

## Broadband USA Applications Database

**Applicant Name:** Axiom Technologies, LLC

**Project Title:** Washington County WiMAX Project

**Project Type:** Sustainable Adoption

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### Executive Summary

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Axiom Technologies is a telecommunications company headquartered in Machias, Maine that has been creating and developing solutions for rural broadband deployment for five years. Axiom has brought high-speed Internet service to over 50 regions in Washington County, which previously had limited broadband connectivity. During this period, Axiom identified wireless as the best candidate for rural last-mile service delivery, demonstrating significant advantages in cost and capability. Axiom is the recipient of four State of Maine ConnectME grant awards (\$750,034.00 in total grant funding). Axiom will continue to deploy broadband using our existing business model to an additional 30 towns and territories in Washington County throughout 2009, adding approximately 100 Access Points, creating an umbrella over 2500 square miles in Washington County, Maine.

By most measures, Washington County is the poorest county in Maine. In 2006, per capita personal income was \$26,148, and median household income was \$31,563, well below state and national averages (U.S. BEA, 2008; U.S. Census, 2008). The poverty rate reached 20.1% with an estimated 29.5% of Washington County children living in poverty in 2007 (U.S. Census, 2008). The number of documented jobs in Washington County declined 8% from 14,754 to 13,579 between the years 2000 and 2007 (U.S. BLS, 2008). For May 2009, unemployment reached 13%.

Axiom is requesting \$1,634,224.00 in funding through the BTOP, SBA grant program. The Washington County WiMAX Project will add 6 FTE positions to its staff, and the potential for many technological jobs throughout the County by the completion of the project. The project goals are as follows:

- 1) Deploy 3.6 GHz WiMAX in Washington County, Maine.
- 2) Develop an education and training program for fishing and farming industry using advanced communication technology.
- 3) Assist in developing a telehealth pilot project using a portable, telemedicine system.
- 4) Introduce high-capacity, next generation broadband to the business community.

For the first goal of this project, Axiom will deploy and implement 3.6 GHz WiMAX technology to its current wireless infrastructure. WiMAX stands for "Worldwide Interoperability for Microwave Access" and it represents the best, most reasonable hope for dramatic improvements to communications networks in economically challenged regions. Although Axiom's 900 MHz, 2.4 and 5.8 GHz systems have

proven effective, there is a challenge to continuing to use those bands exclusively. They are limited in bandwidth and channel space. As more access points go online within an area, these frequencies become saturated. The introduction of WiMAX technology would bring the most technologically advanced telecommunication infrastructure to the most economically challenged geographical area in the Northeast.

The second goal of this project is to develop an education and training program for the fishing and farming industries. Twenty fishing and farming businesses will be selected for intensive study and hands-on technical guidance throughout a two-year period.

The third goal of this project is a collaborative pilot project with the Maine Telemedicine Services (MTS) and Regional Medical Center of Lubec (RMCL) to introduce a wireless and wearable audio/visual/data communication system that allows field or remote employees to collaborate with key experts located anywhere in the world. Ten institutional health care or social service partners will be recruited for adoption of WiMAX to enhance service delivery.

The fourth goal of the WiMAX project is to recruit 160 organizations and businesses throughout Washington County for adaption of this high-capacity, next generation technology.

Axiom's collaborative partner for the BTOP Grant is University of Maine at Machias. UMM's, Assistant Professor Kevin Athearn, Ph.D. primary responsibility will be in tracking economic data, measuring economic outcomes and analyzing initial impacts on individual businesses participating in the WiMAX Project.

Consultants to the Washington County WiMAX Project will be Professor Brian Beal, Ph.D. from Downeast Institute for Applied Marine Research & Education and Dell Emerson from the Sunrise County Blueberry Cooperative. To develop the education and training program, field studies will be done with ten fishermen under the direction of Dr. Beal, and ten blueberry farmers under the direction of Mr. Emerson. The selected fishermen and blueberry farmers will be provided with a laptop that will be connected to the WiMAX network be accessible from the sea, the vast, remote, blueberry barrens, or any location in Washington County. Dr. Beal and Mr. Emerson will assist fishermen and farmers in determining the data to be collected. Data collection for State and Federal Reporting, tracking industry standards and trends are a sampling of the data to be collected.

Consultants Thomas Key and Michael Edwards, Ph.D., who lead the Maine Telemedicine Services division of the Regional Medical Center of Lubec, will coordinate the broadband adoption efforts for health care provider organizations, with an emphasis on telehealth. A pilot program will be developed for the use of an innovative mobile telemedicine system using WiMAX connectivity between the first responders and medical or mental health specialists. These efforts will strive to eliminate telecommunications barriers for the use of telehealth to deliver care and services and to demonstrate model programs that can be applied to rural areas elsewhere in the U.S.

Introducing WiMAX technology to the traditional fishing and farming industries and telehealth services in challenging, rural, geography with next generation, advanced, communication technology is an

aggressive and directed application of a WiMAX system. We expect to reach over 1000 individuals changing the focus of general laborers to a skilled, technical advanced work-force.