



Agenda Report

2725 Judge Fran Jamieson
Way
Viera, FL 32940

New Business - Public Safety Group

J.2.

8/16/2022

Subject:

Request America Rescue Plan Act (ARPA), Second Tranche funding be allocated to (1) Support updating of the Property Appraiser's GIS Infrastructure and (2) Upgrade of the Brevard County Public Safety Radio System to be P25 compliant.

Fiscal Impact:

- (1) Up to \$1.866M in ARPA funding for the Property Appraiser's GIS Infrastructure
- (2) \$1.2M in ARPA funding and \$1.03M in municipality user fees for Brevard County's Public Safety Radio System upgrade

Dept/Office:

Public Safety Group: Emergency Management

Requested Actions:

1. Authorize the use of ARPA funds, not to exceed \$1.866M, to partially fund the reconstruction and updating of the Property Appraiser's GIS Tax Map utilizing Coordinate Geometry.
2. Authorize the use of ARPA funds in the amount of \$1.2M to upgrade Brevard County Public Safety Radio System backbone to P25 standards.
3. Having obtained the cities' concurrence, authorize Emergency Management to invoice municipal users of the Public Safety Radio System a one-time P25 Upgrade charge of \$372 per radio (totaling \$1.03M), no later than FY24.
4. Authorize the County Manager implement any necessary Budget Change Requests in regards any of the Board's approved actions.

Summary Explanation and Background:

Approval (1): Reconstruction and updating of the Property Appraiser's GIS infrastructure (Tax map)

The Property Appraiser's map is a tool commonly used by both the public and private sector. In the 1990's, the original hand-drawn maps were digitized utilizing the best technology available at the time, but depicted boundary lines are inaccurate by today's standards. Mapping software have advanced significantly since then and utilizing Advanced Coordinate Geometry (COGO) style maps will solve those accuracy issues and provide a markedly better-quality service to the public, as well as government agencies. The total cost of this effort is estimated to be \$2.4M. The county's share, based on 77% of the total acreage in unincorporated Brevard, is \$1.866M.

While not required, updating the GIS infrastructure will not only provide a more accurate assessment of value,

but it will also provide Brevard County Departments and Cities with a precise map to more efficiently perform numerous day-to-day functions, including; data analysis, land planning, E-911 addressing, environmental studies, engineering studies, and legal analysis.

Funding and supporting the Property Appraiser's Office is primarily a County responsibility. However, as this upgrade is not required at this time, the Property Appraiser and County staff has begun to ask Cities to contribute toward as it would significantly benefit cities, the County and the public.

Reconstructing and updating the Tax map utilizing Coordinate Geometry would include data preparation and cleanup, boundary simplification, topology cleanup, edge matching and polygon reconstruction.

By acting now, the estimated cost of the upgrade is lower than would be expected since Brevard can currently partner (piggyback) to get these upgrades with Volusia County which is about to have the upgrades performed. The Property Appraiser estimates that the cost will increase if the project is undertaken when, as is anticipated, the State requires such an update in the future.

Approval (2): Upgrade of the communications backbone of the unified Brevard County Public Safety Radio System to P25 standards.

The Brevard County 800MHz Public Safety Radio System is an intergovernmental radio communication program; approved under the provision of Section 316.655(6), F.S, and Division of Communications policy. It provides county-wide public safety radio communication to approximately 6,000 users from all the local public safety agencies/departments. P25 is a suite of national standards developed to provide digital, interoperable, and encrypted communication for public safety. P25 offers a multitude of critical benefits to our first responder community including; improved in-building signal strength, geo-location information, cybersecurity defenses, and seamless interoperability with regional public safety agencies. For background and benefits of the P25 Public Safety Radio System, please see the summary document at Attachment 1.

In 2019, the Board authorized the migration of the County radio frequency sites to the P25 core. The need to upgrade became urgent when maintenance and replacement parts for legacy equipment began to be phased out sooner than originally planned. \$3.4M is needed to fully upgrade the system. Emergency Management, in close partnership with the cities, developed a strategy to achieve P25 compliance:

- \$1.2M in existing 800MHz capital funds
- \$1.2M in County ARPA funds (eligible as Emergency Response Radio Systems category)
- \$1.03M from municipal radio users (already approved by the cities) via and one-time P25 upgrade charge of \$372 per radio, effective in FY 2024 which allows municipalities to plan in future budgets.

