GO/PS ITEM #1
October 14, 2021
Update

M E M O R A N D U M

October 11, 2021

TO: Joint Public Safety and Government Operations & Fiscal Policy Committee

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

SUBJECT: Update: Public Safety Radio System

PURPOSE: To receive an update. No vote is expected.

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

Gerry Adcock, Radio System Manager,
Department of Technology Enterprise and Business Solutions (TEBS)

Assistant Chief Mike Baltrotsky, Technology Section Chief,
Montgomery County Fire and Rescue Service (MCFRS)

Assistant Chief Darren Francke, Management Services Bureau,
Montgomery County Police Department (MCPD)

Cassandra Onley, Director, Emergency Communications Center, MCPD

Background

The public safety radio system provides communication among the 911 call center (Public Safety Communication Center), police, fire, ambulances, and other users. Last March, the County switched over to a new system, replacing an aging system that had experienced significant system disruptions.

The new system was approved by the Council and funds were appropriated for its construction as part of the Capital Improvements Program (CIP) project, "Public Safety System Modernization."[1] The system's full deployment had been delayed several times since its inception in FY11, when the FY11-16 CIP included $1.8 million to plan for the radio infrastructure subproject. In 2019, the Council became aware of another delay, which would have pushed back

[1] Approved FY22 CIP Public Safety System Modernization project (P340901)

a projected fall 2020 cutover date to the fall of 2021 or 2022. While projects are often delayed for both fiscal and operational capacity limitations, the continued delay of this project raised serious concerns about guaranteeing reliable operability. The former system was past its end-of-life date (2009) and the vendor no longer supported the project.

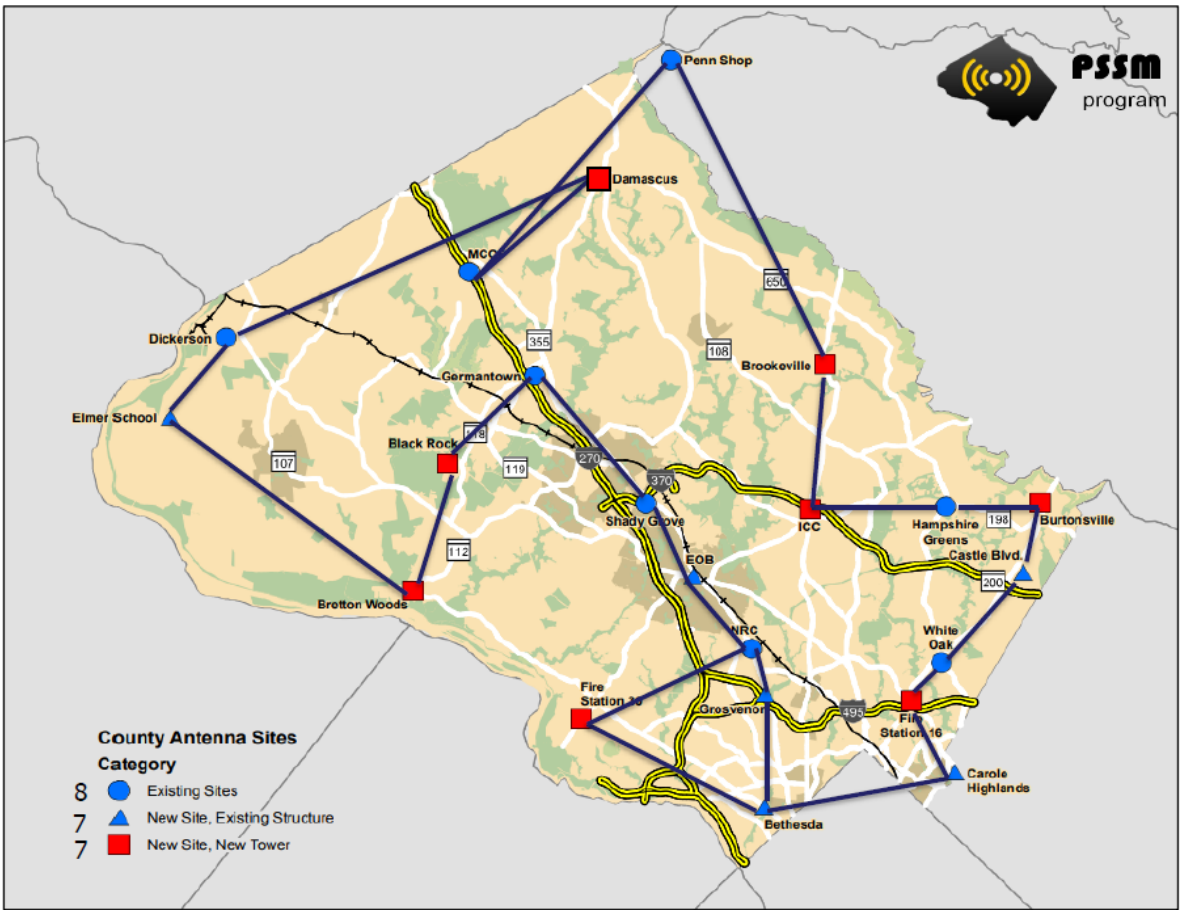
After several Council discussions in 2019, the Executive agreed to keep two tower sites on schedule, and the projected cutover date was December 2020. Council received regular updates on the project status including Executive plans to maintain public safety communications in the event of a system failure. While challenges arose at a few different locations, the County stayed on schedule and on budget. The cutover date was initially scheduled for January 4, 2021, but Motorola's review of its systems detected some problems with their network monitoring operations. The root cause was identified, and the new cutover date was scheduled for January 15, 2021. Given the civil unrest and attempted insurrection at the Capitol on January 6, however, County officials decided to delay cutover until after the inauguration, to ensure that all systems were functioning properly in the case of a regional need for any public safety response. The next cutover decision was made on February 6, and the vendor determined that all systems were ready for cutover. Cutover occurred in three phases:

