

**International Wireless and Communications Expo IWCE**  
**Las Vegas, Nevada**  
**September 30, 2021**



# **P25 on Steroids**

## **HOW TO GET THE MOST OUT OF YOUR P25 SYSTEM**

**Presented by:**  
**PTIG - The Project 25 Technology Interest Group**  
**[www.project25.org](http://www.project25.org) Booth 272**



# Introductions/ Agenda

## PTIG P25 Resources Available

**Stephen Nichols**

Director, Project 25 Technology Interest Group (PTIG)

# Agenda



|                                                          |                                                                                                                                                                                                                        |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Steve Nichols,</b><br>PTIG                            | Introductions, PTIG Members, Website, P25 Resources                                                                                                                                                                    |
| <b>Cindy Cast</b> (Virtual)<br>Miami Dade County         | P25 Miami Snapshot. P25 Benefits from the System Managers perspective.<br>P25 Sharing = Cost Savings, Multi Agency planning and success for P25 interop in Major events, Building Collapse, Conventions, Hurricanes.   |
| <b>Scott Wright</b><br>State of Connecticut              | P25 Sharing = Cost Savings and increased coverage for user agencies. Successful P25 Encryption deployment and management through proper planning.                                                                      |
| <b>Brad Stoddard</b> (Virtual)<br>State of Michigan      | Best Practices for P25 System Governance and management. P25 Benefits have resulted in state-wide multi agency interoperability and significant growth for one of the founding P25 Systems. New P25 paging deployment. |
| <b>Justin Evans</b> (Virtual)<br>Montgomery County Texas | P25 Montgomery County Multi County and agency sharing through P25 ISSI Interoperability, Multi agency response for Operations, Events, COVID 19 telehealth.                                                            |
| <b>Eddie Reyes</b><br>Prince William County VA           | P25 Benefits and Interoperability from the System director's perspective.                                                                                                                                              |
| P25 Basics Video                                         |                                                                                                                                                                                                                        |
| Steve Nichols                                            | Q & A                                                                                                                                                                                                                  |

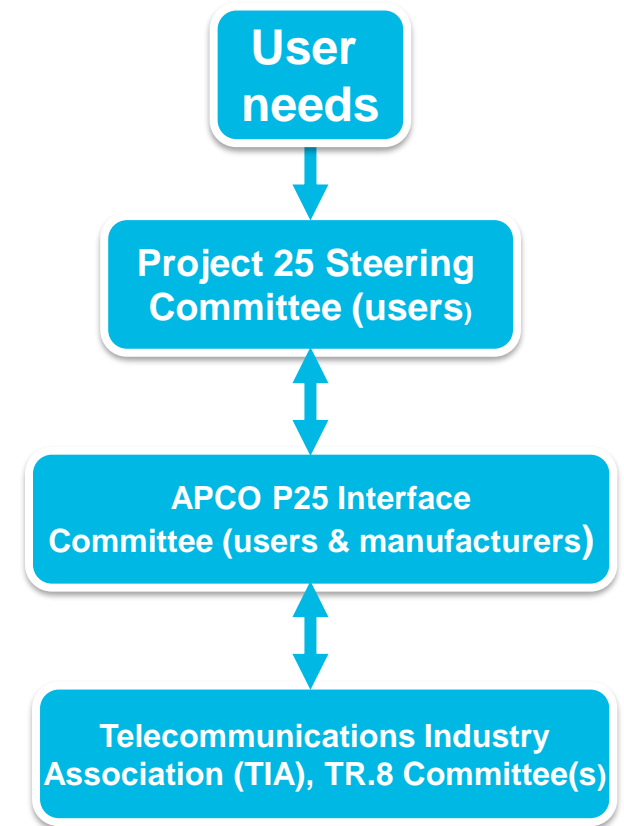
# Project 25: Overview



## Designed for public safety by public safety

Developed in partnership between Public Safety Users and The Telecommunications Industry Association (TIA) manufacturer members under guidance from the Project 25 Steering Committee.

- Project 25 formed in 1989
- Partnership with TIA established 1992
- Initial standards released in 1995
- Original goals have been met
- Ongoing development and evolution of the standards continue with broad industry support



# Benefits of Project 25



- **A Public Safety Grade Technology** with High Availability through Redundant and Resilient Configurations
- **Direct Mode Communications** when Infrastructure is not available
- **Enabling Interoperability** for Multi Agency Sharing of Voice/Data/Location
- **Secure AES 256 bit Encrypted Communications**
- **Large Nationwide Installed Base of P25 Systems** including 42 State-wide.
- **P25 Sharing = Cost Savings & Improved Coverage for Users**
- **Multi-Vendor Sourcing** from 38 P25 Product and Service providers

***P25 is Well Established Suite of Standards  
with a User Driven, Evolving Technology***

# The P25 ECO System Today



## Established Base of over 2900+ Project 25 Systems on the air today

Including 42 Statewide Project 25 Systems in the US.

