PS/GO ITEM #1
December 10, 2020
Update

M E M O R A N D U M

December 7, 2020

TO: Public Safety Committee
Government Operations and Fiscal Policy Committee

FROM: Susan J. Farag, Legislative Analyst
Dr. Costis Toregas, Council IT Advisor

SUBJECT: **Update: Public Safety Radio System Infrastructure Project**

PURPOSE: Update – No vote expected.

Today the Committee will receive a briefing and update on the Public Safety Radio System. Those expected to brief the Committee include:

Mike Knuppel, Program Director, Public Safety System Modernization Department of Technology Services (DTS)
Division Chief John Kinsley, Operations, Montgomery County Fire and Rescue Service (MCFRS)
Assistant Chief Mike Baltrotsky, Technology Services, MCFRS
Lieutenant Ian Clark, Montgomery County Police Department (MCPD)

Background

Over Mother's Day weekend of 2019 the public safety radio system, which enables the 911 call center (Public Safety Communications Center) to communicate with police, fire, ambulances, and other users, experienced a significant system disruption that dropped multiple channels. System users experienced over 600 "busy" signals when they tried to use their radios. Some of these busy signals lasted over two minutes. There were no significant public safety incidents that weekend. Had there been, the system disruptions experienced that weekend could have posed communication and operational issues for first responders.

The current system (Motorola SmartZone 3.0 radio communications system) was purchased in 1999 and made operational in July 2003. It is comprised of 11 radio sites strategically placed around the County and connected by a legacy FiberNet I network using Asynchronous

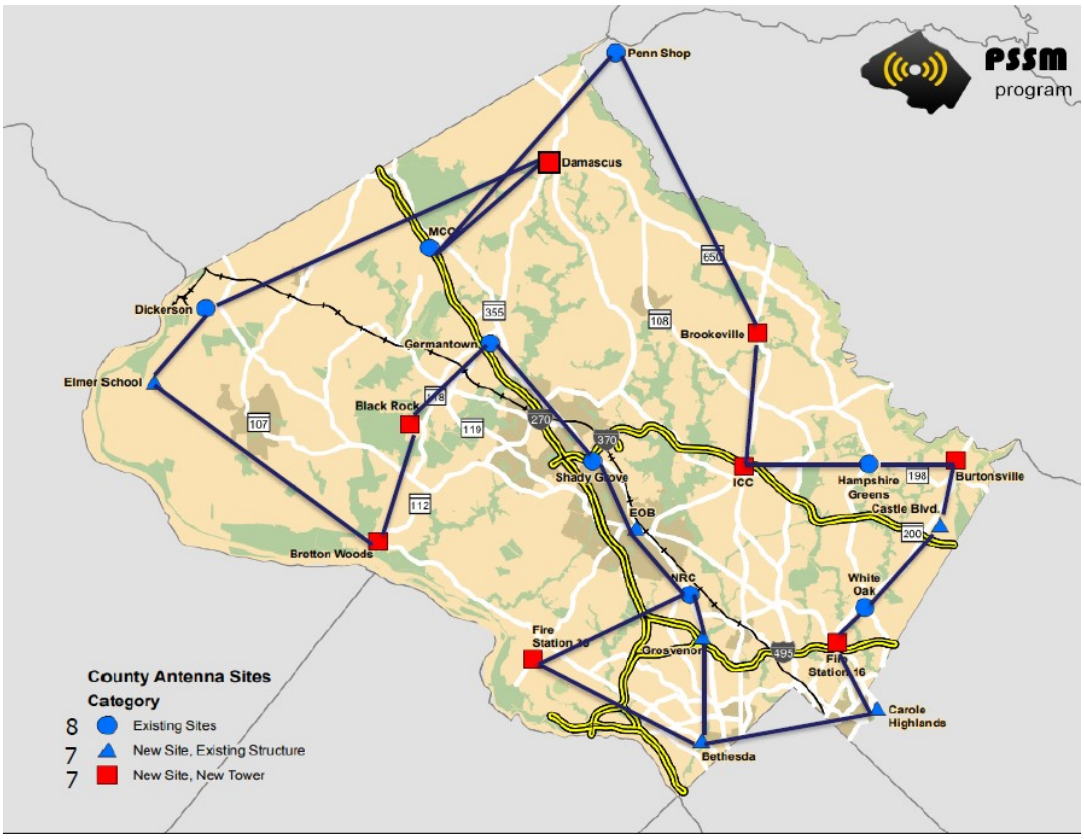
Transfer Mode (ATM) backhaul equipment and design. The towers transmit directly to user radios by radio waves in the 800 MHz range.

