



Monroe County Control Center P25 Digital Radio Network Upgrade Project

Network Information

December 12, 2019

What type is the new radio system?

The Monroe project is an "open architecture" Project 25 (P-25) UHF Digital Trunked UHF radio system. Beginning in 2019 equipment started to be ordered and installed.

What was the reason(s) for a new public safety radio system?

- *Take advantage of the technological enhancements with the new P25 digital trunked simulcast radio networks need to better use the radio resources that are available in Monroe County.*
- *Radio Congestion due to the number of radios being used at any given time at incidents. (On November 1st, 2019 there was a very large fire at the Pocono Manor Lodge; there were 109 fire departments involved on the incident over a 2-3-day period. There were over 300 personnel and over 250 pieces of fire apparatus at the scene during the term of the event. During this event there were 3 incidents where firefighters were trapped and, in one case, the trapped individuals couldn't access the radio system for 5 minutes to call for help.)*
- *THE INEFFICIENCIES OF THE CURRENT RADIO SYSTEMS AND THE USE OF AVAILABLE RADIO RESOURCES (accessibility of radio channels when needed).*

What is P25?

P-25 is the standard for the design and manufacture of interoperable digital two-way wireless communications products. Developed in North America with state, local and federal representatives and Telecommunications Industry Association (TIA) governance, P-25 has gained worldwide acceptance for public safety, security, public service, and commercial applications.

When using P25 Standards, it allows the end user to have the choice of manufacturers.

This enables an agency to choose the size, scale, and feature set that they require. The way each manufacturer engineers their subsystem may be different, but they can still all work together. This is because P25 has defined interfaces between the specific paths of the system. The Common Air Interface, or CAI, defines the radio frequency interface used by portables, mobiles, and repeaters. This allows radio equipment from different manufacturers to work together. The CAI is used on both conventional and on trunked radio systems.

The published P-25 standards suite is administered by the Telecommunications Industry Association (TIA Mobile and Personal Private Radio Standards Committee TR-8). Radio equipment that demonstrates compliance with P-25 is able to meet a set of minimum requirements to fit the needs of public safety. The P-25 standard was created by, and is intended for, public safety professionals and will provide them with the option of choosing from several different radio manufacturers and models.

What is trunking?

Trunking is a more automated and complex radio system, but provides the benefits of less user intervention to operate the radio and greater spectral efficiency with large numbers of users. Instead of assigning a radio channel to one particular user group at a time, users are instead assigned to a logical grouping, a "talkgroup". There are two types of radio systems: conventional and trunked. In a conventional system, the radio message between the station and units in the field occur on one frequency. At any given time, some of the frequencies or channels may be so busy that messages are delayed or "stepped on," while other channels are lightly used or not used at all. When several departments share a single frequency, they may cause interference with one another.

Monroe County has always used conventional analog radio networks. Trunking is a method that utilizes all frequencies within a radio system to its maximum potential. In a trunked system, all radio system users share all the frequencies. When a transmission occurs between two radio system users, the trunked system automatically selects an unused frequency and switches all radios in the system to that frequency.

No one radio frequency is assigned to any one department and the frequency could change every time a transmission is made. Instead of talking on a specific radio frequency, as users did on the conventional system, a user in a trunked radio system utilizes "talkgroups."

Talkgroups will be assigned by the Dispatchers on an "as needed basis" depending upon the needs of the public safety providers.

Departments will no longer have specific channels to operate on, as it's not an efficient use of the radio frequency networks or infrastructure.

Here is a simple analogy of how a trunked radio system works:

- You walk into a McDonald's (or other fast food restaurant) and want to place an order.
- You and other *customers* wait in line for an available cashier.
- As soon as a cashier is available, you get to place your order. Not a *specific* cashier, but the one that is *first available*.

You and the "other customers" are radio users who want to talk on the network.

The "cashiers" are channels on the system. Not a specific cashier, or frequency, but the first one that is not being used.

The other difference is that your wait in the restaurant could take minutes; whereas, with the radio system access, it happens in nanoseconds.

Also to note; currently, if two people want to talk at the same time on the current conventional analog radio networks, you either wait for the other to stop or the two units' end up keying up over each other. As a result, nothing is heard by others on the system.

What Make and Model Radios will work on the new system?

*Harris * Kenwood * Motorola * Relm * Tait*

Harris Radios:

Portables: XL-185P, XL-2000

Mobiles: XG-75M, XM-100F

Kenwood - Radios

Portables: VP6000

Mobiles: VM 5000, VM 6000

Motorola Radios

Portables: APX 4000, 6000Li, 6000XE, 8000XE, 8000

Mobile Radios: APX 4500, 6500, 8500

Harris/Tait Radios:

Portables: TP 9400

Mobiles: TM9400

What can a radio scanner enthusiast expect from the new P25 radio system?

Conventional scanners are not capable of decoding digital voice data. The P-25 UHF Digital Trunked radio system can be monitored by any scanner that is APCO P-25 Phase 2 capable, or online at either www.broadcastify.com or www.radioreference.com . Scanner programming information can be found at www.radioreference.com . Law enforcement talk-group audio shall be encrypted on an as-needed basis and will be unable to be monitored.

Describe communication and interoperability with agencies from other counties?

The network contains interoperability features for units responding into, or out of, Monroe County, as well as provisions for fail-safes in the event of any technology failures in the new networks. The system will be programmed to "revert" to a conventional mode should a catastrophic failure occur.

Questions, Comments or Concerns about this project:

Email: "P25radio@monroeco911.com"

Or

Call: 570-992-4500.