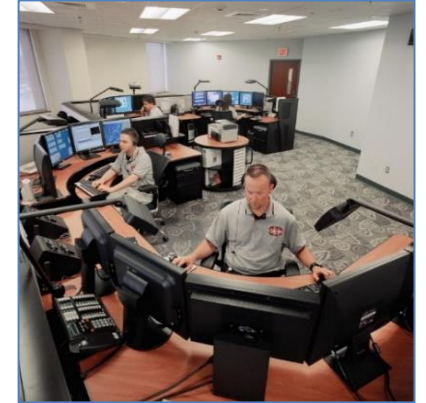
And, numerous Region-wide , County-wide, municipality, campus, and individual facility P25 systems.

### Examples:

Michigan 110,000 users 1,665 Agencies 12 Million PTT /mo.

Miami/Dade 30,000 users, 110 Agencies, 7 million PTT/mo.

P25 is Operating in over **80 other nations World-wide.**



## A Competitive Market-place with 38+ Project 25 Product and Service providers

offering a diverse range of P25 solutions at multiple price points

Independent Testing through the DHS CAP Program and a number of certified Independent Testing Labs.

An Active, Evolving Technology that continues to develop with new capabilities, upgrades, and test standards.



## Founding Members



## Sustaining Members





# Project 25 Technology Interest Group

## Corporate and Professional Members







Project25  
Technology Interest Group

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Tuesday, September 29, 2020

NEWS & EVENTS | PURPOSE | TECHNOLOGY | PRODUCTS | COMPLIANCE ASSESSMENT | MEMBERSHIP | DOCUMENTS



**The Latest News**  
**PTIG Publishes latest CSSI Non CAP Interoperability Test Results from Bosch Telex and Motorola Solutions**  
**P25 Latest New Products and Services for 2020 from IWCE**  
**P25 Priorities, Education, and Outreach Update from the Steering Committee**  
**PTIG Welcomes STI-CO Antenna Solutions as a New Corporate Member**  
**New P25 ISSI/CSSI Interoperability Document: Best Practices Vol II Now Available**

**Upcoming Events**  
No events

**PTIG Website Login**



**Welcome to the Project 25 Technology Interest Group**  
The Project 25 Technology Interest Group (PTIG) brings you this web site to provide information on all topics concerning Project 25.  
  
Please register on the site for access to additional information. If you previously registered prior to June 2010, a new registration is required. This is to assure we have current and accurate information.  
  
Registration is required to maintain a spam free site for you. No Fees are required for website registration.  
  
**PTIG MEMBERS NOTE:** When your individual registration is validated for affiliation to a paid membership or a commercial member company, your registration will provide member access privileges.  
  
Use the dialog box titled **"Contact Us"** on the home page for any inquiries about registration and membership.  
  
This site is the official home of PTIG and our P25 community.  
Your suggestions and comments are always welcome.  
Use the dialog box titled **"Contact Us"** on the home page to make your suggestions, offer comments, or seek more information.

List of P25 Trunking Systems

P25 ISSI/CSSI Interoperability

P25 Frequently Asked Questions

List of P25 Conventional Systems

P25 Standards latest Update

P25 Feature Translator

P25 Capabilities Guide

P25 Steering Committee Approved List of Standards

Why Choose P25?

New P25 Products and Services



## P25 Resources available on the [www.project25.org](http://www.project25.org) Website

- P25 System Lists: Trunking and Conventional
- P25 Video Links: P25 Basics and Encryption from DHS CISA
  - Basics of P25: <https://www.youtube.com/watch?v=2GTApTVOpkE>
  - Encryption in 3 Minutes: <https://www.youtube.com/watch?v=P1sKPEaHWUc>
- P25 Latest Standards Update & List of Standards Documents
- P25 New Products and Services
- PTIG Commercial Member listing Primary P25 Contact information and company Website link

## P25 Resources available on the [www.project25.org](http://www.project25.org) Website



- P25 Security and Encryption Links to DHS Library
- ISSI/CSSI Interoperability Links to DHS Library and Informal Testing Data
- P25 CAP Testing Program: Links to DHS CAP Program Library and approved equipment Lists.
- P25 Case Studies and System of the Month Articles
- PTIG Conference Panel Presentations PPT Slides
- P25 Frequently Asked Questions
- Benefits of P25



# Thank You

**Stephen Nichols**

Director, Project 25 Technology Interest Group (PTIG)

**[www.project25.org](http://www.project25.org)**



# Miami Dade County P25 System Overview

P25 Interoperability Benefits  
P25 Sharing= Cost Savings

**Cindy Cast**

Radio Systems Manager, Miami Dade County FL  
Chairman, Project 25 Technology Interest Group  
Chairman, State of Florida-Communications Focus Group



