APPLICATION FORM

All applications must include the following information. Separate applications must be submitted for each eligible program. **Deadline: June 1, 2016.** Please include this application form with electronic entry.

PROGRAM INFORMATION

County: Arlington County

Program Title: Fiber Optic Connectivity of the Arlington County Public Safety Radio System

Program Category: Criminal Justice and Public Safety and Information Technology

CONTACT INFORMATION

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SIGNATURE OF COUNTY ADMINISTRATOR OR CHIEF ADMINISTRATIVE OFFICER

Name: Mark J. Schwartz

Title: County Manager

Signature: Mark J. Schwartz Digitally signed by Mark J. Schwartz
Date: 2016.05.31 13:14:50 -04'00'

Title: Fiber Optic Connectivity of the Arlington County Public Safety Radio System

Background

Arlington County Government, located in Arlington, Virginia, is a world-class residential, business and tourist location. Slightly smaller than 26 square miles, it is the geographically smallest self-governing county in the United States, and one of only a handful with the prized Aaa/AAA/AAA bond rating. Arlington County is home to some of the most influential organizations in the world — including the Pentagon. The County stands out as one of America's preeminent places to live, visit and do business.

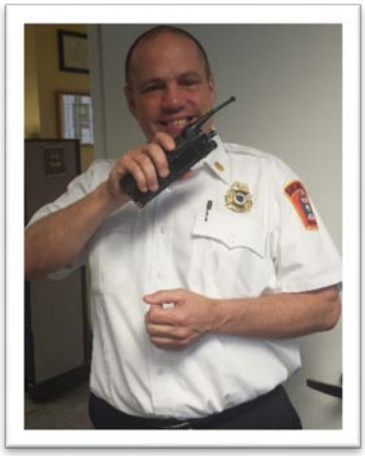
For Arlington County to function with such high standards it utilizes a 800 MHz Public Safety Radio System (PSRS) to support mobile communications, not only for Public Safety (Emergency Communications Center, Fire, Police, Sheriff and the Office of Emergency Management), but also for field workers in the departments of Environmental Services (DES), Department of Technology Services (DTS) and Community Planning, Housing and Development (CPHD). In 2015, there were close to two million conversations over the radio system amounting to just over 6,493 hours of talk time.

Challenge

Radio coverage for the Public Safety Radio System was provided via radio signals simulcasting from six distinct sites (five within the County and one in a neighboring jurisdiction) utilizing a microwave system. Simulcasts of the radio signals were necessary to ensure that radio communication would be maintained at any location across the County. This system was not optimal, however, as it was dependent on a clear line of sight to maintain communications. Due to construction activity (new buildings, construction cranes, etc.) or inclement weather, the signal could potentially be interrupted. Because the Public Safety Radio System is critical for the safety of the community, the County operators of the system began working with the Department of Technology Services to explore possible solutions available in establishing a more reliable communications platform.

Innovation & Partnering

The effort to build an alternate solution to the existing PSRS started with a project to provide for the transmission of the over-the-air microwave service through a resilient fiber optic underground network. To do so, the Department of Technology Services began working with the County's Transportation team to upgrade the County's existing traffic lighting system (some 52 miles of outdated and unreliable twisted pair copper communications system) with a fiber optic solution. The departments leveraged a variety of funding sources including Federal Grants, public bonds, capital improvement funds and cable television fees to fund the refreshment program. Additionally, the County initiated building regulations that required new building construction to provide fiber optic conduit in the adjacent Right Of Way to provide for the implementation of a fiber optic system that would primarily refresh the existing infrastructure as well as benefit public safety needs.



Fire Division Chief, Joseph Reshetar using the Public Safety Radio System supported via the County's fiber optic system.

Collaboration among the departments enabled the County to design and deliver a predominantly underground fiber optic system that could provide communications capabilities to meet the individual departmental requirements and resulting in a Public Safety Radio System that would retain its redundancy while minimizing outages. Financial benefits were realized as well. Through resource sharing, the overall cost of the system was less than estimates for the implementation and maintenance of individual systems to support both Public Safety and Transportation needs. Interdepartmental teamwork ensured that the best minds in the County were working to produce the most innovative solution, which would otherwise have been cost prohibitive for the original Public Safety Radio System upgrade.

