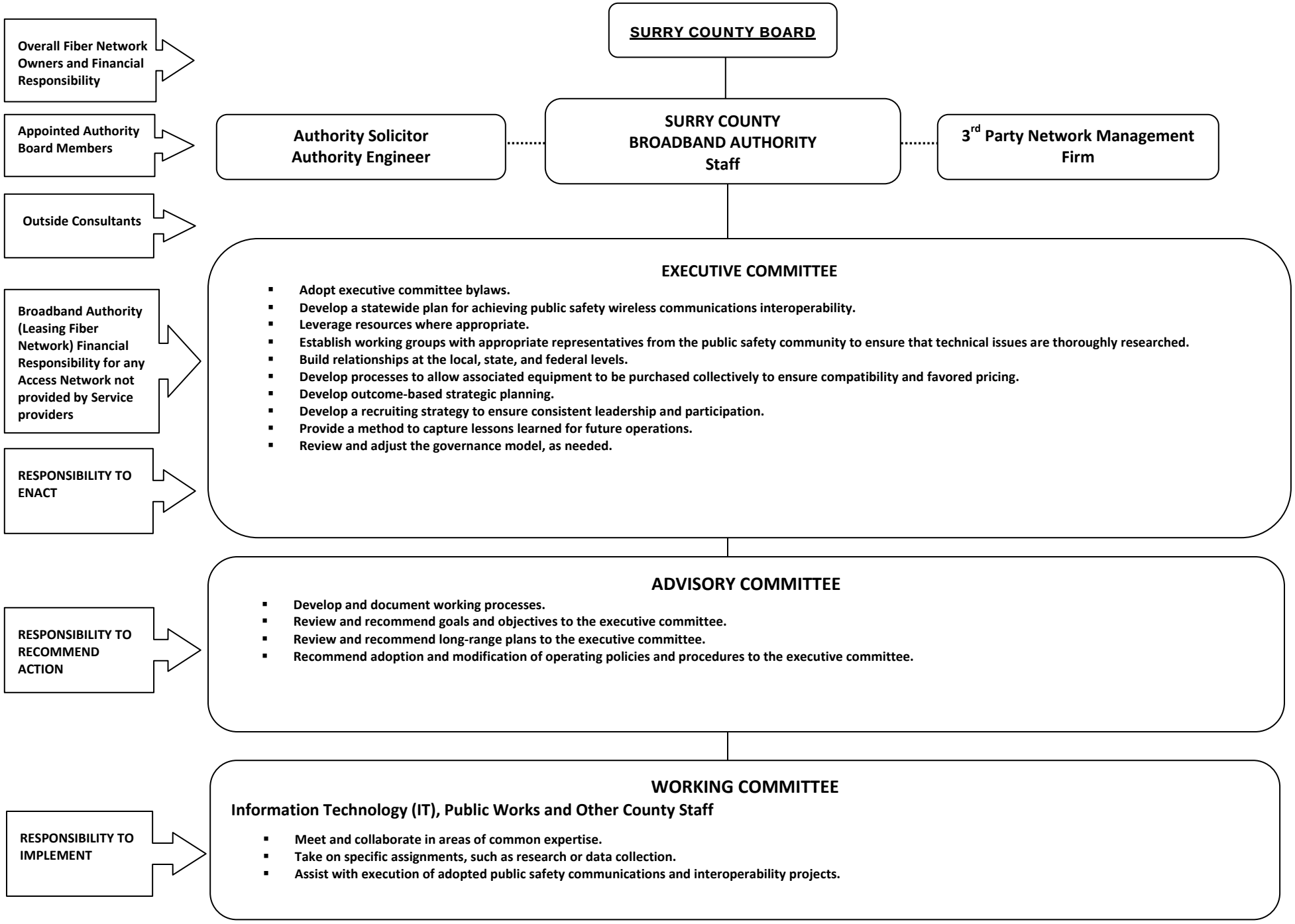
## TYPICAL STEPS FOR PLANNING NETWORK GOVERNANCE

- Establish Key Relationships and Funding
- Gather Information
- Create Network Plan and Roadmap
- Identify Roles and Responsibilities
- Recruit Service Provider Participants
- Conduct Service Provider Interviews
- Analyze Data, Set Goals and Begin Preparations for Strategic Planning
- Finish Preparations for and Conduct Strategic Planning Session
- Develop Network Communications Interoperability Strategic Plan and Develop a Network Operational Hierarchy Management Organization
- Use Guidelines for the First 90 days of Implementation and Practice the Plan

The recommended operational hierarchy of the Governance Doctrine consists of a three tier management organization consisting of the:

1. Executive Committee – having the responsibility to enact
2. Advisory Council – having the responsibility to recommend action
3. Working Subcommittee – having the responsibility to implement

The following figure represents the relationship and responsibilities of the entities involved.


SURRY COUNTY BOARD
Overall Fiber Network Owners and Financial Responsibility
Appointed Authority Board Members
Outside Consultants
Authority Solicitor
Authority Engineer
SURRY COUNTY BROADBAND AUTHORITY Staff
3rd Party Network Management Firm
EXECUTIVE COMMITTEE
Adopt executive committee bylaws.
Develop a statewide plan for achieving public safety wireless communications interoperability.
Leverage resources where appropriate.
Establish working groups with appropriate representatives from the public safety community to ensure that technical issues are thoroughly researched.
Build relationships at the local, state, and federal levels.
Develop processes to allow associated equipment to be purchased collectively to ensure compatibility and favored pricing.
Develop outcome-based strategic planning.
Develop a recruiting strategy to ensure consistent leadership and participation.
Provide a method to capture lessons learned for future operations.
Review and adjust the governance model, as needed.
Broadband Authority (Leasing Fiber Network) Financial Responsibility for any Access Network not provided by Service providers
RESPONSIBILITY TO ENACT
ADVISORY COMMITTEE
Develop and document working processes.
Review and recommend goals and objectives to the executive committee.
Review and recommend long-range plans to the executive committee.
Recommend adoption and modification of operating policies and procedures to the executive committee.
RESPONSIBILITY TO RECOMMEND ACTION
WORKING COMMITTEE
Information Technology (IT), Public Works and Other County Staff
Meet and collaborate in areas of common expertise.
Take on specific assignments, such as research or data collection.
Assist with execution of adopted public safety communications and interoperability projects.
RESPONSIBILITY TO IMPLEMENT

## RATE ORDINANCE AND RESOLUTIONS

An ordinance establishing the legal authority to charge rates will need to be developed and passed by the governing board. Typically rates are established through resolutions because of periodic updating. Steps to establish the ordinance and resolutions typically include:

| | |
|---|---|
| • Advertisement for public hearing and of the ordinance | • Nondiscriminatory rate application and structure |
| • Conduct a public hearing | • Collection practices and policies |
| • Some justification basis for the rates such as cost of service or market driven rates | • Connect and disconnect practices and policies |

## MARKETING / PUBLIC RELATIONS PROGRAM

Virginia law prohibits local government network owners from endorsing and promoting the services of private service providers using the network. As a publicly owned network owner however, the community still needs to be conscientious of public relations. Just like use of other public facilities and infrastructure, the governing board should discuss and establish how the network will be perceived by the general public, as well as service providers using the network. Desired perceptions typically include:

| | |
|---|---|
| • Professionalism | • Benefiting public-owners of the network |
| • Legal decency of content | • Community asset |
| • Fair and equitable/Non-discriminate | |

For those services being offered directly to the end-user by the County network, in addition to public relations issues, a marketing program will need to be developed that typically would include:

| | |
|---|---|
| • Customer incentives and promotions such as bundled pricing or limited free service | • Response time |
| • Customer sign-up and hook-up | • Customer Privacy and Personal Property Rights |
| • Quality of Service being guaranteed | • Easy to find customer technical support and emergency call numbers |
| • Competitive rates and service | • Development of a user friendly website |
| • Customer responsibilities | • Value-added features such as on-line account access and payments, speed testing, etc |

# PRELIMINARY DESIGN & PROJECT COSTS

The fiber distribution network proposed is intended primarily to lay the foundation for private provider expansion of broadband services throughout the County. As a first step towards achieving that goal, the investment in fiber is targeted to connect anchor subscribers including the greatest concentration of municipal (County, Town, State and Federal) facilities in the County.

