

**Bristol, VA, Less Than 50,000**  
**Bristol VA Broadband Partnerships and Sustainability Project**

**PROJECT SUMMARY**

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The City of Bristol Virginia (Washington County) is a model for municipal excellence for having the first public utility in the nation to implement triple-play broadband over a fiber-to-the-user (FTTU) network and for entering important partnerships for bringing ubiquitous broadband access to six additional counties in the Southwest Virginia region.

Bristol Virginia's investment and unwavering determination to achieve its goals, despite facing numerous obstacles – including having to sue the State of Virginia in federal court – are inspirational and have made the utility's "OptiNet" infrastructure the national benchmark for small-town government, triple-play broadband technology. Bristol Virginia Utilities (BVU), which operates as the government enterprise fund for the city, has invested millions to build the innovative network and had to pay \$2.5 million in legal fees to fight local internet and cable companies that sought to block its entry into the telecommunications business. The city's pioneering efforts have been recognized by the American Public Power Association, FTTH Council, telecommunications industry and government entities across the country.

Based on its success, BVU developed important partnerships with two regional economic development commissions, resulting in the acquisition of more than \$6 million in funding from the U.S. Department of Commerce's Economic Development Administration and the Virginia Tobacco Commission. The funds were used to complete a 155-mile expansion of the now-existing 850-mile OptiNet to bring world-class broadband to some of the most remote rural locations in southern Appalachia.

It was the promise of acquiring OptiNet that led two of the nation's largest knowledge-based companies, CGI Inc. and Northrop Grumman Corporation, to build multi-million-dollar facilities in the Russell (County) Regional Business Technology Park during 2007. Other business developments are also currently under way in the other counties.

BVU OptiNet has already helped bring to seven counties in the region a reported 1,200 jobs, in addition to adding \$50 million in new private investment and \$37 million in annual payrolls. The city and BVU have received numerous awards, including being one of only two 2008 recipients of the Smart Community Award bestowed annually by *Last Mile* magazine.

## **PROJECT DESCRIPTION**

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**Background.** The City of Bristol Virginia, located in Southwest Virginia, is part of the Metropolitan Statistical Area known as the Tri-Cities. Divided down its main street by the Virginia-Tennessee state line, Bristol is known worldwide by sports fans as the home to Bristol Motor Speedway (the “World’s Fastest Half-Mile”) and to music fans as the “Birthplace of Country Music.”

With Southwest Virginia battling major declines in its two staple products of tobacco and coal at the close of the 20th century, local leaders feared that serious economic decline was looming. They also watched in vain as many local youth departed the region in search of more lucrative and diverse job opportunities. This led Bristol Virginia’s leadership, in conjunction with its 64-year-old electric utility, to make a daring decision in 1999 – to enhance its economic development clout by investing in advanced fiber-optic telecommunications.

**Project Mission and Obstacles Faced.** Bristol Virginia Utilities (BVU), which operates as the government enterprise fund for the City of Bristol Virginia, has invested millions in its fiber-optic infrastructure known as OptiNet. The company’s telecommunications division was officially formed with a dual mission:

- To enhance economic development opportunities in the city and surrounding areas by providing access to cutting-edge broadband services.
- To improve the quality of life for local citizens and small businesses by offering broadband access at affordable and stable prices.

After surveys were conducted that quantified a high level of community interest, the work of applying the fiber-optic network to all business and residential customers began. OptiNet’s architects chose to deploy a passive optical network (PON), which is a point-to-multi-point architecture that delivers “last-mile” connectivity. The network contains no active components, so there is no need for powered equipment or excessive network management – which translates to better rates and services for BVU OptiNet customers.

As OptiNet’s engineers worked out technical aspects, BVU’s legal counsel and management team saw serious legal and regulatory issues emerge. One of the biggest hurdles was the existence of a State of Virginia statute that prohibited municipal entities from offering telecom services. Because OptiNet is government-owned, it could not legally provide telephone, internet and cable services in the State of Virginia. To overcome this obstacle, the utility filed a complaint against the state, pointing out that a more recent federal statute – the Telecommunications Act of 1996 – made the state law invalid. The Virginia General Assembly agreed in 2002 by overwhelmingly passing legislation that reversed the previous ruling.

That same year, as BVU was ready to roll out its suite of services, the incumbent cable operator in Bristol entered an injunction against BVU, claiming the utility wasn’t legally authorized to provide cable television (CATV) services. The courts ruled in favor of the cable operator, and BVU was forced to seek a legislative change to its charter and a separate legislation that would allow it to provide the services. In 2003, the Virginia General

Assembly once again came to the rescue, passing Senate Bill 875, which reversed the decision.