- February 23, 2021 (Police);
- March 4, 2021 (Fire and Rescue);
- March 9, 2021 (DOCR, DOT, and other GOVT users).

Given the timing of the cutover, during winter, the vendor had to delay one final testing component – full foliage testing – to ensure the system worked with a full summer canopy of vegetation. This testing occurred in May, and involved driving through test grides (river, off-road areas), testing 30 required buildings, and testing 20 informational buildings. The contract specifications required 95% coverage of the county; the test results were 98.34% coverage.

Technology

The new system uses redundant-ring architecture microwave radio to connect the 22 County public safety radio sites. Executive staff advises this technology is "self-healing" in the event of a link failure. The decision to choose microwave connectivity was driven by the higher cost to extend fiber to numerous newly-added and remotely-located towers. The new microwave enables a second diverse path for redundancy at a lower cost than extending new FiberNet fiber along two routes to all 22 sites. The graphic below shows the locations of the 22 sites used for the new system.



Budget

The Council first approved the PSSM project in FY09. Council budget discussions for the FY11-16 CIP noted that the PSSM's budget contained $53.7 million for three initial elements:

- Replacement of the Computer Aided Dispatch;
- Replacement of the fire station alerting system; and
- Acquisition of P-25 standard radio devices.

The project also included $1.8 million for planning a radio infrastructure replacement, estimated at the time to be "an additional $50 million." About $51 million was budgeted for the project, closely aligning with the FY11 estimate, even though the system was not purchased until FY17. The project has stayed on budget. The original contract price was $42 million, including included a System Obsolescence Program ($835,817). One site change added more costs, and the contract was amended to include $608,268 to replace the original Pepco Quince Orchard site with the Black Rock site. Total project costs are $42.880 million.

Potential Discussion Questions

1. It would be helpful for the Joint Committee to understand the obsolescence program. What is the projected lifespan for this system?
2. What are the next steps to examine whether any new technology can and should be adopted in the future?
3. Has the County experienced any type of operational concerns with the new system?
4. Are there periodic tests to determine coverage levels in the County? If so, how often?
5. It is Council staff's understanding that the PSSM project will likely be closed out once the final subproject (Law Enforcement Records Management System) is procured and operational. What are the Executive's longer-range plans for funding a potential RSIP replacement in approximately 10 years?