The system is 17 years old and well past its 2009 end-of-life date. It is no longer supported by the vendor, replacement parts are no longer manufactured, and there is limited expertise in the region to repair certain components of the system. The system replacement included in the Capital Improvements Program (CIP) Public Safety System Modernization (PSSM) Project (approved FY21-26 CIP attached at ©1-3).

The Council became very concerned with project delays in 2019, and the obvious risk of system failure with the original system. The current system was no longer supported by the vendor, and it could be difficult to get certain replacement parts. At that time, the Executive had delayed two of the 22 proposed new towers to reassess placement due to community concerns – the Bretton Woods and the ICC/Georgia Ave. locations. Council requested that the Executive reinstate the original cutover date of December 2020, which he did. Council was also very concerned about the reliability of the current radio system and asked for a briefing on public safety departments' back-up plans in the event of further system disruptions. The Public Safety Committee was briefed on these plans in a closed session in September 2019. Since then, DTS has provided regular updates on the new project's progress, and it has stayed on schedule for most of the year.

Current RSIP Status

The map below illustrates the configuration of the new 22-microwave tower RSIP.



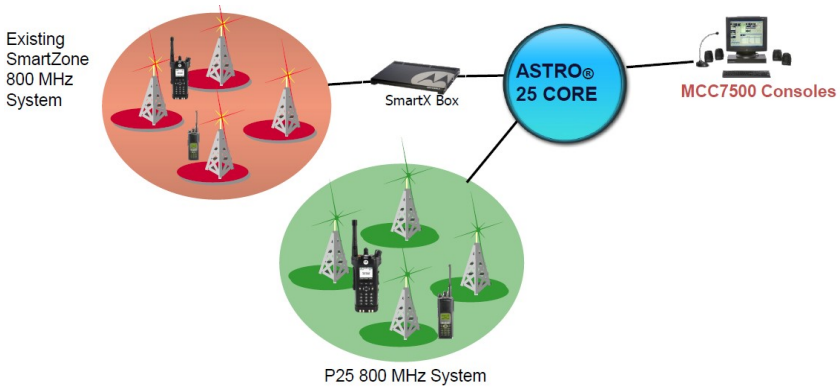
The new system uses different technology than the current one. Instead of using FiberNet 1 for connectivity, it will use microwave-based connectivity between all 22 towers. The use of microwave technology requires towers to be at a height allowing line-of-sight connectivity to adjacent towers so that each can transmit and receive from nearby towers in the County. In some cases, this means that towers are taller than would be required if only radio coverage were considered. The benefit of this new system configuration is that the overall network has multiple recovery pathways if a certain tower became inoperative (mesh network).

For the most part, the project has progressed on schedule. Over the summer, there were some delays at the ICC site (a State site on which the County is co-locating a dish) due to backfill from the ICC being deeper than expected. The crew needed to drill down to 90 feet to hit solid bedrock to install the caissons that support the tower. The installation was successful, and the vendors sought other ways to accelerate the project to stay on schedule. While this likely had unanticipated construction costs, they were borne by the State, since the State is the owner of the tower.

The vendor also ran into a challenge with the Bethesda site in August, where there was too much antenna radiation for the vendor to install the microwave dish on an existing tower. When the vendor's crew ascended the tower, their RF meters went off around 640 feet and had to descend immediately. After working with the vendor and the other stakeholders at the site to ensure all other systems were powered down, the vendor was able to install the microwave dish at the proper height. ***Despite these unanticipated challenges, the RSIP project has remained on budget.***

Cutover Process: There are three phases to the cutover. The vendor has a go/no go date of December 22 and if all systems are ready, the cutover will start on January 4, 2021. In order to prepare for the cutover process, the vendor must ensure the following:

- System Optimization (completed)
- Conduct Interim Coverage Testing (determine if system delivers DAQ 3.4 and 95% composite coverage)
- Interim Coverage Acceptance Testing approval (expected December 22)
- System Burn-in period (in progress)
- Fleet Mapping (configures the system for management and control of subscriber radios)
- Subscriber Programming



Phase 1: During this phase, Police talk groups will be transitioned from the existing SmartZone 3.0 system to the new P25 system.