There are typically two problems with this objective—high cost of wholesale Internet and limited high speed broadband connections to end users. This plan is designed to address the first problem laying the groundwork with a partial solution to the second problem. Typically lower cost wholesale Internet is obtained by purchasing from one of the alternative providers to the Incumbent. Unfortunately in Surry no other providers have a direct fiber connection other than Verizon. A second approach to lowering Internet costs is to connect via a microwave link to a lower cost provider with a presence in an adjacent county. That approach has been utilized here with monies included for a tower and transmitters to reach another provider. Wireless microwave links have been used for many years and when properly designed and implemented have very high reliability. Final wholesale Internet costs should drop to approximately $50 per Mbps (per month) from the current retail cost delivered of approximately $400 per Mbps.

The second objective—providing high speed bandwidth connections to end users—is only partially addressed because of cost limitations. The first segment of Phase I will reach the greatest concentration of business and municipal locations with the county. Additional end-users would be reached by additions of more fiber optic cable or by wireless from the new tower and other ones installed by the County (future) or private providers. Because of the limited number of customers connected directly to fiber, the ability to develop an agreement with a wireless provider(s) is a critical part of the viability of the plan. The County can offer a fiber connection potentially to a wireless provider's office, lower wholesale Internet costs for that provider(s), and provide a tower for the attachment of the provider's wireless transmitters. In return the agreement needs to cover the costs of operation and sustainability of the fiber network and electronics gear. For this to be a successful deployment those agreements should be in place.

The preliminary design and project costs were developed with the aforementioned items in mind. The construction costs are believed to be conservative. Operations revenue is based on converting a portion of current municipal T1 costs to the new network while obtaining reasonable revenues for transport over the network.

# BUSINESS PLAN & ASSUMPTIONS

Many different business models were considered during the preliminary portions of this project ultimately settling on one which best met the following objectives:

- Provide an infrastructure over which multiple providers could offer voice, data and video services
- Minimize the involvement of the County government in competition with private providers while increasing competition for cost effective telecommunications services
- Increase the pace of economic development within the county
- Minimize the demands on the County for staffing of a newly developed fiber optic network
- Create a self-sustaining network not requiring continuous support from the County tax base to continue operations
- Develop a phased approach which blends the needs for the infrastructure with the ability of the County to fund it

The final choice selected is one in which the County (through a Broadband Authority) builds a fiber optic infrastructure capable of serving the downtown area of the Town of Surry while bringing lower cost wholesale Internet into the network for use by municipal facilities and for resale to wireless providers within the area. The outside plant fiber infrastructure would be capable of supplying services to businesses or residents within about five hundred feet of the installed fiber. The initial plan calls for providing only Internet services, but depending on the electronics selected, the network could be fully capable of providing voice and cable services as well. Details and a discussion of plans for the most basic phase I network follows:

- The numbers of potential customers were determined from a GIS analysis which counted all of the businesses and homes within 500 feet of the projected fiber path; the potential number of wireless customers was estimated as the number of housing units within five miles (2000 census);
- The network envisions installing an approximately 160 foot tower as part of a microwave link to bring lower cost wholesale Internet services to the county. Wholesale Internet could be sold to existing Internet Service Providers as well as distributed to municipal facilities (RF engineering will determine the best final height of the tower);
- The tower would be used in future phases to deliver point to point wireless services to other parts of the county;
- The tower would also be the site for transmitters for a wireless point to multipoint network operated by a wireless Internet Service Provider(s), and
- The revenue projections are for transport of data across the network. They would consist of:

- A transport fee for each wireless or fiber optic business customer utilizing the network for the transport of data.
- A charge for each municipal customer for access to the fiber network and Internet access. This charge has been estimated to be an offset against currently purchased T-1 data services and should result in no overall increase in operations by municipal customers.
- Fees charged for the usage of the tower for ISP or other's transmitters.

Actual revenue generated will be based on the agreements developed with providers prior to start-up of the network. The number of actual customers is reasonable but will be based on the marketing and financial resources of those providers. The potential benefit to any provider is access to customers over the network or to a tower for wireless transmitters as well as a reduction in wholesale Internet costs from an effective cost of approximately $300 per Mbps per month to something less than $100 per Mbps per month. Expected revenues per customer will be in the range of $15-$25.

### Customer Base and Revenue:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| **Residential Population** | | | | | | |
| Total Residential Homes Passed | 1,326 | 1326 | 1326 | 1326 | 1326 | 1326 |
| Wireless Customers | 132 | 198 | 265 | 265 | 265 | 265 |
| Residential | | | | | | |
| Recurring Revenue Dollars | | | | | | |
| Internet Revenue | | | | | | |
| Leased Network Revenues | $15,840 | $47,520 | $63,600 | $63,600 | $63,600 | $63,600 |
| **Total Recurring Revenue (Wireless)** | **$15,840** | **$47,520** | **$63,600** | **$63,600** | **$63,600** | **$63,600** |
| Total Businesses Passed | 19 | 19 | 19 | 19 | 19 | 19 |
| Municipal Buildings, Police Fire | 7 | 7 | 7 | 7 | 7 | 7 |
| Small Business Served | 0 | 0 | 0 | 0 | 0 | 0 |
| Municipal Buildings, Police, Fire Served | 7 | 7 | 7 | 7 | 7 | 7 |
| Leased Network Customers | 3 | 6 | 7 | 7 | 7 | 7 |
| **Business Revenue** | | | | | | |
| Recurring Revenue Dollars | | | | | | |
| Municipal Customers, Fire & Police | $8,400 | $8,610 | $8,825 | $9,046 | $9,272 | $9,504 |
| Fiber Optic Business Customers | $900 | $1,800 | $2,100 | $2,100 | $2,100 | $2,100 |
| **Total Business Revenue (Fiber Optic)** | **$10,200** | **$12,210** | **$13,025** | **$13,246** | **$13,472** | **$13,704** |
| **Wholesale Internet Sales** | **$2,720** | **$4,080** | **$5,360** | **$5,360** | **$5,360** | **$5,360** |
| **Total Annual Revenue** | **$28,760** | **$63,810** | **$81,985** | **$82,206** | **$82,432** | **$82,664** |

Every network has costs to operate. While some costs such as back-up power or leased space can be minimized by placing equipment at existing county facilities, some costs cannot be avoided. Principally among these are:

- Equipment repairs—Fiber optic cable has a useful lifetime off well beyond twenty years, but some percentage of the electronics will need to be repaired or replaced annually
- Network Licensing—Electronics manufacturer's support their products based on annual licensing fees, typically about seven percent of the purchase price
- Staffing—This would include customer support, changes to level of service, software upgrades, and other work which must be done by individuals. The work can be done in house or subcontracted. For most purposes the staff need not be physically located where the network gear is housed.