This report contains the follow attachments ©

Montgomery County Public Safety Radio System Project

Joint GO/PS Committee Update

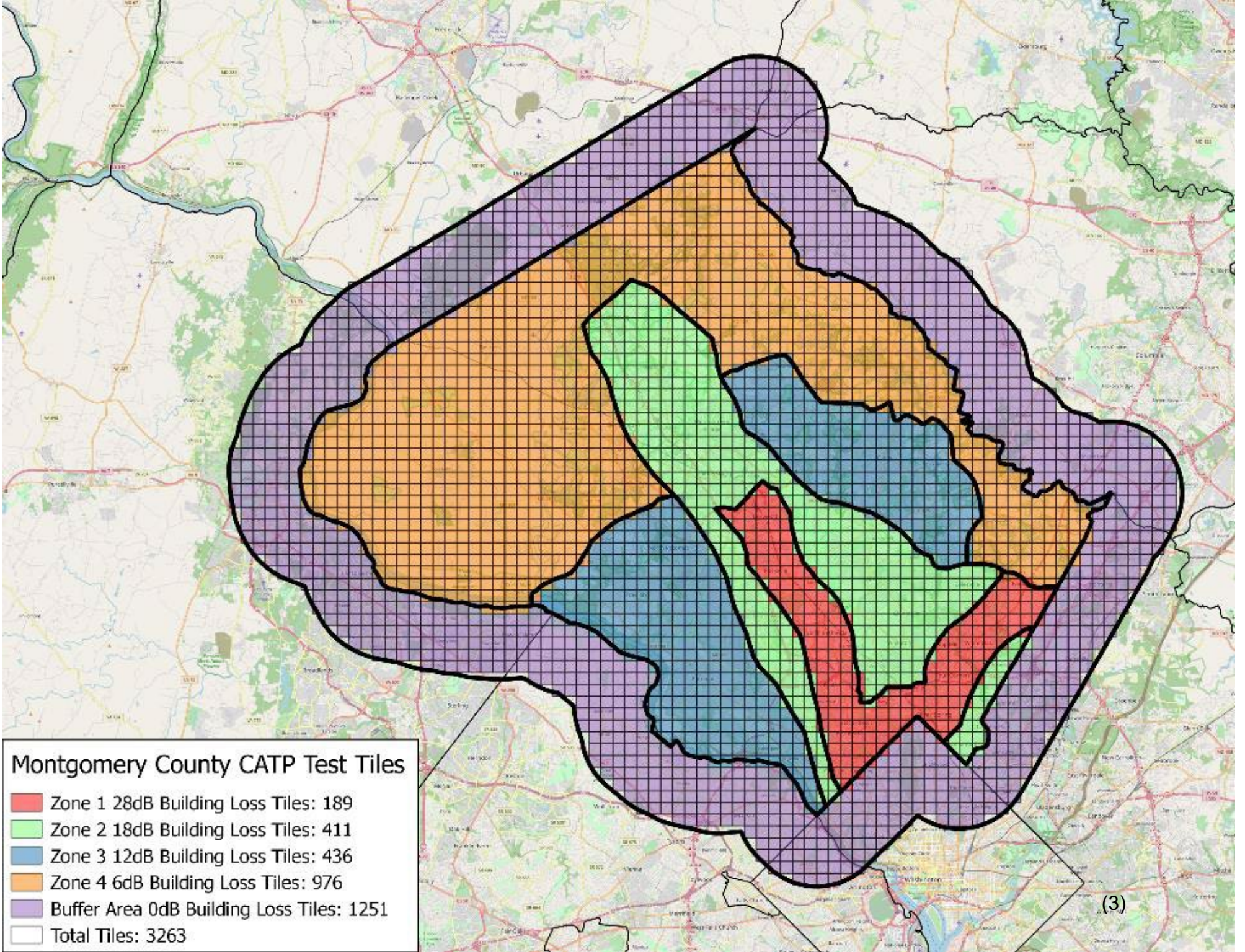
October 14, 2021

Radio System Infrastructure Project

Cutover

- February 23, 2021 (Police)
- March 4, 2021 (Fire Rescue Services)
- March 9, 2021 (DOCR, Public Service)

Cutover in three phases based on antenna/combiner assignments


Montgomery County CATP Test Tiles
Zone 1 28dB Building Loss Tiles: 189
Zone 2 18dB Building Loss Tiles: 411
Zone 3 12dB Building Loss Tiles: 436
Zone 4 6dB Building Loss Tiles: 976
Buffer Area 0dB Building Loss Tiles: 1251
Total Tiles: 3263

Radio System Infrastructure Project

Full Foliage Testing – May 18-21, 2021

- Tested with same parameters as the Fall test (portable radio, on the hip, w/RSM, antenna attenuation per dB loss zones)
- Tested 3,076 grids
- Tests included 3-mile border around County
- Test Results = 98.34% of grids passed with an established dB loss (simulated in-building coverage) at a DAQ of 3.4
  Note: contract required 95% coverage.
- Tested on and along the Potomac River with FRS
- Two (of three) Bi-Directional Amplifiers remain in service to fill gaps along river
- Tested 49 County buildings (offices, hospitals, schools, malls, Police Stations, Detention facilities, and Courthouses)

Radio System Infrastructure Project

Performance to date

a. Microwave issue on 9/22/2021 from heavy storm that swept through the County
b. Microwave dish mounting bracket came loose.
c. Requested that Motorola have their microwave mounting teams go back and check all mounting hardware again to ensure that brackets and tiebacks are secure.
d. System (channel) capacity averaging 20%
e. No other system issues to date

Radio System Infrastructure Project

Motorola has been very responsive to requests for service for various deficiencies identified:

a. VHF channels rectified (VHF used by FRS)
b. Specific UPS units (Eaton model at 3 sites)
c. Fire Panel testing with Fire Marshall
d. HVAC unit at 2 sites (FS30, Castle Blvd)
e. System alarm corrections
f. Rectifying Microwave mounts

Radio System Infrastructure Project

Next Steps to Prevent System Obsolescence

- System Obsolescence Program in 2023 and 2028 (years 5 & 10 of system life)
- Working with Motorola to provide a System Upgrade Assurance solution – periodic updates to hardware and software to keep the Radio System current

Radio System Infrastructure Project

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Radio System Infrastructure Project

Budget:

1) It was necessary to add $608k to project to build the Black Rock site (moved off Pepco/Quince Orchard)
2) Stayed on budget with project costs.
3) The 5 & 10 year System Obsolescence Program is within the RSI Project budget, and will be billed once in 2023 ($835,827)*
4) Rent Savings:
    1) Rent for 11 sites (old) = $53K/month
    2) Rent for 22 sites (new) = $42K/month
    3) **Savings = $11K/month or $136K/year**