<u>AGENCY</u>	<u>NUMBER OF RADIOS IN 2022</u>	<u>CONTRIBUTION</u>
Brevard County Sheriff's Office	1744	\$647,818
Brevard County Fire Rescue	630	\$234,017
Brevard County Departments	480	\$178,298

Brevard County Support Agencies	363	\$134,838
COUNTY ARPA TOTALS	3,217	\$1,194,971

Cape Canaveral	88	\$32,688
Cocoa	277	\$102,893
Cocoa Beach	209	\$77,634
Indialantic	51	\$18,944
Indian Harbour Beach	78	\$28,973
Malabar	36	\$13,372
Melbourne	585	\$217,301
Melbourne Beach	50	\$18,573
Melbourne Village	14	\$5,200
Palm Bay	577	\$214,330
Rockledge	165	\$61,290
Satellite Beach	111	\$41,232
Titusville	370	\$137,438
West Melbourne	147	\$54,604
MUNICIPAL RADIO FEE TOTALS	2,758	\$1,024,472

Clerk to the Board Instructions:

Send Clerk Memorandum to the County Manager's Office and Emergency Management.



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August 17, 2022

MEMORANDUM

TO: John Scott, Emergency Management Director

RE: Item J.2., Request America Rescue Plan Act (ARPA), Second Tranche Funding be Allocated to (1) Support Updating of the Property Appraiser's GIS Infrastructure and (2) Upgrade of the Brevard County Public Safety Radio System to be P25 Compliant

The Board of County Commissioners, in regular session on August 16, 2022, authorized the use of ARPA funds, not to exceed \$1.866M, to partially fund the reconstruction and updating of the Property Appraiser's GIS Tax Map utilizing Coordinate Geometry; authorized the use of ARPA funds in the amount of \$1.2M to upgrade Brevard County Public Safety Radio System backbone to P25 standards; having obtained the cities' concurrence, authorized Emergency Management to invoice municipal users of the Public Safety Radio System a one-time P25 Upgrade charge of \$372 per radio (totaling \$1.03M), no later than FY24; and authorized the County Manager implement any necessary Budget Change Requests in regards any of the Board's approved actions.

Your continued cooperation is always appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS
RACHEL M. SADOFF, CLERK

A handwritten signature in cursive script, reading "Kimberly Powell".

Kimberly Powell, Clerk to the Board

/pp

cc: Public Safety Office
County Manager
County Attorney
Finance
Budget



PUBLIC SAFETY RADIO SYSTEM P25 UPGRADE REPORT–FY22

Abstract

A summarized report of the current status of the Brevard County 800 MHz Public Safety Radio System and the need to upgrade to P25 as an imminent solution to address cybersecurity threats and new standards.

800MHz Public Safety Radio System

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800MHz Radio System Project 25 (P25) Upgrade

Background

The Brevard County 800MHz Public Safety Radio System is an intergovernmental radio communication program approved under the provision of Chapter 316.655(6), F.S, and Division of Communications policy. It provides county-wide public safety radio communication to over 6,000 users from 60 local, State, and Federal agencies/departments. The system includes eleven 9-1-1 Public Safety Answering Points (PSAPs) and nine towers in a simulcast Enhanced Digital Access Communication System (EDACS) configuration, tied to a Project 25 (P25) core backbone.

In 2012, the Board of County Commissioners authorized the first upgrade of the radio system towards Project 25 (P25). Since then, the system has evolved from a four-site multisite to a nine-site simulcast system and transitioned the PSAP's radio consoles to the newly implemented P25 backbone core.

