

ITS Strategic Roadmap – FY20 Planning

Safety Communications

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Background

Since 1999, the Metropolitan Government of Nashville and Davidson County (Metro) has operated an 800MHz Trunked Simulcast Radio System, providing highly reliable public-safety grade communications throughout the Greater Nashville region for a large array of users.

System users include:

- Metro Nashville public safety agencies: Metro Police, Nashville Sheriff, Emergency Communications Center/911, Nashville Fire Department, Office of Emergency Management
- Metro authorities, departments and agencies: Nashville Electric Service, Health, Public Works, General Services, Metro Nashville Public Schools, Metro Transit Authority, Water Services, Courts, Tornado Warning Sirens
- Satellite cities: Belle Meade, Berry Hill, Goodlettsville
- Universities: Vanderbilt, Belmont, Lipscomb, Tennessee State University
- Adjacent cities and counties: Brentwood, LaVergne, Mt. Juliet, Sumner, Williamson, and Wilson Counties
- Federal and state agencies: Alcohol Tobacco & Firearms, Federal Bureau of Investigation, US Marshal, Secret Service, Tennessee Highway Patrol, Tennessee Emergency Management Agency, Tennessee Dept. of Transportation, TN Dept. of Homeland Security

The radio system provides overlapping coverage from eight tower sites with two separate radio networks dedicated to public-safety and public utility operations, and includes multiple layers of equipment and power redundancy. Those features include hot standby servers, controllers, and routers, a bi-directional loop digital microwave, as well as generator and UPS power back-ups. The 26-channel system used by public-safety agencies conforms to the nationally recognized APCO 25 (P25) interoperability standard. The 14-channel legacy system serves public service, utilities, and schools, while providing backup capabilities for public-safety. In 2016, Radio Communications implemented a 5-year plan to migrate the remaining legacy system infrastructure and users to P25, while also enhancing services and system redundancies.

Metro also serves the public with a network of over 90 outdoor tower-based weather warning sirens. These sirens are activated by ITS on behalf of the Office of Emergency Management and alerts are currently countywide, with plans for location-based notifications in the work. Similarly, ITS manages the operation, access and maintenance of Metro Alert and Notification System (MEANS), an Everbridge product, which will provide location-based mass notification of weather warnings, civil emergencies, and other significant events via multiple channels including telephone, email and text messaging.



Current Strategic Drivers

1. **Community Demand: Mass Notification (High)** – The need to provide directed telephone and text notifications of impending weather events, civil emergencies, and the dissemination of essential community information is critical to life safety and the well-being of our residents, visitors, and employees.
2. **End of Life (EOL) Equipment Replacement (High)** – As is the case with all computer based technology, radio systems utilizing common OS based equipment and networks must maintain those systems to the same industry standards for equipment, software support, and maintenance.
3. **Customer Demand: GPS tracking of personnel and resources (High)** – The ability to track and assign calls to emergency responders by location via their radio provides the ability for dispatchers to send the closest available responders to calls for assistance and emergency incidents.
4. **Technology Change: Equipment Compatibility (High)** - Industry standards for interoperable equipment requires replacement of legacy radio systems and subscriber equipment that are both at end-of-life, and incompatible with the new standards. That transition for public-safety agencies is complete, and now continues for public service agencies as part of the 5-year plan.
5. **Equipment Protection/Safety: Lightning Damage Prevention (High)** – Lightning damage poses one of the most significant dangers for radio systems, and while complete protection from lightning is impossible, advances in equipment protection technology have progressed considerably in the past few years.
6. **Customer Demand: Resiliency and Coverage Enhancement (High)** – Failure of the radio system’s primary core computer system could cripple communications for our public safety personnel. Providing a connection to the network core of the new Williamson County 700MHz System will bring a level of redundancy to the Metro system that is cutting-edge for the industry, while effectively doubling the coverage footprint of the system.

On the Horizon Strategic Drivers

1. **FirstNet System Connectivity and Integration (High)** – The FirstNet Corporation is building a nationwide LTE system dedicated to public-safety agencies. All of Metro’s data that currently rides on commercial cellular networks will eventually move to the FirstNet system.
2. **Nationwide Interoperability for Metro Radio Users (Medium)** – Metro employees and task forces are often called on to provide rescue and recovery assistance in disasters and large scale events across the nation.
3. **Contract Expiration (High)** – The current maintenance contract with Motorola expires December 31, 2020. A new contract must be negotiated prior to February 2020 in order to prepare the FY21 budget.



Short Term Goals (0-6 months) 7/1/19 – 12/31/19

#	Goal/Objective	Est. Start	Est. Duration
1	Begin Phase 3 of the Metro Emergency Alerts and Notification System (MEANS) roll-out.	July 2019	3 months
2	Continue installation of 'Enhanced Data' software on subscriber radios to enable GPS position reporting to dispatch.	Continued	18 months
3	Continue migration of public service and utility radios to the P25 System, using contract provided radios and capital funding.	Continued	Ongoing
4	Installation of enhanced lightning protection on radio towers. Capital required.	July 2019	6 months
5	Connect the Metro and Williamson County radio system network cores for 'Dynamic System Resiliency'.	Continued	12 months
6	Upgrade the county-wide Tornado Warning Siren system to accommodate polygon-based warnings. Capital required.	August 2019	12 months

Medium Term Goals (6-18 months) 1/1/20 – 12/31/20

#	Goal/Objective	Est. Start	Est. Duration
1	Expand the P25 System by adding 4 channels from legacy data channels to P25.	Jan 2020	6 months
2	Integrate a cloud-based radio system to radio system communications interface to provide immediate, nationwide, interoperable radio communications for public safety responders.	Jan 2020	3 months
3	Software upgrade existing radios to P25 compatibility.	July 2020	1 years
4	Continued migration of users to the P25 System with radios provided in contract and capital funding.	Continued	2 years
5	Initial connectivity of FirstNet nationwide public-safety LTE system.	March 2019	1 year
6	Negotiate the next 5 year Radio System maintenance, upgrade, and support contract.	July 2019	8 months

Long Term Goals (18-36 months) 1/1/21 – 6/30/22

#	Goal/Objective	Est. Start	Est. Duration
1	Upgrade legacy radio system to P25 by moving an additional 4 channels from legacy to P25.	Feb 2021	1 year
3	Complete the migration of radios to P25. Significant capital investment will be required.	Continued	1 years
4	FirstNet system application services integration and deployment	Jan 2021	12 Months

Related Roadmaps:

- Network Infrastructure