## Network Operating Costs

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| **Network Charges** | | | | | | |
| Pole Charges | $0 | $0 | $0 | $0 | $0 | $0 |
| Central Office Utilities | $443 | $454 | $465 | $477 | $489 | $501 |
| Wholesale Internet | $3,400 | $5,100 | $6,700 | $6,700 | $6,700 | $6,700 |
| Misc.--supplies | $750 | $750 | $750 | $750 | $750 | $750 |
| Leased Space | $1,872 | $1,919 | $1,967 | $2,016 | $2,066 | $2,118 |
| CPE repairs/replacements | $2,100 | $2,183 | $2,248 | $2,305 | $2,362 | $2,421 |
| Network Licensing | $6,167 | $6,248 | $6,273 | $6,273 | $6,273 | $6,273 |
| Staff Support | $29,992 | $32,916 | $35,936 | $36,834 | $37,755 | $38,699 |
| **Total Network** | **$44,723** | **$49,570** | **$54,339** | **$55,354** | **$56,395** | **$57,462** |

Fiber networks have long lifetimes, with the fiber itself reportedly having a service lifetime in excess of forty years. Electronics continue to improve but have much significantly shorter service lifetimes. The principal costs associated with building the network are:

- Outside Plant materials—Fiber optic cable, mounting hardware, vaults and splice closures
- Outside Plant Labor—The cost of mounting the fiber on poles or burying it, usually in conduit.
- Design and Construction Management—The design, supervisory and quality control costs associated with the installation of fiber
- Network Gear with OSS—Network electronics and software. Much of this equipment will need to be replaced every five to seven years
- Fiber splicing, Installation of Drop and Optical Network Terminal (ONT), Drop fiber—the costs associated at the individual premise with provisioning each new customer.

- Costs for a tower are included to make it possible to purchase affordable bandwidth using a microwave link to an adjacent county

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| **Capital Expenditures** | | | | | | |
| Outside Plant Labor exc. Make-ready | $76,354 | $0 | $0 | $0 | $0 | $0 |
| Make Ready and Permitting | $8,050 | $0 | $0 | $0 | $0 | $0 |
| Outside Plant Materials | $51,142 | $0 | $0 | $0 | $0 | $0 |
| Design and Construction Management | $64,022 | $0 | $0 | $0 | $0 | $0 |
| Network Gear with OSS | $78,200 | $0 | $0 | $0 | $0 | $0 |
| Wireless Transmitters and Tower | $95,450 | $0 | $0 | $0 | $0 | $0 |
| Fiber Splicing per new customer | $575 | $173 | $58 | $0 | $0 | $0 |
| Install Fiber Drop and ONT | $11,500 | $3,450 | $1,150 | $0 | $0 | $0 |
| Install Wireless ONT | $0 | $0 | $0 | $0 | $0 | $0 |
| 2 Fiber All Dielectric Drop Fiber | $460 | $138 | $46 | $0 | $0 | $0 |
| FTTH ONT (Outdoor) | $4,025 | $1,087 | $326 | $0 | $0 | $0 |
| Wireless ONT+Antenna | $0 | $0 | $0 | $0 | $0 | $0 |
| Electronics Replacements | $0 | $0 | $0 | $0 | $0 | $41,113 |
| **Total Capital Expenditures** | **$389,778** | **$4,847** | **$1,580** | **$0** | **$0** | **$41,113** |
| **Capital Cost Paid by Grant** | **$200,000** | **$0** | **$0** | **$0** | **$0** | **$0** |
| **Capital Investment by County** | **$178,859** | **$0** | **$0** | **$0** | **$0** | **$0** |
| **Net Capital Expenditures** | **$189,778** | **$4,847** | **$1,580** | **$0** | **$0** | **$41,113** |

For this business plan the capital expenditures were assumed to be funded by a combination of grants and investment into the Broadband Authority by the County. To avoid any borrowing for capital equipment Phase I was broken into segments starting with the downtown Surry area (loop including Bank Street, School Street, Rolfe Highway and Colonial Trail completing the loop extending eastward approximately 0.6 miles along Colonial Trail east) and additional segments based on available monies. The approximate total cost for adding each of the additional segments is shown in the table below:

| **Phase I Costs if all Segments Implemented** | | |
|---|---|---|
| **Phase 1** | **Location** | **Total Estimated Incremental Cost** |
| Segment 1 | Downtown Loop (already included) | $389,778 |
| Segment 2 | Loop South to Colonial Trail West | $ 54,085 |
| Segment 3 | Colonial Trail West into Commerce Drive Business Park | $153,768 |
| Segment 4 | Loop North approximately 0.5 miles on Rolfe Highway | $ 49,305 |
| **Total Phase 1** | | **$646,936** |

While the project has been structured in a way to avoid long term borrowing, short term borrowing to cover the first years operating expenditures has been included. Every telecommunications project will experience a lag between the time that

monies begin to be expended and when revenues begin to be generated. While operating capital need not be borrowed, it should be expected that some operating monies will be needed. Those funds also allow for unexpected items such as higher growth rate than initially expected. For example, each additional customer on the fiber network would result in an immediate outflow of between $500 and $1500 which would be repaid from revenues generated in the future. The availability of operating capital makes that investment possible. For this business plan short term borrowing equal to the first years operating costs has been assumed.

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Summary of Principal and Interest Payments | $0 | $0 | $0 | $0 | $0 | $0 |
| Principal Paid | $0 | $0 | $0 | $0 | $0 | $0 |
| Interest Paid | $0 | $0 | $0 | $0 | $0 | $0 |
| Balloon Payment | $0 | $0 | $0 | $0 | $0 | $0 |
| Short Term Borrowing (current year) | $44,723 | ($4,000) | ($20,000) | ($17,323) | $0 | $0 |
| Short Term Debt | $44,723 | $40,723 | $20,723 | $3,400 | $3,400 | $3,400 |
| Interest Paid on Short Term Debt | $783 | $1,610 | $1,466 | $746 | $122 | $122 |

Under these assumptions the business plan would have a positive cash flow every year after the first year of operation until a general upgrade of electronics would be required around year six.

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| **Cash Flow** | | | | | | |
| Net Income | ($25,700) | ($3,867) | $9,515 | $9,549 | $9,698 | $7,763 |
| Depreciation Expense | $8,954 | $17,094 | $17,415 | $17,494 | $17,494 | $19,550 |
| **Total-Net Cash** | ($16,746) | $13,227 | $26,931 | $27,043 | $27,192 | $27,312 |
| Capital Expenditures | $389,778 | $4,847 | $1,580 | $0 | $0 | $41,113 |
| Financing Change (Long Term) | $0 | $0 | $0 | $0 | $0 | $0 |
| Financing Change (Short Term) | $44,723 | ($4,000) | ($20,000) | ($17,323) | ($3,400) | $0 |
| **Net of Cash Financing** | $434,501 | $847 | ($18,420) | ($17,323) | ($3,400) | $41,113 |
| **Cash Flow** | **$17,059** | **$4,379** | **$5,351** | **$9,720** | **$23,792** | **($13,800)** |
| **Total Cash Reserves** | **$17,059** | **$21,438** | **$26,789** | **$36,509** | **$60,301** | **$46,501** |

# FUNDING PLAN

Total capital project costs for the Phase I fiber deployment are approximately $390,000 for the first segment of fiber throughout downtown Surry. By first deploying phase I recommendations the County can begin receiving revenue to solidify the business plan prior to requesting additional funds to compete additional fiber segments and ending at the Surry West Business Center. In December 2008, the County submitted a funding request in the amount of $1,775,000 to the Governor's office in anticipation of potential infrastructure funding as part of a proposed federal government stimulus plan. That request included all segments of the Phase I proposed fiber, fiber to and through the Town of Dendron, and wireless equipment to serve all households and small businesses in the County.

Wireless will be an important component of last mile broadband service delivery due to the low density of rural households. During the broadband study process, wireless providers indicated a desire to provide services but capital cost constraints necessitating partnership with the County to fund start-up costs. As a Broadband Authority, the County could own the wireless equipment and contract with a private provider for operation, establishing a revenue stream for long-term sustainability. Costs for the wireless equipment and towers are approximately $625,000 and were included in a project funding request provided to the State in December 2008 in anticipation of federal stimulus funding for rural broadband infrastructure.