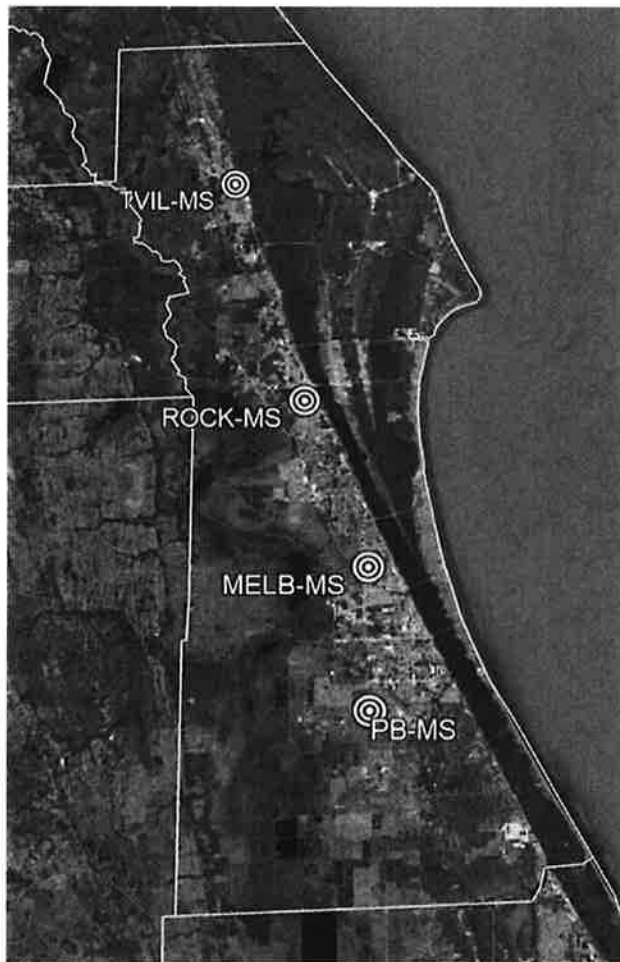


Figure 1: BC Public Safety Radio System before 2013

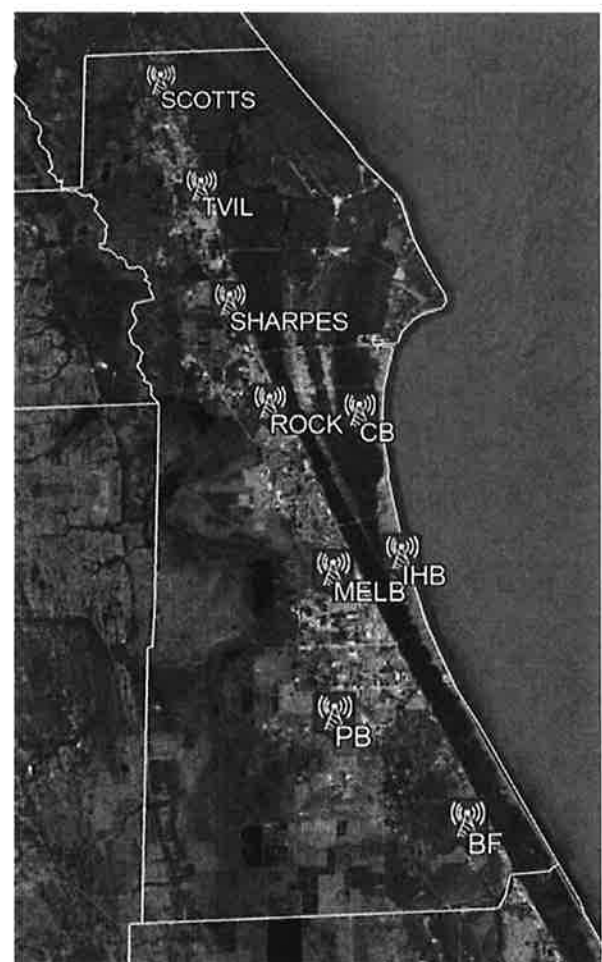


Figure 2: BC Public Safety Radio System after the upgrade

In 2019, the Board authorized the migration of the radio frequency sites to the already implemented P25 core, the last necessary step to provide a fully P25 system to the Brevard County public safety agencies and first-responders. A \$3.6M project was awarded the same year as a multi-year project, contingent upon the availability of funds, following the timeline below:

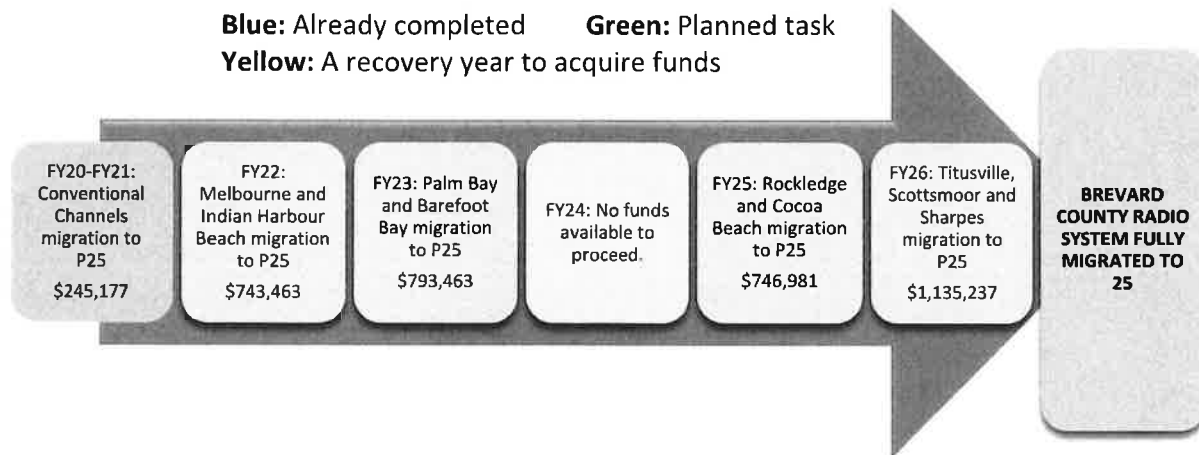


Figure 3: P25 Phase 2 Upgrade – 2019

The first task (in blue) was complete during the Fiscal Year 2020-2021, and the next task is part of the current Fiscal Year (FY) budget. During FY24, the project will need to pause; for the 800 MHz Division to collect funds and resume the upgrades in FY25.

P25 and its benefits

P25 is a suite of standards; developed to provide digital, interoperable, and encrypted communication to public safety. The benefits of the P25 technology to the Brevard County public safety and first responders' agencies are:

1. Harden cybersecurity defenses.

Living in a world where cybercrime is one of our primary threats, P25 offers the most robust set of voice/data encryption, key management, and user/system authentication and access control available today. Encrypted information over the air will allow the first-responders, agencies, and municipalities to keep critical information, like running investigations, surveillances, and active shooter incidents, out of reach from criminals. Additionally, transmitting patient information and medical records over an encrypted radio channel will decrease the response time and simplify the operation of our first responders during critical moments.

2. Seamless interoperability with regional public safety agencies.

The COVID-19 response demonstrated the need for interoperability between a variety of organizations and systems. In P25, radio users can easily roam to other radio systems within the region while maintaining contact with their home dispatchers via encrypted communications. Seamless radio interoperability will benefit our first responders greatly during the transport of patients to/from Brevard County.

3. Multi-vendor sources for radio terminal.

As the user agencies invest in renewing their radio terminals, they currently have to pay a premium for radios with EDACS (analog) capabilities from a single source: L3Harris. By moving to the P25, the agencies will select their terminals from other vendors offering competitive pricing, as the radio terminal will no longer need analog capabilities.

4. Data services such as over-the-air-programming (OTAP) and tier 2 location information.

The current cost to update/reprogram the radio terminals is \$34/hour. Over-the-air-programming (OTAP) will allow the radio terminals to receive the radio profiles, configurations, and software updates from afar, a significant cost saving when more than 6,000 radios are involved.

The real-time location of assets and personnel is a great addition that comes with P25. It contributes to the safety of the first responders and improves response times and organizational efficiencies. This service integrates with existing AVL, mapping applications, or CAD systems.

5. Effective double channel capacity.

The radio frequency spectrum is a limited resource; by implementing P25 Phase-2, the County will maximize its current FCC licensed frequencies. P25 Phase 2 double the number of simultaneous conversations per frequency, equivalent to less maintenance cost and space/power needs.