Public Safety Communication Points of Presence

In a subsequent effort to extend public safety and emergency presence in times of crisis, the Department leveraged the fiber optic network to provide network points of presence at critical traffic signal locations. The Public Safety Points of Presence (PSPs) were added to selected traffic signal control cabinets in the field enabling field staff, Emergency Command Vehicles and others to have directly wired, high speed (1Gb) connectivity by simply attaching to an Ethernet connection.

During emergency incidents, Command Villages can be established allowing various department units (Fire, Police, etc) to communicate at different scenes by leveraging the PSPs at designated traffic signal control cabinets. The PSPs alleviated the requirement to deploy equipped satellite accessible mobile command units. Previously the County had to maintain a fleet of Mobile Command Vehicles (Police, Fire and Emergency Management/Technology) to achieve the same solution. Today, at a fraction of the cost and with far more capacity and capability, First Responders can avail themselves of this support infrastructure. The result of all of these efforts is an increase in security benefits for the residents and visitors to Arlington County.

Flasher Data Port: A dedicated hardwire connection to the County network at traffic signal cabinets

Enhanced Regional Communications

The fiber system has since been used to enhance connectivity for the Metropolitan Washington Airports Authority which provides for the support of the major airports at Dulles and Reagan National. Additionally, the fiber optic network is now being developed to enhance connectivity for the National Capital Region Public Safety Communications Network (NCRnet) which interconnects the institutional networks of the seventeen jurisdictions that constitute the National Capitol Region's Council of Governments. Most recently Arlington has partnered with the District of Columbia and the NCRNet to provide for interconnection of the military reservations of Joint Base Ft. Myer Henderson Hall and Fort McNair (DC). In this initiative, high speed connectivity provides for emergency management dispatch and video camera integration at both bases and the Arlington Cemetery. These initiatives have enhanced interjurisdictional collaboration among federal, regional and local government entities.

Economic Development

The system's excess capacity is also being made available for license by Government, Businesses, Non-Profits and Higher Education for the purposes of inspiring economic development in Arlington.

Most recently, Arlington County entered into two agreements with local universities. First, the County and Virginia Tech have jointly applied for membership in MetroLab Network, a White House initiative to leverage broadband communications, sensor technology and big data analytics to suggest new solutions for local jurisdictions that are based on technological advances. Secondly, Arlington entered into a Memorandum of Understanding with the University of Maryland's Mid-Atlantic Crossroads (MAX), a multi-state optical transport network, to leverage the mutual assets and services of both organizations. Arlington's dark fiber lines enhance the capabilities of each network, making the process of transmitting data much more streamlined and less expensive. Under the arrangement, both parties will benefit from more than 40 telecommunications links with the capacity to operate at up to 300 gigabits each — a rate

translated as 1,000 times faster than the speed enjoyed through residential Internet service. Together the creation of agreements with both universities will lay the foundation for Arlington County to be distinguished as center for research and innovation.

Program Overview/Quick Reference/Summary

Arlington County's Public Safety Radio System (PSRS) was provided via radio signals simulcasting from six distinct sites around the county utilizing a microwave system. This system was not optimal, as it was dependent on a clear line of sight to maintain communications and would be periodically interrupted due to construction or weather conditions. The PSRS needed to be updated and a project was initiated to explore potential solution options.

During this exploratory time, Arlington's Transportation team also identified planned improvement areas within their infrastructure; they sought to upgrade their existing twisted pair copper communication system. The departments collaborated and determined that instead of devising distinct solutions, they would utilize Arlington's fiber-optic, high-speed dedicated network. The benefits of this innovative thinking were numerous. Not only are both systems highly redundant, an added capability was realized: a Public Safety network port could be deployed on any designated traffic signal control cabinet in the field enabling field staff, Emergency Command Vehicles, and others to have hardwired, high speed (1Gb) connectivity. Thus, not only would the Transportation's traffic cameras be supported by a more up-to-date infrastructure, the fiber would create additional capabilities for Police and Fire to access hardwired network connections at the camera locations, resulting in an increase in security benefits for the residents and visitors to Arlington County.

The teamwork portrayed during these infrastructure improvements has continued to benefit not only the County government's integral operations, but also the surrounding community and beyond. The fiber system continues to be leveraged to bring Arlington's technology infrastructure to the forefront of not only the region, but the entire country by making its dark fiber available. Examples include collaboration with educational institutions, businesses and governmental organizations.