Wireless services in the Town of Surry would benefit from the fiber investment and access to cost-effective bandwidth transport, and provide the base to extend services throughout the County. RUS grant guidelines indicate the Town would not qualify for funding (Community Connect). Without access to funding for the $625,000 costs the County should seek to encourage wireless provider investment by including some components in the Phase I project that could be contributed to offset shortfalls in wireless start-up and operations funding.

## FUNDING PLAN FORMULA

The Community Broadband Planning Project business model used assumes that grants in the amount of $200,000 can be obtained with local funding covering whatever additional funds are expended. Work is continuing to examine other possible sources of funding.

Additional operating capital would need to be available to support the first year's operations. That has been estimated at approximately $45,000 of which approximately $20,000 would be required with the rest as reserve. Those numbers should be adjusted as agreements with private providers are developed.

## Capital Cost Funding

"Capital Costs" as used within this funding plan is defined as those upfront tangible costs that have a capital asset value that will depreciate over the life of service plus the associated costs of designing and implementing the project. Capital Cost items include:

- Network construction materials and equipment such as fiber, towers, cabinets, enclosures, Network Interface Devises (NID), etc.
- Network design consulting, bidding, constructing and funding expense

## Operational Costs Funding

"Operational Costs" as used within this funding plan is defined as costs necessary to operate, maintain, repair and collect revenues of the network. Operational Cost items include:

- Network staffing personnel
- Office equipment and materials
- Software and billing documents
- Network maintenance personnel
- Contracted services such as network repair

## Valuation Method

Telecommunications is often referred to as the communications utility. Like water, wastewater, electric, and gas industries, there are some common schools of thought of what source should be used to fund the expenses associated with the utility.

One of the first accounting principles to understand is that utility companies will want to depreciate the system assets. Depreciation schedules not only plan for replacement of the item, but justify the charges associated with the item. The determination of the value of a utility is used to provide information needed in the structuring of proposed rates, development of depreciation reserve funds, and capital outlay funds.

There are two types approaches typically employed in the performance of a valuation study. These are the **asset-based method**, which relies on the capital cost of the facilities, and the **income-based method**, which involves the operating income generated by the rates.

The asset based method considers the original and current day (replacement) costs of the utility in-place. The value is based on the capital costs less depreciation, commonly referred to as the undepreciated costs. The depreciation is intended to quantify in dollars, to the extent possible, the actual deterioration of the facilities or the loss in service that occurs over time due to wear and tear. For purposes of

establishing a fair market value for the utility in the event of potential acquisition, the original and replacement costs provide a range for negotiations. However, only the original costs and related depreciation are needed for the rate determination.

If the network is being constructed new, than obviously the actual costs are the original costs. If the network includes a component already existing, then the replacement or current costs can be determined by trending the original costs forward to the present using generally accepted construction costs indices. On the other hand, if the original costs can not be ascertained from historical records, then the cost to replace the system can be estimated based on recent costs for the installation of similar facilities in the general area. In turn, replacement costs can be trended backwards with the assistance of the same cost indices to arrive at the original costs.

The income-based method is predicated on the revenues earned and the expenses incurred by the utility operations. This method equates the value of the system to the sum of the estimated cash flows of the net operating income (revenues less expenses) over a period of time (say next 20 years), discounted or restated in terms of today's dollars. It is widely used by companies in the valuation of capital acquisitions.

For the Community Broadband Planning Project, a greater emphasis is placed on the asset-based method because original costs are known as opposed to having known operating income and it provides data that is necessary for the development of rate structures and the depreciation reserve. The income-based method can be used primarily to check the reasonableness of the value generated by the asset-based approach.

## GRANTS

Opportunities for grant funding include the USDA Rural Utilities Service (RUS), the Virginia Department of Housing and Community Development (VDHCD), and the U.S. Economic Development Administration (EDA). There are no private foundations making grants for rural communications infrastructure development at the present time. Matching funds requirements at the federal level are such that funds received from other sources (not federal) as well as in-kind contributions can generally be used to meet matching thresholds.

The most likely source for grant funding ($200,000) for the fiber network is the VDHCD. Specifically, the County would be implementing infrastructure to benefit at least one business creating new jobs, and depending upon the extent of construction, providing high speed data to the Surry West Business Center for attracting additional jobs and businesses to the County. With the addition of fiber segments 3 and 4, the County would also be furthering rural healthcare initiatives by providing the means to connect the rural health care providers with robust, high

speed access for electronic medical record use and the opportunity to use real-time video for remote care.

One of the most attractive grant programs is the RUS Community Connect program, specifically targeting unserved, rural areas typically overlooked by service providers. This program however, has been modified to benefit only communities without any high speed services from any provider. Furthermore, each community to be served is required to establish a community center with ten (10) computers for free access open at convenient times to accommodate the working population. The most desirable scenario for applying for a Community Connect Grant would be to first establish a wireless service base in the Town of Surry, then extend service to the Town of Claremont and/or Dendron. Premises located between these points would be within reach of the signal as well, though costs to directly serve those premises could not be included in the grant request. The Town of Surry, however, is not eligible for the Community Connect Grant because at least one address is receiving high speed wireless service from 380 Communications.

In December 2008, speculation arose as to a future economic stimulus funding package to coincide with the change in federal Administration. In anticipation of potential funding for broadband infrastructure projects that are 'ready to go', a funding request in the amount of $1,775,000 was submitted to the Governor's office on behalf of Surry County for implementation of a combination fiber and wireless community network that would serve the majority of Surry County. The stimulus bill (The American Recovery and Reinvestment Act of 2009) became law on February 17, 2009 and Surry County's request to the Governor's office is still awaiting consideration. Should that amount of funding be awarded to the County, the Phase I could be fully implemented as planned as well as the phase II fiber and some additional wireless components.

## USDA – RUS

Two grant programs available through RUS may provide funding for various aspects of broadband deployment in the County. The **Community Connect Grant** is intended to provide Internet access and training to residents and businesses in single, unserved communities within the County. The County as a whole cannot be considered a community. The community must be represented in the last US Census or in the Rand McNally 2008 Atlas, and contain 20,000 or fewer inhabitants. Because of wireless services available within the Town of Surry, this community is not eligible for this grant funding.

Communities that would be eligible include the unincorporated communities of:

| Community | Source | Population |
|---|---|---|
| Bacon's Castle | Rand McNally | 70 |
| Cabin Point | Rand McNally | 40 |
| Claremont | US Census | 338 |
| Dendron | US Census | 294 |
| Elberon | Rand McNally | 50 |
| Scotland | Rand McNally | 120 |
| Spring Grove | Rand McNally | 80 |
| Surrounding Population (including Surry Town): | | 5837 |

The Community Connect Grant requires two years of free Internet access be made available to all community (municipal) facilities including a Community Center with ten (10) computer access points for public use for a period of two (2) years. If part of the funding is for physical construction of the Community Center, the Center must be open before, during and after normal working hours and on Saturday or Sunday, and provide training and instruction to encourage Internet and computer use in the community. Funding will cover expenses for establishing the Center, purchasing the access points and salary for community center staff not to exceed $25,000 per year (cannot include benefit packages or transportation subsidies). Additional eligible costs also include:

- Salary for Operations manager, not to exceed $30,000 per year
- Salary for Technical support staff, not to exceed $30,000 per year
- Bandwidth expenses, not to exceed $25,000 per year
- Training courses on the use of the Internet, not to exceed $15,000 per year

Operating expenses to be financed by grant funds and/or used as matching contributions cannot exceed in the aggregate of $250,000 for the first two (2) years of operation. Other operating expenses, such as utilities, are permissible but will not be eligible for grant funding nor considered an acceptable matching contribution.