6. Extension of coverage outside the county-wide radio coverage.

The already integrated L3Harris BeOn service to our P25 core provides secure radio PTT (Push-To-Talk) far beyond the boundaries of our radio system by utilizing commercial wireless networks and Wi-Fi. Additionally, non-critical personnel can use the 800MHz radio system without additional investment, as these applications run on tablets, laptops, and phones.

Current status, challenges, and cyber vulnerabilities

As our world becomes increasingly dependent upon computer systems and networking to accomplish day-to-day tasks, public safety radio systems are also becoming more dependent on networking equipment and connectivity to the internet. Digital technologies, like P25, give first responders many more tools than dated technologies. These advantages come with the understanding that a threat from cyberattacks exists and that we should protect the integrity of the network by applying the latest industry best practices.

Legacy equipment is one of the most common causes of cybersecurity vulnerabilities for public safety systems as manufacturers stop providing the software patches and updates necessary to maintain the integrity of the radio system. Those public safety radio systems utilizing dated and unsupported networking equipment are the most vulnerable to hackers. In August 2021, the manufacturer of the system (L3Harris) disclosed its new roadmap for the P25 systems upgrades, not only driven by the

current needs and technologies in the industry but by the end of support of some of the main system components from other manufacturers like Cisco and Microsoft.

The current core of the public safety radio system utilizes Windows Servers 2008. By January 2023, Microsoft will stop supporting the Windows Server 2008, about the same time as L3Harris will stop supporting the EDACS technology. The end of the Windows Servers 2008 support by 2023 adds a new step to the previous P25-Phase 2 Upgrade project: The existing P25 core upgrade to the next platform compatible with our Land Mobile Radio (LMR) System. Although this is an unavoidable upgrade to keep our public safety infrastructure secure, it moves our ability to fully migrate the radio frequency sites infrastructure to the P25 trunked technology from 2026 to 2028 because of funding.

The following diagram shows the new timeline, with the insertion of the P25 core upgrade in red and the need for an additional year to acquire funds if we continue the multi-year approach approved by the Board in 2019.

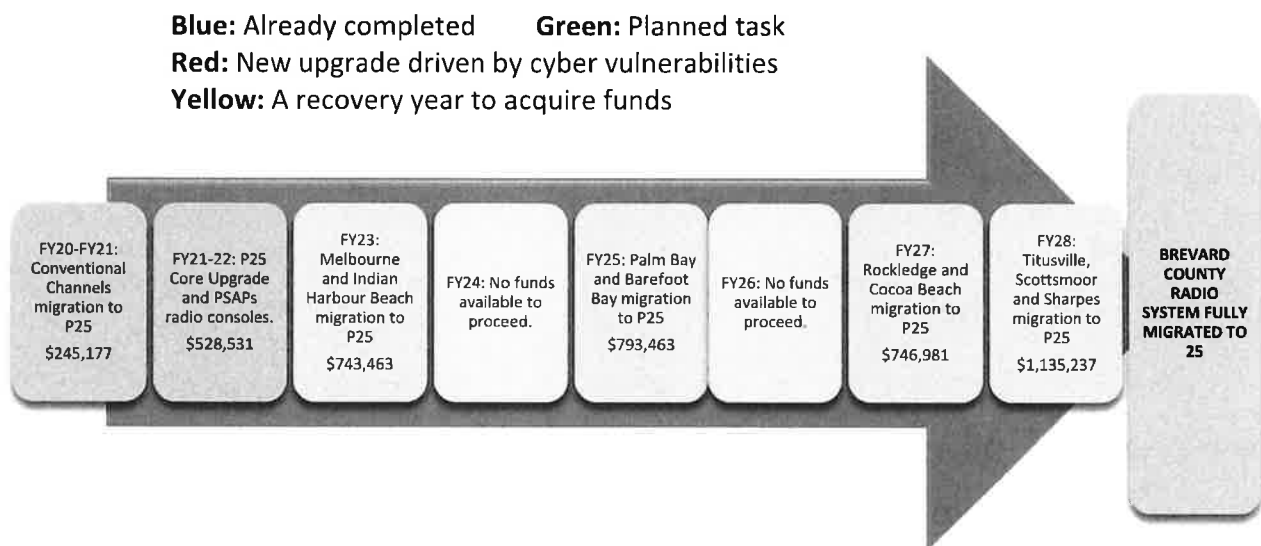


Figure 4: P25 Phase 2 Upgrade - 2021

With technology moving forward at such a high pace, utilizing a multi-year approach for future planning brings a new challenge. The upgrade of the existing network core without upgrading the site equipment leaves the radio frequency infrastructure no longer supported by the manufacturers (L3Harris and Cisco) and our public safety agencies at risk of continuing investing resources in hardware-intensive and vendor-locked solutions.