Phase 2: Fire talk groups will be transitioned to the new system. The cutover target for Police and Fire is before the Presidential Inauguration on January 20.

Phase 3: DOCR and other government talk groups will be transitioned to the new system. DTS expects this to be completed in February.

Discussion Issues

1. The coverage acceptance testing is described as "interim" since a full foliage coverage test has to be performed when there are leaves on the trees (May 2021). Foliage could potentially degrade signal strength in some areas or some buildings of the County. Does the Executive anticipate any problems with this test? What are the terms of the contract for needed improvements if the vendor does not meet DAQ 3.4 and 95% composite coverage?
2. Radio coverage along and on the Potomac River had been a concern. What were the test results for those areas?
3. The old system is expected to remain in place until the new system is fully functional and has been appropriately tested. Currently, public safety departments have back-up systems in place in case of current system failure. One of those back-ups included the issuance of cell phones to various apparatus in the Fire Department. These cell phones were only budgeted through December 2020. Since the cutover is anticipated to go through until mid-February, can MCFRS maintain these cell phones as back-ups? Is there a reason to maintain them definitely?
4. How have COVID-19 work restrictions and other social distancing measures impacted the process?
5. How long is the new system anticipated to last? What does vendor support for the system entail?
6. Is there a current budget estimate for completion? Will it likely require additional appropriations?

This staff report contains:	**Circle #**
Approved FY21-26 PSSM CIP	1-3

Public Safety System Modernization
(P340901)

Category	General Government	Date Last Modified	01/06/20
SubCategory	County Offices and Other Improvements	Administering Agency	County Executive
Planning Area	Countywide	Status	Ongoing

EXPENDITURE SCHEDULE ($000s)

Cost Elements	Total	Thru FY19	Est FY20	Total 6 Years	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	Beyond 6 Years
Planning, Design and Supervision	10,028	3,976	5,567	485	17	468	-	-	-	-	-
Construction	32,370	2,872	29,228	270	270	-	-	-	-	-	-
Other	71,096	69,109	-	1,987	1,987	-	-	-	-	-	-
TOTAL EXPENDITURES	113,494	75,957	34,795	2,742	2,274	468	-	-	-	-	-

FUNDING SCHEDULE ($000s)

Funding Source	Total	Thru FY19	Est FY20	Total 6 Years	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	Beyond 6 Years
Contributions	32	32	-	-	-	-	-	-	-	-	-
Current Revenue: General	10,311	7,233	2,593	485	17	468	-	-	-	-	-
Federal Aid	2,947	2,947	-	-	-	-	-	-	-	-	-
G.O. Bonds	55,728	27,058	28,400	270	270	-	-	-	-	-	-
PAYGO	133	133	-	-	-	-	-	-	-	-	-
Short-Term Financing	44,343	38,554	3,802	1,987	1,987	-	-	-	-	-	-
TOTAL FUNDING SOURCES	113,494	75,957	34,795	2,742	2,274	468	-	-	-	-	-

OPERATING BUDGET IMPACT ($000s)

Impact Type		Total 6 Years	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26
Maintenance		2,400	-	-	600	600	600	600
Program-Staff		800	-	-	200	200	200	200
Program-Other		1,056	-	-	264	264	264	264
NET IMPACT		4,256	-	-	1,064	1,064	1,064	1,064

APPROPRIATION AND EXPENDITURE DATA ($000s)

Appropriation FY 21 Request	2,274	Year First Appropriation	FY09
Appropriation FY 22 Request	468	Last FY's Cost Estimate	110,752
Cumulative Appropriation	110,752		
Expenditure / Encumbrances	100,407		
Unencumbered Balance	10,345		

PROJECT DESCRIPTION

This program will provide for phased upgrades and modernization of computer aided dispatch (CAD), law enforcement records management system (RMS), and voice radio systems used primarily by the County's public safety first responder agencies including Police, Fire and Rescue, Sheriff, Corrections and Rehabilitation, and Emergency Management and Homeland Security. The modernization will include replacement of the current CAD/RMS system, replacement of public safety mobile and portable radios, upgrade of non-public safety mobile and portable radios, and replacement of core voice radio communications infrastructure. The previously approved Fire Station Alerting System Upgrades project (CIP #451000) was transferred to this project in order to coordinate the upgrades with the new CAD system. The alerting system upgrades will modernize the fire station alerting systems at 43 existing work sites, maintaining the ability to notify fire and rescue stations of emergencies. The alerting system, including audible and data signals, is essential for the notification of an emergency and the dispatch of appropriate response units from the County. As voice, data, and video are beginning to converge to a single platform, this project will provide a pathway to a modern public safety support infrastructure that will enable the County to leverage technology advances and provide efficient and reliable systems for first responders. This project will follow the methodologies and strategies presented in the Public Safety Systems Modernization (PSSM) plan completed in July 2009.