Broadband service must be made available to all residents and businesses in the community at a minimum speed of 200 Kbps in each direction; this requirement follows the current FCC definition of broadband service transmission that is expected to change in the future, but probably to no more than 768 Kbps. This speed is still below what is typically offered over wireless (minimum 1 Mbps) and far below the capabilities of fiber.

Offering service to all residents and businesses within the community dictates wireless as the last mile access medium, as costs to deploy fiber to every home are not feasible at this time. The County could however, include in the grant request funding to extend fiber to reach additional towers to provide wireline backhaul in support of wireless. The minimum grant request amount is $50,000 with a

maximum of $1,000,000 and priority given for projects that include advanced services over fiber.

Specifically, grant funds may be used to finance:

1. The construction, acquisition, or lease of facilities (including spectrum) to deploy broadband transmission services to all critical community facilities and to offer such service to all residential and business customers located with the proposed service area.
2. The improvement, expansion, construction, acquisition, or leasing of a community center that furnishes free access to broadband Internet service (minimum of ten (1) access points). Grant funds provided for the community center are limited to the greater of $100,000 or 5% of the grant amount requested. The total cost of the center may exceed the maximum limit, but it will be the responsibility of the County to finance those expenditures which exceed $100,000, and the additional costs cannot be used to satisfy matching funds requirements. Costs for the computer access points, their installation or connection to the broadband system are not included in this limitation.
3. End-user equipment needed to carry out the project.
4. All operating expenses incurred in providing broadband transmission service to critical community facilities and to provide training and instruction for the first two (2) years of operation shall not exceed $250,000 in grant funds requested plus matching contribution. Salary and administrative expenses subject to review by RUS for reasonableness in relation to project scope.

The grantee must provide a matching contribution equal to 15% of the grant amount requested. The contribution must be for eligible purposes, and can be a combination of cash, in-kind and the rental value for donated space in a community center for the first two (2) years of operation. In-kind contributions must be new or non-depreciated assets with established monetary values. Cash for eligible purposes may include bandwidth expenses to provide service to the community center and salary expenses for operating the center, for the first two (2) years of operation. Matching funds may be provided by a third party (such as a wireless services operator or municipality) and can include future revenues but must be documented.

A Notice of Funding Availability (NOFA) is typically released by USDA in January of each year, with a ninety (90) day window for submitting applications. While there are no changes proposed for the Community Connect Grant program this year, because of the change in the federal administration in 2009 it is expected that the NOFA will not be released until after the new leadership is in place.

The only other grant program administered by USDA-RUS is the **Distance Learning and Telemedicine** (DLT) program. The purpose of this grant is to provide rural communities with opportunities to obtain educational and medical services from distant locations utilizing communication technologies. This program uses the same rurality definition as the Community Connect Grant, but does allow

the grouping of communities as beneficiaries of grant funds. Minimum grant funding is $50,000 with a maximum of $500,000 and a 15% matching contribution is required.

This grant does not provide funding for transmission services but does fund costs for the following eligible purposes:

- Computer hardware and software
- Audio and video equipment
- Interactive video equipment
- Computer network components
- Acquiring instructional programming
- Providing technical assistance and instruction

The grant program could benefit the County by providing health care end-users with funding for equipment to connect to a County-owned fiber network that will allow them to utilize remote service enhancements. This grant would also fund connecting home health nurses and ambulances to local clinics and regional hospitals. A specific benefit to the County includes funding for offering technology and job training to the community.

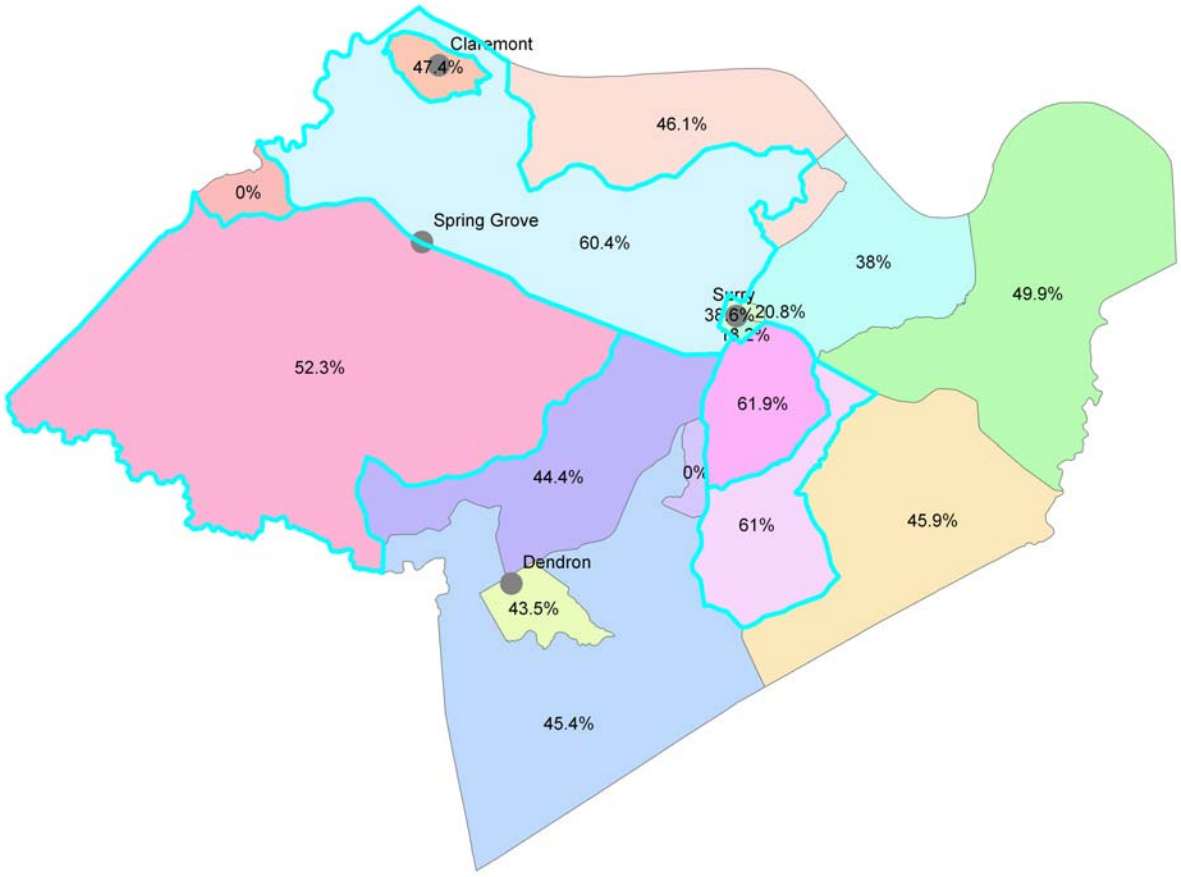
## VIRGINIA DEPT OF HOUSING AND COMMUNITY DEVELOPMENT (DHCD)

The Virginia DHCD has supported community broadband planning for the County with the understanding that the County is proactively investing in economic development to attract and retain businesses and to improve the quality of life for County citizens. With a communications plan in place and stakeholder support, the County may apply for **infrastructure and planning grants** to move forward with implementation. Up to $200,000 per project is available from DHCD for telecommunications efforts which may include implementation (e.g., installation of a fiber network) or system development and support (e.g., community business training and education). All projects must demonstrate that they meet a Community Development Block Grant (CDBG) national objective and demonstrate a direct relationship between intended project efforts and measurable, tangible improvements to the health of the community being served. National objectives are as follows:

1. Benefiting low- and moderate-income persons,
2. Preventing or eliminating blight, or
3. Meeting other community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community, and other financial resources are not available to meet such needs.

Only implementation projects which target “last mile” installation of broadband applications will be considered for funding (no long-haul backbone systems). Applications for telecommunications projects may combine planning and system development/ technical support or planning and implementation.

