Executive Summary

Introduction The Southern Shenandoah Valley is plagued by many of the problems that threaten rural counties across the country. With a weak economy and geographic isolation, this region is cut off from the technological tools that would give its citizens a brighter future. The AOC-XGEN Project not only recognizes these problems, but also sees a chance to transform a lagging community into a thriving global competitor. Our project creates a broadband infrastructure that will translate into direct economic growth and job creation by linking local institutions, including public safety entities, schools and libraries, to world-class organizations—the Library of Congress (LOC) and the Internet2 Network. Opportunity Addressed Our project presents a real and immediate opportunity for economic growth and job creation in the Shenandoah Valley. Historically significant and visually stunning, the Shenandoah Valley is economically depressed, remote and underemployed. Our project brings the advantages of broadband to community anchors and the people they attend in this underserved area. High unemployment, low median family incomes and limited job opportunities are the trademarks of this region. Unemployment rates are staggering, as high as 13.7%. The median family income in Shenandoah County of $45,000 is $9,000 below that of the Commonwealth of Virginia,’ according to the Comprehensive Plan of Shenandoah County. Average per capita incomes for the three counties in our service area range from 62% to 75% of the national average. An economy driven by tourism and agriculture, the only jobs available are low-tech, low paying and often seasonal. The local economy is disadvantaged by geographic isolation, outside an easy commuting distance of Washington. Mountain ranges guard the valley, increasing the cost of infrastructure interconnection with surrounding communities. All of these factors work against the local economy and deter locally driven economic growth. Advantages of Broadband for Public Service Entities To better understand the region, our outreach team met with representatives of dozens of community institutions in our service area. Virtually every organization has a story to tell about how a lack of broadband connectivity prevents them from providing needed services to their communities. Without broadband connectivity, institutions are unable to use technology paid for by taxpayers; to fulfill educational missions; to meet government mandates for digitizing records; and to constrain costs of operation. Limits on broadband access have become a life-and-death matter for some emergency responders. The Stanley Fire Department received Panasonic Toughbooks from the state for use in the field and state-of-the-art defibrillators that are capable of remotely connecting to hospitals to communicate vital signs directly to doctors. However, they can’t use either tool because an absence of broadband access translated into no mobile connectivity. The Luray Fire Department echoed these concerns, stressing the importance of mobile connectivity to complete its life-and-death missions. We will provide first responders access to...
the same network that supports law enforcement and defense agencies nationwide, with speeds of 100Mbps. Advantages of Broadband for Education and Library Systems Currently, the network infrastructure of our service area is unable to support the broadband access needs of local education and library systems. The Page County School District has a single 4.5 Mbps Internet connection to serve its 4,000 students and faculty members at 11 locations. The Massanutten Regional Library has 0.5 Mbps Internet connections at seven of its nine branches to provide both interlibrary connectivity and public Internet access. The initial design of our network will allow us to deliver 100Mbps to each of the 44 schools and libraries we will serve. This will increase the current connection speeds at many locations by some 2000%! In addition, our single hop connectivity to the LOC Internet routers offers the lowest possibly latency for the delivery of digital content. Through the LOC, our network will link our service area to 15.3 million digital items, more than 160 terabytes of data, most of which must be streamed over a broadband connection. The LOC has an aggressive plan to expand its K-12 education programs to rural communities, ensuring that the schools and local libraries will benefit from collaborative programming. We will provide free access to the Internet2 Network, a next-generation optical network. Proposed Services and Applications The AOC-XGEN Project is built on a 120-mile fiber optic backbone, providing the highest capacity and the most secure, stable and reliable backhaul technology available today. The 122 miles of new fiber will be built using existing poles, with minimal environmental disturbance. Our open network is available on a wholesale basis to all third-party service providers and community members. In addition to reaching underserved consumers and community anchor institutions, our network is available to several federal agencies located in our service area. The availability of a secure fiber optic broadband backbone in the Shenandoah Valley provides a substantial incentive for the expansion of government and high-tech commercial enterprises. Addressing Non-Discrimination and Interconnection Obligations Our commitment to non-discrimination and interconnection obligations within the context of the BTOP grant is rigorous. We adhere to the principles contained in the FCC's Internet Policy Statement (FCC 05'151, adopted Aug. 5, 2005) or any subsequent ruling or statement. We do not favor any lawful Internet applications and content over others. We display any network management policies in a prominent location on our Web page and provide notice to our customers of changes to these policies. Because we connect to the Internet both directly and indirectly, our project is a truly open network. We offer interconnection, where technically feasible without exceeding current or reasonably anticipated capacity limitations, at reasonable rates and terms to be negotiated with requesting parties. We offer our services subject to the needs of law enforcement and reasonable network management. Our interconnection practice is to negotiate in good faith with all parties making bona fide requests for our services. Our non-discrimination practice is to offer non-exclusive, carrier-independent, wholesale access to our network and permit our consumers to use any lawful device, so long as it is compatible with and not harmful to our network. Our network management practice permits our consumers to download and use any software applications, content or services they desire, so long as it is compatible with and not harmful to our network, and they respect law enforcement and public safety considerations. Type of Broadband System Deployed The AOC-XGEN Project's proposed technology is the extension of an existing fiber optic network. Our fiber optic network consists of a mix of TU-T G.655, a NZ-DSF fiber and TU-T G.652, SMF 28 fiber. This allows for a network that supports all wavelengths and required transmission rates, with a minimum reach of 150km without electrical regeneration. All fiber optic cable in our network is capable of supporting DWDM
applications with up to forty 40GB wavelengths for a total network capacity of more than 10TB. We continually monitor our fiber network for faults, and have a 24/7, 365-day call-out team to address concerns. Qualifications of the Applicant AOC-XGEN, LLC'on the Governor of Virginia's Preferred List in Round One'has a track record of building and operating reliable, secure fiber optic networks. Our executive team'which averages 20 years of experience in the telecommunications, media and technology sectors'includes the former president of Sprint Nextel. Our staff has decades of experience providing services to the federal government on DCAA audited fixed price contracts. We have built and currently operate thousands of fiber miles of middle mile network in the National Capitol Region, reaching into more than 30 on-network government buildings and carrier POPs. We provide fiber network services to the LOC, the U.S. Senate, the U.S. House of Representatives, the U.S. Department of Justice and other federal agencies. We are proud of our record of reliability'greater than 99.999% on all of our owned network elements since 2003. We will provide the highest quality service to the underserved citizens and entities in our proposed service area. Overall Infrastructure Cost of the Broadband System: $15.8 Million Subscriber Projections for the Project: 195 Community Anchors. Number of Households and Businesses Passed: 27,184 Households, 11,967 Businesses Number of Community Anchor Institutions Passed: 195 Number of Created or Saved Jobs: 172 job-years