LOB #304:

RADIO COMMUNICATIONS

Purpose

The primary purpose of the Radio Communications LOB is to provide critical dedicated wireless communications infrastructure and radio systems serving Fairfax County Government, Fairfax County Public Schools (FCPS) and interoperability with the 23 localities in the National Capital Area. The footprint includes Public Safety and Public Service 800 MHz radio systems with 19 tower sites and 22 transmit antennas. This activity while staffed with single shift – Monday through Friday, is responsible to support the service needs of Public Safety response operations 24 x 7, seven days a week, 365 days per year.

Description

The Radio Communications LOB is a specialized, discrete program in Fund 60030, Technology Infrastructure Services, specifically supporting the equipment, maintenance services, and staff positions dedicated to the County's critical radio systems and devices used by all public safety agencies, public works, FASTRAN and Connector bus fleets, Park Authority, Facilities Management, Fairfax County Water Authority, other County agencies, Fairfax County Public Schools, and the local police departments in the City of Fairfax and Towns of Herndon and Vienna. Radio communications are the primary dedicated critical infrastructure relied upon by public safety organizations world-wide, and like Fairfax County, it is managed locally. To support the operational and maintenance requirements of the systems, costs are recovered from County user agencies and FCPS.

The Radio Services Center (RSC) has ten staff employees that have specialized expertise and perform design, engineering, implementation, system programming and maintenance for the radio systems and network, and, install and maintains all the land-mobile subscriber radios (LMR) utilized by the Fairfax County Government agencies and Fairfax County Public Schools totaling 11,000 radios, that in addition to voice communications, allow for mobile computing, computer aided dispatch, automatic vehicle locating and routing. The RSC performs routine preventive maintenance on subscriber units, programming, analytical troubleshooting for complex issues. The radio network integrates the 9-1-1 Computer Aided Dispatch (CAD) system and mobile computer terminals, and GIS.

RSC also administers and maintains compliance of the two supporting primary FCC 800 Mhz. licenses, and expert staff assist in inquiries related to RF (radio frequency) matters affecting Fairfax County including carrier applications for installing antennae in Fairfax County locations, performing custom in-building coverage studies and engineering. RSC is also responsible for County building intercom systems, and Fire Station Response Alerting Systems which are installed in all 38 stations.

The RSC mission includes coordination of regional interoperability initiatives and Department of Homeland Security (DHS) national strategy to ensure effective communication between local, state and federal partners for responders. This includes regional planning and coordination so that seamless communication across jurisdictional borders supporting mutual-aid response for first responders is maintained. A map of each localities' system profile is maintained for a comprehensive view of the National Capital Region 23 member locality partners, as well as Federal responder organizations. Fairfax coordinates the group of radio managers across the region for planning forward, interoperability strategy and ensuring that any individual locality's plan is consistent with the overall goal of preserving seamless communications.

The RSC are members of the Federal Partnership for Interoperable Communications, commonly referred to as the FPIC, this group identifies and enhances wireless communications interoperability capabilities within the Federal Government and coordinates these efforts with ongoing/existing state and local interoperability programs, in coordination with SAFECOM and Grants & Training.

Finally, the Radio Services staff is the primary resource for the development of the County's Public Safety Broadband wireless plan for data and integration with Next Generation 9-1-1.

Benefits

The governmentally provided private land mobile radio system is the core, essential communications capability required and relied upon by all public safety operations world-wide for response operations and emergency support functions. It is critical to the accuracy of command and control, the life safety of responders and the public. For example, during 9-11, commercial wireless capabilities were overwhelmed and capacity was limited through loss of key towers that served the east coast; responder operations would have been severely compromised if they had to rely on public, commercial wireless devices.

The County's program is centralized as a part of the overall County communications infrastructure that leverages all current and future supporting technology, and continuity of technical architecture and operational and financial sustainability.

The County's radio systems and network have functioned with a high degree of performance and sustained an exemplary record of 99.999% availability over the past 15 years, and, because of the central inventory, Fairfax has done exceptionally well in price point negotiations.

These systems have proven through many emergency events to be optimally reliable, surviving and sustaining operational integrity through extreme weather such as the Derecho, as well as other regional emergency and high security events while commercial telecommunications carrier networks were jammed or compromised.

Mandates

While this specific technology function is not mandated, it is regarded by all public safety and emergency support functions as a core base-line key capability, and the frequency use is regulated.