In another instance, the incumbent telephone operator accused BVU of cross-subsidizing its phone service and charging prices below cost. Again, the incumbent filed a legal complaint that led to another dramatic showdown. This time, BVU's chief financial officer had to testify before the Virginia State Corporation Commission. Based on her testimony, the commission eventually ruled against the complaint, saying it saw no evidence of cross-subsidization.

**Innovation and Success of BVU OptiNet.** Bristol Virginia has the first government-owned public utility in the nation to implement some of the most advanced telecommunications technology available – the provision of a fiber-to-the-user (FTTU) network that offers triple-play of services (phone, video and digital data). The belief behind the company's investments is that only fiber systems are capable of meeting long-term bandwidth needs of communities. According to a recent Jupiter Research study, average households will require 57-72 Mbps of bandwidth by 2009, with more “tech-savvy” households consuming nearly 100 Mbps. Notably, the United States as a nation ranks only eighth globally in fiber-to-the-home penetration.

Bristol Virginia's OptiNet consists of two architectures: 1) Passive Optical Network (ideal for voice, data and CATV to business and residential customers) and 2) Private Ethernet (ideal for transparent LAN application and high-bandwidth IP-based services). Currently, the system extends more than 800 miles and has 15 points of presence, with a voice/data backbone built on multiple 2.5 Gbps self-healing (50ms) resilient packet rings, capable of handling the most advanced Ethernet demands.

BVU OptiNet is viewed as the national benchmark for acquisition of cutting-edge broadband technology by rural small-town governments. To ensure redundancy of digital services for customers, the Bristol utility also developed partnerships with several telecom providers in Southwest Virginia, including Verizon Business, Level 3, Kentucky Data Link, NTELOS and several others.

**Measurable Results:** BVU's investment in OptiNet has been extremely successful. The division's net revenues have risen from \$302,746 in 2002 to \$16 million for budget fiscal year 2009, making OptiNet self-sufficient with a \$3 million capital budget of its own. The success of the investment is quantified by the system's sharp rise in broadband service market penetration since 2003. As of August 31, 2008, the division captures more than 62 percent of the possible residential and business sectors in its immediate service area, having gone from zero customers in 2002 to supporting more than 9,134 in 2008. In addition, local residents and businesses are paying less for their standard-priced broadband services.

**Awards and Industry Recognition:** Because of BVU's dedication to customers, the company was the only utility in the United States to be awarded the prestigious Cornerstone Award in 2007 – in the outstanding customer service category. The Cornerstone Award is bestowed annually by *Broadband Properties*, a national magazine that disseminates information on digital and broadband technologies and promotes FTTH deployment. In addition, BVU – representing the City of Bristol – was named a Smart Community in 2008, along with Tucson, Ariz., by *Last Mile* magazine. The utility also received the 2008 American Public Power Association's Community Service Award for its commitment to customers and community. Various members of BVU's leadership team have also been

honored, including BVU President and CEO Wes Rosenbalm, who received the FTTH Council Star Award in 2003 and the APPA James D. Donovan Individual Achievement Award in 2008. And the company's chief financial officer, Stacey Bright, was named one of 22 women nationally to be included in the 2008 Class of Wonder Women. Sponsored by Multichannel News magazine and Women in Cable Telecommunications, the list honors high-achieving females in the cable, broadband and telecommunications industries.

**Regional Partnering For 155-Mile Expansion.** With the city's expertise in FTTH broadband implementation and delivery, Bristol Virginia Utilities (BVU) was selected to enter into important partnerships for bringing ubiquitous broadband access to six additional counties in the Southwest Virginia region. Working with the Virginia Coalfield Coalition, a non-profit organization comprised of the LENOWISCO and Cumberland Plateau Planning District Commissions, BVU was responsible for overseeing construction and deployment of high capacity optical fiber along 160 miles in Buchanan, Dickenson, Lee, Russell, Tazewell and Wise Counties in Southwest Virginia.