COST CHANGE

Cost increase in FY21 and FY22 for desktop radio console, applications for messaging service and person location tracking to be activated on subscriber user radios, and staff charges.

PROJECT JUSTIFICATION

The public safety systems require modernization. Prior to replacement, the CAD system was reaching the end of useful life and did not meet the County's current operational requirements, impacting the response time of first responders to 9-1-1 calls. The CAD Roadmap Study, completed in March 2009, recommended replacement of the system to address existing shortcomings and prepare for the next generation 9-1-1 systems. The manufacturer's support for the voice radio system had to be phased out as of December 31, 2009. Beyond that date, the manufacturer will only continue to provide system support on an as available basis, but will not guarantee the availability of parts or technical resources. The CAD modernization initiated a detailed planning phase that included the use of industry experts to assist with business process analysis and to develop detailed business and technical requirements for the new CAD system. This process allowed the County to incorporate lessons learned and best practices from other jurisdictions. As more of the County's regional partners migrate to newer voice technologies, it will affect interoperable voice communications. To ensure that the County maintains reliable and effective public safety (voice radio) communications for the operations of its first responders and to sustain communications interoperability for seamless mutual aid among its regional partners, the County needed to implement a project to upgrade and modernize its portable and mobile radio units and subsequently the radio voice communications infrastructure. Acceleration of the public safety radio purchases was initiated to take advantage of a Partial Payment in Lieu of Re-Banding offer from Sprint/Nextel toward the financing of new, upgraded, P-25 compliant public safety radios and to meet the Federal Communications Commission (FCC) mandated 800 MHZ frequency rebanding requirements for nationwide public safety radio frequency interoperability. Now, the installation of the new core radio communication infrastructure is needed. The fire station alerting system upgrades were identified as a need under Section 5 of the MCFRS Master Plan (adopted by the County Council in October 2005) and detailed in the Station Alerting and Public Address (SA/PA) System for Fire/Rescue Stations, Rev 1, 2006. This project allows for the continuous and seamless functioning of the alerting systems within each fire station. A preliminary survey by DTS of existing conditions at all stations revealed system-wide concerns, including inadequate spare parts inventory and lack of available maintenance support for alerting systems.

OTHER

$20.936 million was appropriated in FY11 to purchase P-25 compliant radios that allowed the County to complete immediate re-banding within the 800 MHz frequency as required by the FCC. The radio replacement program includes the M-NCPPC Montgomery County Park Police. The future purchase of public safety radios (other than to replace broken equipment) must be able to be supported by a P25 Phase-2 compliant infrastructure. The use of State of Maryland infrastructure will be aggressively pursued in order to minimize costs to Montgomery County. The CAD procurement request will reflect the County's interest in maintaining the station alerting functionality at the current level or better through the CAD system. The RFP for CAD replacement will include replacement of the following systems: CAD, mapping, and the existing Law Enforcement Records Management and Field Reporting systems. Coordination with participating department/agencies and regional partners will continue throughout the project.

FISCAL NOTE

Funding in FY09 included Urban Area Security Initiative (UASI) grant funding of $2.055 million and Fire Act grant funding of $988,000. Funding schedule reflects FY18 supplemental adding $32,000 in Contributions for additional equipment required for Local Fire Rescue Departments (LFRDs). FY18 funding switch is due to a transfer of Current Revenue General for $283,000 from Technology Modernization (MCG) project offset by an equal reduction in Short Term Financing.

COORDINATION

PSSM Executive Steering Committee, Executive Program Directors, Department of Technology Services, Department of Police, Montgomery County Fire and Rescue Service, Sheriff's Office, Department of Correction and Rehabilitation, Office of Emergency Management and Homeland Security, Department of Transportation , Department of Liquor Control, Montgomery County Public Schools (MCPS), Maryland-National Park and Planning Commission (M-NCPPC) Park Police, Washington Metropolitan Area Transit Authority (WMATA)