

EXECUTIVE SUMMARY

Brief Description of the Project

AOC-XGEN Wireless, LLC (XGEN) proposes to provide WiMAX, next-generation Internet broadband connectivity to the unserved and underserved consumers primarily located in the Harrisonburg and Charlottesville, VA BTA. While focusing on the Harrisonburg and Charlottesville micropolitan areas, our solution will have the range to extend service into neighboring unserved and underserved areas in 12 adjoining counties in Virginia. We will eliminate the digital divide affecting rural households and other underserved groups by expanding broadband Internet access to consumers with limited or no access to universal affordable broadband services. Our sound business model utilizes the BTOP grant to expand viable commercial service to reach otherwise unserved and underserved populations. These services will be available for both fixed and mobile applications.

XGEN is a new venture formed by an operating telecommunications company with experienced management in place. XGEN's member owners have been operating in Virginia for over 8 years and are fully familiar with the state and local government environmental and permitting process. The Applicant, AOC-XGEN Wireless, LLC (XGEN) is a Veteran Owned Small Business. XGEN has identified and will contract with BZT Corporation, a Service Disabled Veteran Owned Small Business, for surveying, engineering and environmental assessments. If awarded this grant, XGEN will exclusively contract with Smartnet on the Severn, LLC, a HUB Zone company, for purchasing and human resource services.

Opportunity the Proposed System Seeks to Address

XGEN's proposed system seeks to address several opportunities that will improve overall community wellness, employment, education, and health by bridging the digital divide. We will help overcome the historic low adoption rate of low-income residents by providing an affordable alternative to current broadband service. Our system will enhance employment opportunities by providing affordable broadband access to businesses in outlying communities. It will provide broadband access at public access centers located in community anchor institutions. The proposed system will provide educational services introducing broadband and Internet usage to underserved and low adoption groups and households. Furthermore, our system will enhance access to broadband for health care providers in outlying, underserved communities by providing true broadband with carrier independent backhaul. Our fiber optic network solution enhances the command and control communications within and between public safety and first responder networks and the national Homeland Security and first responder infrastructure.

General Description of the Proposed Funded Service Areas (location, number of communities, etc.)

Our Service Area centered in the Harrisonburg and Charlottesville, VA BTA and spreads into several neighboring counties. This is an historically underserved area that includes approximately 309,175 citizens, 88.8% of whom are underserved or unserved. The area encompasses 12 counties and 7,472 census blocks.

Number of Households and Businesses

118,640 households, 3,965 businesses

159 Community Anchor Institutions, Public Safety Entities and Critical Community Organizations Passed or Involved with the Project.

Proposed services and applications for the proposed funded service areas and users

Our WiMAX system is designed to support fixed, portable and mobile service offerings over a single Radio Access Network architecture. This architecture consists of four basic subsystems: WiMAX Infrastructure encompasses devices (i.e., modems, USB), Base Stations, Access Service Node (ASN) Gateway (ASN-GW) and Element Management System (EMS); Backhaul Network platforms to consolidate the WiMAX signaling and data links for delivery to the WiMAX Data Center for call control and Internet access.

Core Services Network (CSN) provide the foundation for Internet and application (i.e., CALEA, VoIP, Location) access; IT Systems provide customer care, subscription service as well as service tools such as coverage mapping and device firmware / software upgrades.

WiMAX Learning Lab:

To promote the hands-on learning experience for high school or higher education technology students AOC-XGEN proposes the construction of a WiMAX lab to give students the opportunity to test network routing and mobile applications. The intended benefit is to encourage and assist WiMAX and other next generation technology innovation and standards.

AOC-XGEN and its technology partners would provide the required WiMAX lab design and equipment. The minimum bill of materials in support of the WiMAX learning lab would consist of one ASN GW, two base stations, two antennas and basic components to simulate a scaled down core network. Additionally, a limited number of WiMAX enabled devices such as laptops and WiMAX enabled air-cards or dongles and modems would be provided to support various lab test scenarios.

Approach to addressing the non-discrimination and interconnection obligations:

AOC-XGEN Wireless promises:

1. We will permit consumers to use any lawful device that they want so long as it is compatible with and not harmful to the WiMAX network
2. We will permit consumers to download and use any software applications, content, or services they desire, subject only to reasonable network management practices and law enforcement and public safety considerations
3. We will offer non-exclusive wholesale access to our network
4. We will deploy an advanced mobile WiMAX broadband network that will cover approximately 120,000 people in the proposed Harrisonburg and Charlottesville, VA BTA.

Type of broadband system that will be deployed (network type and technology standard)

AOC-XGEN's proposed technology deployment of mobile Worldwide Interoperability for Microwave Access (WiMAX) is an Institute of Electrical and Electronics Engineers (IEEE, see <http://www.ieee.org>) standard designated 802.16e-2005. The industry trade group WiMAX Forum (<http://www.wimaxforum.org>) has defined WiMAX as a "last mile" broadband wireless

access alternative to cable modem service, Telephone Company Digital Subscriber Line (DSL) or T1/E1 service. WiMAX is a technology designed for Broadband Wireless Access (BWA), which traditionally operates in non-cellular frequencies above 2GHz. That spectrum includes the MDS bands between 2.3 and 2.7 GHz (used in North America), the international FWA bands between 3.3 and 3.8 GHz, and unlicensed frequencies such as 2.4 GHz and 5.8 GHz, typically used for Wi-Fi and cordless telephony. Although current 802.16 standards support the entire frequency range between 2 and 6 GHz, the WiMAX forum has focused WiMAX certification on the 2.5GHz, 3.5GHz and 5.8GHz bands.

Qualifications of the applicant that demonstrate the ability to implement and operate a broadband infrastructure, and/or be a sustainable broadband services provider

AOC-XGEN Wireless, LLC represents a highly qualified team to deploy a WiMAX wireless broadband network for BTOP. Our management team averages more than 20 years of experience each in the telecommunications, media and technology sectors. The XGEN management team played an active role in developing the WiMAX standards and led the development and deployment of WiMAX technology under Sprint's XOHM brand. The team had key leadership roles in the deployment of 4,500 cell sites covering 15 million people.

XGEN has over 3,500 fiber-miles deployed in the National Capitol Region, including northern Virginia, reaching into more than 30 on-network Government buildings and carrier POPs. We have been providing fiber optic networks for almost a decade to both houses of Congress, federal law enforcement agencies and other key agencies of the federal government. Our entire network is in buried conduit for survivability. All network operations and maintenance are performed by in-house personnel to maintain network security and integrity.

Overall infrastructure cost of the broadband system: \$27,543,840

Overall expected subscriber projections for the project: approximately 45,000 by 2014

Number of jobs estimated to be created or saved as result of this project: A recent study comparing Waterloo, IA (without fiber) to Cedar Falls, IA (with fiber) showed that from 1990 to 2003 Cedar Falls experienced a 1.9% greater growth attributed to the presence of a fiber network. (Kelly, Doris J., *A Study of the Economic and Community Benefits of Cedar Falls, Iowa's Municipal Telecommunications Network*, October 2003.) The Department of Commerce 2006 study *Measuring Broadband's Economic Impact*, indicated a 1%-1.4% increase in employment due to broadband implementation. Applying these metrics, we estimate that approximately 1000 to 1400 jobs will be created.