Trends and Challenges

Trends in the area of public safety wireless communication include leveraging the LMR (land mobile radio) systems to provide geospatial positioning (GPS) location services, bio-metrics and Next Generation 9-1-1 data pushed to the field. The newer radio systems are no longer proprietary architectures, and use industry standard technology and the functionality is software defined, thus supporting hardware is now the same as information technology server processor technology.

Radio systems are also being encrypted to protect sensitive radio communications that can easily be intercepted with commercial, off-the-shelf radio scanner equipment. The use of encryption ensures the freedom of movement of emergency response personnel. It denies adversaries, whether a criminal organization, gang, or a terrorist cell, the ability to take advantage of our communications to circumvent or defeat public safety efforts.

Another trend in governments that have their own private, fiber networks is to use the fiber networks to inter-connect there radio towers and reduce reliance on increasingly expensive and less reliable commercial telecomm facilities. This also allows the regional partners to interconnect and serve as mutual back-up as needed.

Perhaps the biggest challenge presented to regional interoperability within the Greater Metropolitan Washington Area, National Capital Region (NCR) is the agency or jurisdiction that makes a unilateral system, subscriber or policy change that affects interoperability. In the judgment of the agency or jurisdiction in that situation whereby they make a change, their need for the change outweighs the need for interoperable communications, and a conscious decision is made to disrupt the ability of the agency or jurisdiction to support interoperability with other agencies or jurisdictions. Interoperability among Northern Virginia localities is extremely important supporting daily mutual aid emergency response.

The Cities and Towns within Fairfax County and surrounding NCR jurisdictions have prepared budgets through 2020 to pay for the upgrades necessary to attain the proper subscribers equipment that meet the national standards for encryption and enhanced modes of operation needed to increase system infrastructure capacity for their fleets.

The radio experts are being tapped as the lead analysts for the national public safety broadband initiatives and associated projects. This infrastructure will facilitate data, video and other visual image technologies with adequate capacity, coverage and security.

Challenges for the County include providing for a more aggressive schedule to keep the radio wireless infrastructure updated as necessitated due to manufacture end-of-life schedules and long term sustainability; imbalance in the State's structure affecting Fairfax County's share of the 9-1-1 receipts that are the appropriate revenue stream for public safety communications: capital investment availability needed for new equipment; and, buy-in for the inevitable migration to newer technologies in the future.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #304: Radio Communications			
FUNDING			
Expenditures:			
Compensation	$674,760	$841,529	$834,094
Benefits	227,847	305,391	286,202
Operating Expenses	183,364	200,678	214,200
Total Expenditures	$1,085,971	$1,347,598	$1,334,496
Total Revenue	$896,450	$881,450	$940,000
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	10 / 10	10 / 10	10 / 10
Total Positions	10 / 10	10 / 10	10 / 10

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
New vehicle builds for communications equipment install for new vehicles	191 Public Safety and 34 general agencies	215 Public Safety and 89 general agencies	214 Public Safety and 89 general agencies	220 Public Safety and 300 general agencies	250 Public Safety and 300 general agencies
Productivity Calls for Services (Police, Fire, Sheriff and DPSC)	• 908 radio service in-take • 132 CAD-ICV • 25 FSA	• 440 radio service in-take • 74 CAD-ICV • 3 FSA	• 262 radio service in-take • 74 CAD-ICV • 3 FSA	• 200 radio service in-take • 80 CAD - ICV • 10 FSA	• 150 radio service in-take • 90 AD - ICV • 10 FSA
Radio System Uptime performance	99.999%	99.999%	99.999%	99.999%	99.999%

DIT installs radios, Mobile Computer Terminals (MCTs), In-Car Video (ICV), printers, and docking stations as a part of the Police Car Get Ready process.

DIT responds to a variety of radio and MCT repairs due to equipment failures or rough ride or accident caused disconnections. The trend over the past several years has been for less calls for service repairs due to retiring legacy equipment. Usually work is accomplished in one day. Work also includes support of the Fire Station Alerting system (FSA). DIT Radio staff work standard Monday - Friday business schedules; however, are on-call 24 x 7 for immediate response requirements supporting the three Public Safety shifts.

The County's radio system uptime had been 99.999 percent availability (less than 6 seconds downtime per month), exceeding industry standards.