Conclusion

The time for upgrading the network core and the radio frequency sites to P25 has come to a critical juncture. Migrating in steps to newer technology, which, in the past helped with costs, is no longer a viable approach due to the leaps taking place in technology. A total of \$3.9M investment, see attachment A, in the public safety radio infrastructure will bring the system up to the latest standards, eliminate any unforeseen future costs because of system incompatibilities, and most importantly, protect it against cybercrime.

Having up-to-date equipment in place has never been more imperative. Seculore Solutions website, a company specializing in cyber security, shows that in the past 24 months, 118 public safety agencies have been hacked, along with 276 government agencies.

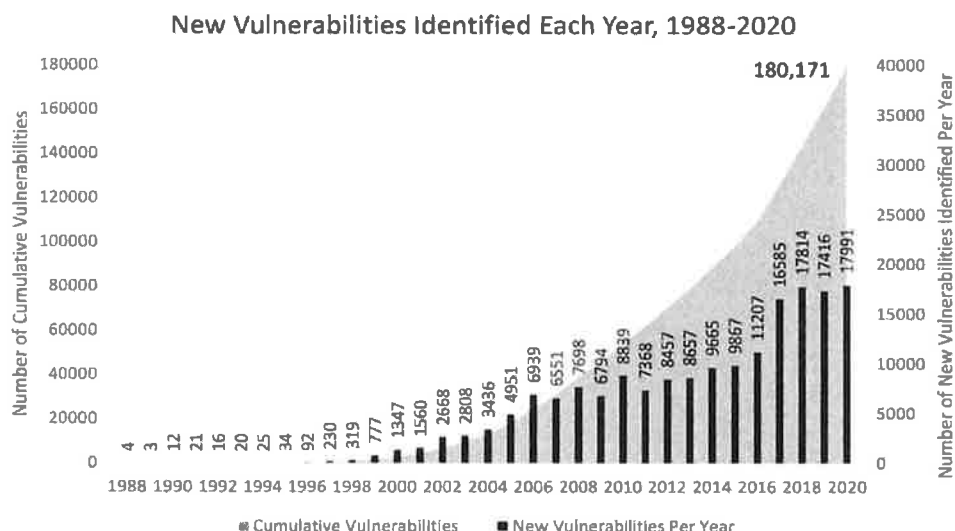


Figure 5: Newly Identified and Cumulative Vulnerabilities Per Year, 1988-2020 (Source: IBM X-Force Red)

The Florida Department of Transportation (FDOT) classifies its District 5 (Brevard, Flagler, Lake, Marion, Orange, Osceola, Seminole, Sumter, and Volusia) as one of the fastest-growing areas of the state. Ensuring that our first responders have reliable and secure communications when seconds count is one of the core missions of Public Safety. Relying on an aging legacy system with increasing vulnerabilities to cyber-attacks does not put us on a long-term path to success. The upgrade of the current system, driven by the new standards, the obsolescence of the equipment, and the cybersecurity vulnerabilities, is imperative.

ATTACHMENT A

TASK ORDER	DESCRIPTION	PRICE
1	Conventional channels migration to P25	Completed FY21-12.50
2	P25 Core upgrade	\$528,531 (in progress)-12.50
3	South Cell - Melbourne and Indian Harbour Beach migration to P25	\$743,463
4	South Cell – Palm Bay and Barefoot Bay migration to P25	\$793,463
5	North Cell – Rockledge and Cocoa Beach migration to P25	\$746,981
6	North Cell – Titusville, Scottsmeer and Sharpes migration to P25	\$1,135,237
	TOTAL	\$3,419,144

Figure 6: Brevard County P25 Upgrade - Phase 2