U.S. Department of Housing and Urban Development data indicates 1,369 persons with low to moderate income (LMI) exceeding 51% located throughout the County. The fiber network proposed will provide wireless service providers with access to cost-effective backhaul to deploy services to reach these targeted households, thereby meeting a primary CDBG program national objective. LMI areas in excess of 51% are highlighted in blue in the figure below:




DHCD Office of Community Capacity Building has typically provided **Seed grants** to non-profit and local governments for capacity building and operational support. Seed is a two (2) year program combining an award of $20,000 along with training and technical assistance in strategic planning, board and staff development, financial management, fund development, marketing and communications, and information systems. This program would assist the County by providing resources for effectively implementing organizational and management elements of network ownership and Authority oversight.

## U.S. ECONOMIC DEVELOPMENT ADMINISTRATION (EDA)

The Public Works and Economic Development Program of the Economic Development Administration (EDA) is designed to enhance regional competitiveness and promote long-term economic development in regions experiencing substantial economic distress. Through the program, EDA provides **public works investment assistance** to support the construction or rehabilitation of essential public infrastructure and facilities necessary to generate or retain long-term private sector jobs and investments, attract private sector capital, and promote regional competitiveness. Grants (referred to in CFDA No. 11.300 as investments) may be used for projects such as expanding and upgrading infrastructure to attract new industry, supporting technology-led development, redeveloping brownfield sites, promoting eco-industrial development, and supporting heritage preservation development investments such as those promoted by the Executive Order on Preserve America. Eligible applicants include: State, city, county, or other political subdivision of a State, including a special purpose unit of a State or local government engaged in economic or infrastructure development activities, an institution of higher education or a consortium of institutions of higher education, an Economic Development District organization, a private or public nonprofit organization or association, including a faith-based non-profit organization, acting in cooperation with officials of a political subdivision of a State, or an Indian Tribe, or a consortium of Indian Tribes. Matching funds are required; generally EDA will not provide more than 50% of project funds, though an additional 30% may be authorized based on regional impact and need. Matching funds may be in the form of in-kind contributions, such as contributions of space, equipment, assumptions of debt, and services to provide the required non-federal share of the total project cost. Applications for funding are competitively evaluated on their ability to meet or exceed the following investment policy guidelines, outlined on the Agency's website:

*Be market-based and results-driven*. An investment will capitalize on a region's competitive strengths and will positively move a regional economic indicator measured on EDA's Balanced Scorecard, such as: an increased number of higher-skill, higher-wage jobs; increased tax revenue; or increased private-sector investment.

*Have strong organizational leadership*. An investment will have strong leadership, relevant project management experience, and a significant commitment of human-resources talent to ensure a project's successful execution.

*Advance productivity, innovation, and entrepreneurship*. An investment will embrace the principles of entrepreneurship; enhance regional clusters, and leverage and link technology innovators and local universities to the private sector to create the conditions for greater productivity, innovation, and job creation.

*Look beyond the immediate economic horizon, anticipate economic changes, and diversify the local and regional economy*. An investment will be part of an overarching, long-term comprehensive economic development strategy that enhances a region's success in achieving a rising standard of living by supporting existing industry clusters, developing emerging new clusters, or attracting new regional economic drivers.

*Demonstrate a high degree of commitment by exhibiting:*
• High levels of local-government or nonprofit matching funds and private-sector leverage.
• Clear and unified leadership and support by local elected officials.
• Strong cooperation between the business sector, relevant regional partners, and local, state, and federal governments.

EDA grants are extremely competitive, requiring strong support and leadership from the region's legislative representatives. The Eastern Shore of Virginia is receiving funding assistance from the EDA for building a fiber network linking communities, a planned research park, and the NASA facility. Within Surry County, extending fiber to serve the future Old Dominion Electric Cooperative power plant in Dendron would meet the program's investment policy guidelines.

## LOANS

### USDA - RUS

In addition to the grant program, RUS offers loans for rural broadband construction projects at rates typically lower than private lending institutions. The loan application process is extremely complex, time consuming and costly, requiring near-final design and costing and equipment specification without a guarantee of funding. While the 2008 Farm Bill dictates changes to the RUS broadband loan program to address numerous roadblocks encountered by applicants historically, the amount of information and document detail required will no doubt remain. Furthermore, the lead-time from application to approval is significant and such that the County may not be able to take advantage of opportunities to leverage deployment with other infrastructure projects. Most importantly, RUS loan applicants need the support of regional state legislators to bring priority and attention to their funding request in the competitive program. For these reasons, the County is encouraged to first seek funding through the Virginia Resources Authority.

### VIRGINIA RESOURCES AUTHORITY (VRA)

The VRA was created by the Virginia General Assembly in 1984 to support community infrastructure investments by providing cost-effective financial solutions to local governments and other public bodies. In addition to infrastructure projects such as public safety, transportation and water, the VRA is authorized by the State

to fund wired and wireless broadband projects through revolving fund loans to localities at below-market interest rates and to issue bonds backed by the moral obligation of the Commonwealth. The VRA provides access to three (3) types of financing assistance: Pooled Financing (VRA funds), Term Financing (SunTrust Leasing Corp), and Interim Financing (SunTrust Bank).

## ADDITIONAL FUNDING MECHANISMS

Matching funds can generally be funding received from other sources such as grants or donations, or can often be offered as in-kind services with reasonable dollar values. This provides localities with the opportunity to leverage any funding received, and assets and investments such as community right-of-ways and infrastructure suitable for mounting or housing equipment. Additionally, in-house technology talent can be tapped for system integration, operation and maintenance functions. Cost savings realized by a realignment of services, access to lower-cost bandwidth or interoperability improvements may allow localities to reallocate spending to offset the capital investment of the new facilities or access.

### GOVERNOR'S DEVELOPMENT OPPORTUNITY FUND

The Governor's Development Opportunity Fund is to be used by the Governor to attract economic development prospects and secure the expansion of existing industry in the Commonwealth. Funds may be used for public and private utility extension or capacity development on and off site; public and private installation, extension, or capacity development of high-speed or broadband Internet access, whether on or off site; road, rail, or other transportation access costs beyond the funding capability of existing programs; site acquisition; grading, drainage, paving, and any other activity required to prepare a site for construction; construction or build-out of publicly owned buildings; training; or grants or loans to an industrial development authority, housing and redevelopment authority, or other political subdivision for purposes directly relating to any of the foregoing. Funds shall be awarded as grants or loans to political subdivisions. Loans shall be approved by the Governor and made in accordance with guidelines established by the Virginia Economic Development Partnership and approved by the Comptroller. Loans shall be interest-free unless otherwise determined by the Governor and shall be repaid to the Fund. The Governor may establish the interest rate to be charged; otherwise, any interest charged shall be at market rates as determined by the State Treasurer and shall be indicative of the duration of the loan. The Virginia Economic Development Partnership shall be responsible for monitoring repayment of such loans and reporting the receivables to the Comptroller as required.

## ADVANCED COMMUNICATIONS ASSISTANCE FUND

This State fund is intended to assist underserved localities with taking advantage of advanced communication services through loans or grants. Funding assistance can be used for the internal communication needs of localities and in the planning, deployment and maintenance of dark fiber. Funds are appropriated by the General Assembly.

## VIRGINIA COMMUNITY CAPITAL

This for-profit bank focuses on providing access to economic development capital, working through partnerships with state/local organizations, city governments and traditional financial institutions. Instead of competing with traditional banks, this organization works with local partners to develop funding packages to meet the needs of Virginia's communities. Projects funded include economic development infrastructure and community facilities. This bank works closely with the VRA in developing structured funding partnerships.