In 2003, BVU and the Cumberland Plateau Planning District Commission (representing four of the neighboring counties) collaborated to construct the first 45-miles of the infrastructure that would run between Bristol and Richlands, Va., through the town of Lebanon in Russell County. Funding for this endeavor came from the U.S. Department of Commerce's Economic Development Administration – a \$1.6 million grant – and the Virginia Tobacco Commission, which gave matching funds of \$1.55 million. It was the promise of acquiring this advanced infrastructure that led two of the nation's largest knowledge-based companies, CGI Inc. and Northrop Grumman Corporation, to construct multi-million dollar facilities in the Russell (County) Regional Business Technology Park during 2007. Northrop Grumman's 101,000-square-foot data center – called the Southwest Enterprise Solutions Center – not only houses the company's own internal IT operations but also the state's Virginia Information Technologies Agency (VITA). The opening of the center is part of a landmark public-private infrastructure partnership between the Commonwealth of Virginia and Northrop Grumman to modernize the IT infrastructure for state government.

In late 2005, the Economic Development Administration (EDA) presented a second \$3 million grant to the Virginia Coalfield Coalition (made up of both the LENOWISCO and Cumberland Plateau Planning District Commissions). And once again, the Virginia Tobacco Commission matched the amount, which provided BVU and the Cumberland Plateau Commission with a total of \$6 million. This time, the funds were used to extend BVU's fiber-optic cable an additional 155 miles into Southwest Virginia through the counties of Russell, Tazewell, Buchanan and Dickenson. Engineering for the 155-mile expansion commenced in early 2006 and actual construction began in February 2007 and continued for eight months. The majority of the fiber-optic infrastructure was to be located in the rights-of-way of the highway system in Southwest Virginia. After construction commenced, an exceptional amount of rock was encountered, requiring the installation route to be redirected in many instances, which added \$1.5 million in costs. However, due to BVU's previous experience in network construction, the utility was able to make site changes and quick decisions that prevented even greater cost over-runs. Despite these difficulties, the work was completed within an allowable timeframe for a total cost of \$7.5 million.

**Measurable Results:** Because of the broadband expertise of Bristol Virginia’s utility and the partnerships that developed, businesses in these remote, rural locations of southern Appalachia now have access to some of the most sophisticated telecommunications technology in the world. With the 155-mile expansion, Bristol Virginia Utilities and the Cumberland Plateau Planning District Commission in partnership now have the capacity to serve more than 1,800 potential commercial and industrial customers in the four counties, including current and future businesses located in nine industrial parks. In addition to the new presence of both CGI Inc. and Northrop Grumman Corporation in Russell County, two new industrial parks are also currently under construction in Buchanan and Tazewell counties – the Poplar Gap and Bluestone projects respectively – which will be serviced by BVU OptiNet.

Recent media reports indicate that the related business growth has already resulted “in 1,220 jobs across the seven coal-producing counties, with more than \$50 million in new private investment and \$37 million in annual payrolls.” In addition, the information technology jobs in CGI’s software-development center and Northrop Grumman’s data center are paying an average weekly wage of about \$960, which is a two-thirds increase over the normal average weekly wage in this region of \$577.

Also, since the 155-mile expansion was completed (November 2007), approximately 250 businesses have become BVU customers, resulting in \$750,000 in additional revenues. By the end of 2010, the utility expects to acquire another 500 customers in these locales – for a total of 750 customers and expected annual gross revenues of \$2.5 million. This calculation is based on a conservative average “business billing” of \$350 per month.

**Additional Results:** Due to the presence of BVU OptiNet, small health clinics in isolated rural locations of Southwest Virginia are now digitally linked to larger comprehensive care hospitals, and many public school facilities are electronically connected to their central offices. In addition, localities and businesses are working with the region’s two community colleges, the University of Virginia College at Wise, local school systems and some new institutions to produce high-tech workers. In fact, UVa-Wise launched the state’s first undergraduate software engineering program due to partnerships with Northrop Grumman Corporation and CGI.

BVU OptiNet’s presence also pushed the Bristol Virginia Office of Economic Development to initiate a business recruiting campaign called AccessBristol in August 2007 ([www.accessbristolva.com](http://www.accessbristolva.com)) that touts Bristol Virginia as a premier location for companies seeking an alternative to offshore outsourcing. In addition, ongoing interest in BVU’s extensive knowledge base has led to the formation of a new business unit in April 2007 called BVU FOCUS. Operating as part of BVU OptiNet, FOCUS (Finding Opportunities for Communities Throughout the United States) offers broadband consulting and management services to entities across the nation that want to deploy telecommunications and information services to benefit their own communities. BVU FOCUS acquired its first customer in August 2007, a consortium of towns in North Carolina.

**Conclusion.** The City of Bristol’s creation of OptiNet and its subsequent 155-mile expansion exemplify what can happen when strong leadership embraces innovation and enters strategic partnerships to reach long-term goals. It is an approach replicable in any American community where the leaders at all levels are willing to make the investment and pursue the funding.