# LAST MILE SERVICE SOLUTIONS

The focus of this implementation plan is on constructing, operating and managing a fiber optic distribution network to enable private provider delivery of last mile services. The first phase of construction is targeted towards meeting the higher bandwidth needs of county facilities, town facilities, medical facilities and key employers. The majorities of these potential end-users are located in the downtown Surry area thereby providing the best opportunity for the County to realize a return on investment to support future network extensions.

Facilities located within approximately 500 feet of the proposed fiber network can be feasibly connected to the fiber for last mile service delivery. End-users in need of higher bandwidth services can be served directly over fiber by any of the national or regional bandwidth providers they are currently purchasing from. Private provider collocation can be accommodated in the network operating center proposed at the Government Center on School Street, or via a fiber connection to a provider located within the serving area.

Residents and small businesses located more than 500 feet from the proposed fiber network can benefit from the higher bandwidth of fiber but served via wireless. Currently wireless service is available from 380 Communications in some areas of the Town of Surry depending upon line of sight to their antennas. The County's proposed investment in a tower to utilize microwave for less costly Internet transport provides an opportunity for a wireless provider to extend services to reach a greater number of residents and businesses.

The Request for Interest (RFI) process completed in the Community Broadband Study elicited responses from several wireless providers. The incumbent telephone provider Verizon did not respond to the County's request. Potentially Verizon could benefit from a County-deployed fiber network by serving customers directly with fiber. Once the network is in place, the incumbent provider may be more amenable to considering its use for access to business customers.

A Community Connect Grant is targeted to accommodate wireless service extension to the communities of Dendron and Claremont. Both of these communities are completely unserved with broadband at this time, and contain the greatest concentrations of households. The RUS grant guidelines require a community center with public access be established, which may be accomplished through existing facilities but the staffing requirements may be such that only a center in Claremont would be reasonable. While premises outside of the town limits would be included in the wireless servable area, the grant limits expenses to what is necessary to serve within the community limits. The eligible communities that are recognized in either the U.S. Census or the 2009 Rand McNally Atlas include:

| Community | Source | Population |
|---|---|---|
| Bacon's Castle | Rand McNally | 70 |
| Cabin Point | Rand McNally | 40 |
| Claremont | US Census | 338 |
| Dendron | US Census | 294 |
| Elberon | Rand McNally | 50 |
| Scotland | Rand McNally | 120 |
| Spring Grove | Rand McNally | 80 |
| | | |
| Surrounding Population (including Surry Town): | | 5837 |

This grant is available to both service providers and municipal entities, and RUS funding guidelines prohibit grants to serve communities where even one subscriber is receiving services. Because 380 Communications offers wireless services within the Town of Surry, that community would not be eligible for grant funding. A provider serving in the Town of Surry however could apply for grant funding to serve additional communities from the base in town. At the time of this writing, 2009 funding commitments have not been announced by the Rural Utilities Service (RUS). Likewise, details of the RUS broadband loan program and the additional funding allocated in the 2009 economic stimulus bill have not been released pending secretarial appointments by the new federal administration.

The County is advised to issue a Request for Proposal (RFP) to solicit providers to use the fiber network for last mile service delivery. The providers that responded to the County's initial RFI should be included in the RFP distribution. Additionally, the RFP should be provided to a national bid search website such as www.governmentbids.com to gain the greatest attention possible.

# RESOURCES

Virginia Wireless Service Authorities Act – Frequently Asked Questions (*Source*: Jeff Gore with Hefty and Wiley, PC)

Wireless Service Authority Resolution Example – Eastern Shore Broadband Authority

**Wireless Service Authorities and the**
**The Virginia Wireless Service Authority Act**

1. What is the Virginia Wireless Service Authority Act?
2. What is a Wireless Service Authority?
3. Can multiple localities form a single Wireless Service Authority?
4. What are the advantages of forming a Wireless Service Authority?
5. Is an Authority limited to "wireless" services?
6. Is an Authority required to own and operate the broadband network?
7. How is a Wireless Service Authority created?
8. Who controls the Authority?
9. Are Wireless Services Authority subject to the Virginia Freedom of Information Act?
10. What are issues that typically need to be addressed in a contract between an Authority and an Internet Service Provider?

## 1. What is the Virginia Wireless Service Authority Act?

The Virginia Wireless Service Authorities Act (Code of Virginia, §15.2-5431.1 et seq.) was enacted by the Virginia General Assembly in 2003. The Act enables counties, cities and towns in Virginia to form their own Wireless Service Authorities to provide certain communications services, including but not limited to, high speed data and Internet access services.

## 2. What is a Wireless Service Authority?

Wireless Service Authorities are separate, legal entities from the localities that form them. They are similar to other local or regional authorities (waste and water authorities, regional jail authorities, economic or industrial development authorities, etc.). Just like other local authorities, Wireless Service Authorities are public bodies that can enter into contracts, sue and be sued, borrow money, and issue debt to finance their projects. As declared by the legislature, each Wireless Service Authority is an instrumentality of the locality "exercising public and essential governmental functions to provide for the public health and welfare..."

## 3. Can multiple localities join to form a single Authority?

Yes, any locality can form its own Wireless Authority, or join with other localities to create a regional authority. There is no limit on how many jurisdictions can join together to form a Wireless Services Authority.

## 4. Why form a Wireless Service Authority?

- ***Financing:*** Wireless Service Authorities can borrow money and issue revenue bonds that do not constitute debt of the local governing body, to finance their projects. In 2007, the Virginia General Assembly added wireless broadband equipment and infrastructure to the definition of projects that may be entered into under the provisions of the Virginia Public-Private Education Facilities and Infrastructure Act (PPEA), and projects that can be financed through the Virginia Resources Authority.

- ***Flexibility:*** In most instances, a Wireless Service Authority has the flexibility to provide services that the locality cannot provide on its own. Virginia localities are generally prohibited from providing Internet broadband services, with limited exceptions, including certain localities with "service gaps" who successfully petition the State Corporation Commission, and municipal providers of electricity. Wireless Service Authorities under provisions of the Act do not appear to be subject to these limitations or conditions, and have wide discretion to acquire, construct, improve, enlarge, operate or extend any project providing qualifying communications services under the Act.

- ***Facilities:*** Wireless Service Authorities can own and operate their own facilities. In addition, they are authorized under the Act to access state-owned lands for the placement of their facilities. A provision was added to state law in 2008 that requires the Commonwealth to lease available space on state tower facilities to qualifying Internet service providers in underserved areas. A Wireless Services Authority could presumably qualify for such access if it meets these conditions.

**5. Is a Wireless Service Authority limited to providing "wireless" services?**

No, Wireless Service Authorities have wide discretion under the Act to provide "qualifying communications services", which include, but is not limited to high speed data and Internet access service (but excludes cable television or video programming). In fact, an Authority created under the Act could choose not to utilize any wireless technologies, and opt for DSL or fiber, for example. Furthermore, the term "wireless" does not even have to be in the Authority's name.

**6. Is an Authority required to own and operate the broadband network?**

No. Wireless Service Authorities have wide discretion to both directly own and operate systems that provide qualifying communications services to customers or to partner with the private sector for the deployment, operation and maintenance of the system. For example, a Wireless Service Authority could essentially serve as a financing entity in a public-private partnership with a private provider of Internet services.

**7. How is a Wireless Service Authority created?**

In order to form a Wireless Service Authority, the locality (or localities in the case of a joint or regional authority) is required to hold a public hearing on the matter. The governing body must then adopt a formal resolution and file articles of incorporation, which must be approved by the State Corporation Commission. If all the requirements have been met, then the SCC will issue a Certificate of Incorporation or Charter to the Authority.

**8. Who controls the Authority?**

The Act requires that each Wireless Service Authority have a board of five members to control the Authority, any number of which can be members of the local governing body if they choose. A board of supervisors creating an Authority can opt to have the number of Authority board members equal to the number of members on the board of supervisors. The Authority board must then appoint a chairman, secretary and treasurer. The Act also allows the board to adopt by-laws to govern the conduct of its meetings and internal business.

**9. Are Wireless Services Authority subject to the Virginia Freedom of Information Act?**

Yes. Since they are public bodies under Virginia law, Wireless Service Authorities generally are subject to the Virginia Freedom of Information Act (FOIA), which requires meetings to be noticed and open to the public, and requires disclosure, upon a citizen's request, of its records that cannot otherwise be excluded from FOIA. There are, however, exclusions from FOIA specific to Wireless Service Authorities. These exclusions relate to certain proprietary information and trade secrets, as well certain meetings that involve negotiations under the Virginia Public Procurement Act.

**10. What are issues that typically need to be addressed in a contract between an Authority and an Internet Service Provider?**

**a. It depends largely on the business model**

The contractual relationship between an Authority and any service provider will vary from project to project and from region to region, based on the needs and goals identified, and the approach or business model chosen to achieve those goals. The business model will dictate many of terms and conditions that should be addressed. For example:

- Is the Authority or a private or non-profit entity to be the service provider?
- Who will own the actual network equipment and facilities?

- Is government (public safety, schools, libraries, governmental administration) to provide the "anchor tenants" or primary customers, or are private residences and business the intended market for the services (or both)?
- What funds will be used to finance the project, and what are the applicable procurement laws and regulations?

**b. Regardless the business model, there are certain issues that will probably need to be addressed in the contract:**

- **Technologies to be deployed** (Wi-Fi, Wi-Max, licensed v. unlicensed radio spectrum, DSL, fiber, broadband over power lines, etc.)
- **Financing** (How will deployment be financed? If a public-private partnership, how will the risks and start up costs be shared?)
- **Service levels** (desired Internet upload/download speeds, system reliability, customer service, etc.)
- **Coverage goals** (geographic/by population)
- **Network deployment goals and timeline**
- **Accountability/Enforcement** (how to measure network performance and ensure compliance)
- **Access to public facilities/rights-of-way** (communications and water towers, public buildings, attachments to utility poles, use of rights-of-way, etc., and any applicable federal and state laws)
- **Siting of communications towers** (compliance with applicable local zoning ordinances, and applicable state and federal regulations)
- **Co-location arrangements on private towers**
- **Radio frequency interference** (provisions to prevent and resolve interference of a wireless network with local government and emergency communications, for example)
- **Subscriber rates.** Are the services to be free or subsidized to subscribers, or fee-based and market driven?
- **Marketing strategy and responsibility**
- **Digital Divide/Inclusion issues** (including possible FCC "E-rate" subsidies for schools and libraries)
- **Liability/Insurance coverage for personal injury or property damage**
- **Dispute Resolution process**
- **System Continuity** (what to do if service provider is no longer able to operate the network)
- **Contract default and enforcement provisions**

Provided with permission, courtesy of:
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Richmond, Virginia 23219 jsgore@gmail.com (804)780-3143

CONCURRENT RESOLUTION

A RESOLUTION CREATING THE
EASTERN SHORE OF VIRGINIA BROADBAND AUTHORITY

WHEREAS, a meeting of the Board of Supervisors of Accomack County, Virginia (Accomack) was held on the 16th day of April 2008, and a meeting of the Board of Supervisors of Northampton County (Northampton)(collectively "the localities") was held on the 8th day of April 2008, and this Concurrent Resolution was adopted upon motion duly made and seconded by each Board; and

WHEREAS, in order to promote economic development of the localities and for the comfort, convenience and welfare of the citizens thereof, the Accomack and Northampton County Boards of Supervisors have made a determination that a Wireless Broadband Authority needs to be created to provide high speed data service and internet access service to local businesses, local government, and the public.

NOW, THEREFORE, BE IT RESOLVED, that the Eastern Shore of Virginia Broadband Authority (hereinafter the Authority) be created pursuant to the Virginia Wireless Service Authorities Act, Chapter 54.1 §15.2-543.1.1 et seq.

The Articles of Incorporation of the Authority shall be as follows:

ARTICLES OF INCORPORATION OF THE EASTERN SHORE OF VIRGINIA BROADBAND AUTHORITY

The Accomack and Northampton County Boards of Supervisors pursuant to Virginia Code §15.2-543.1:1 et seq hereby establishes and adopts these Articles of Incorporation of the Eastern Shore of Virginia Wireless Broadband Authority:

(a) The name of the Authority is "Eastern Shore of Virginia Broadband Authority."

(b) The address of its principal office is: P.O. Box 417, Accomac, Virginia 23301

(c) The Authority shall be physically located at the Accomack-Northampton Planning District Commission offices at 23372 Front Street, Accomac, Virginia.

(d) The Authority shall consist of five voting members. Two members shall be the respective county administrators and three members shall be appointed from the community by agreement of the two County Boards of Supervisors.

County administrators from Accomack County and Northampton County will be appointed for four-year terms. The three appointees from the community shall have three-year terms as shown below. The names, addresses, and terms of office of the initial Members of the Authority are as follows:

| **Name of Member** | **Address** | **Term of Office** |
|---|---|---|
| Steven Miner<br>County Administrator<br>Accomack County Representative | P.O. Box 388<br>Accomac, VA 23301 | 4 years |
| Katie H. Nunez<br>County Administrator<br>Northampton County Representative | P.O. Box 66<br>Eastville, VA 23347 | 4 years |

| | | |
|---|---|---|
| Dimitri Plionis<br>Economist | P.O. Box 658<br>Eastville, VA 23347 | 3 years |
| Michael Zodun<br>Chief Information Officer<br>Eastern Shore Rural Health Network | P.O. Box 1039<br>Nassawadox, VA 23413 | 3 years |
| Joseph L. Caffrey<br>Business Consultant | P.O. Box 98<br>Onancock, VA 23417 | 3 years |

The terms of office of the members shall begin on the date the certificate of incorporation or charter is issued by the State Corporation Commission. The successor of each member shall be appointed as is described above, either as a county administrator or a community member as chosen by both counties Boards of Supervisors, and new members shall be appointed for the same term. Any person who is appointed to serve the remaining term of his predecessor, however, shall serve only for the unexpired term of office. All members shall hold office until their successors have been appointed, and they may succeed themselves.

(e) The purpose of the Authority is: The Authority is created to exercise all powers conferred by the Virginia Wireless Service Authority Act, Chapter 54.1 §15.2-543.1:1 et. Seq. and Article 5.1 §56.484.7:1.

(f) The general business of the Authority, including the issuance of bonds not based upon the full faith, credit and assets of the Authority and the expenditure of funds for general expenses, shall be conducted by majority action of the Board of the Authority, provided, such Board may create an executive committee and such other committees as the Board may direct, including project committees. The Authority shall, from time to time, by majority action of the Board of the Authority, establish such fees and rates as shall be necessary to support the general activities of the Authority, provided, however, that, without its express agreement, no locality shall be required to pay any fees or assessments to support the general activities of the Authority.

(g) The Authority is vested with the powers of a body corporate, including the power to sue and be sued in its own name, plead and be impleaded, and adopt and use a common seal and alter the same as may be deemed expedient. The Authority shall have all rights, duties and powers provided by the provisions of the Act, including the power to issue bonds for any valid purpose.

**IN WITNESS WHEREOF,** the Governing Bodies identified, by authorized action, have caused this Resolution to be approved after public hearings in each locality, properly advertised and conducted in conformity with the Act, and their respective seals to be affixed hereto and attested by their respective clerks or secretaries commencing this _____day, of _____ , 2008.

This Resolution approved this 16th day of April, 2008, by the Accomack County Board of Supervisors.

This Resolution approved this 8th day of April, 2008, by the Northampton County Board of Supervisors.