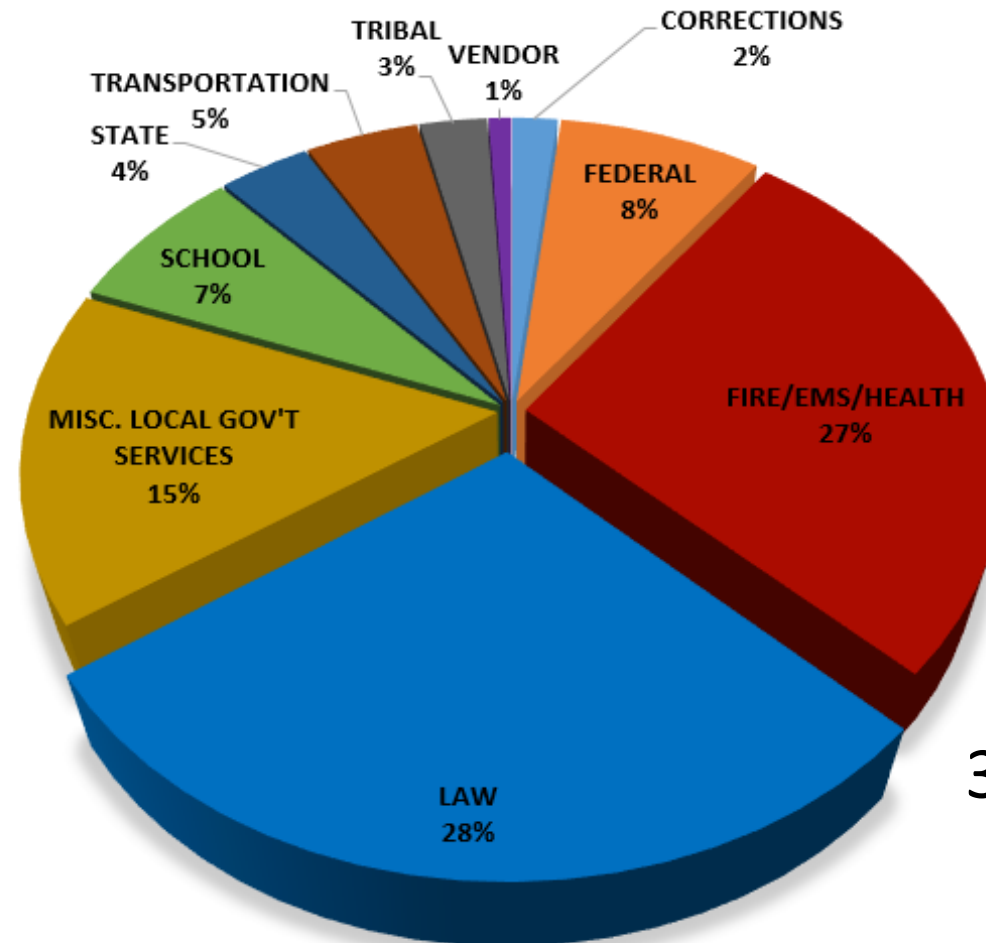
# P25 Radio County-Wide System



# Miami-Dade County P25 Radio System



This system is developed with agreements and partnerships from agencies that include counties, cities, state, federal, tribal and non-governmental organizations with the same mission to communicate with each other when needed to have a beneficial effect on the health, welfare, and safety of both the public safety personnel and the citizens they serve



110+ Agencies  
31,000+ Radios





# P25 Radio User Community



110+ agencies with 31,000+ radio devices (portables, mobiles, desktops, and consoles)

## FULL TIME USERS

### Tribal Government

Miccosukee Tribe of Indians

### Miami-Dade County Departments

Admin Office of the Courts  
Animal Services  
Aviation  
Clerk of Courts  
Communications  
Community Action & Human Services  
Corrections & Rehabilitation  
Cultural Affairs  
Fire Rescue  
Information Technology  
Internal Services  
Libraries  
Medical Examiner  
Parks, Recreation & Open Spaces  
Police  
Public Housing & Community Development  
Regulatory & Economics Resources  
Seaport  
Solid Waste Management

Transportation & Public Works

Vizcaya Museum & Gardens

Water & Sewer

### Municipality Agencies

Aventura PD  
Bal Harbour PD  
Bay Harbor Islands PD  
Biscayne Park PD  
Cutler Bay PD  
Doral PD  
El Portal PD  
Florida City PD  
Golden Beach PD  
Hialeah Gardens PD  
Indian Creek Village PD  
Medley PD  
Miami Gardens PD  
Miami Shores PD  
Miami Springs PD  
North Bay Village PD  
North Miami Beach PD  
North Miami PD  
Opa-Locka PD  
Pinecrest Local Gov.  
Pinecrest PD

South Miami PD

Sunny Isles Beach PD

Surfside PD

Sweetwater PD

Town of Miami Lakes PD

Village of Key Biscayne PD

Village of Palmetto Bay PD

Virginia Gardens PD

West Miami PD

### Hospitals

Aventura Hospital  
Baptist Hospital  
Jackson Health System  
Kendall Regional Hospital  
Memorial Hospitals  
Mercy Hospital  
Mount Sinai Hospital  
Nicklaus Children's Hospital  
North Shore Medical Center  
Palmetto General Hospital  
South Miami Hospital  
UM Hospital  
Veteran's Hospital  
West Gables Rehabilitation Hospital

### Schools

Barry University Emergency Mgmt.  
Florida International University PD  
Florida National University Emergency Mgmt.  
Johnson & Wales Emergency Mgmt.  
Miami Dade College Security  
Miami Dade County School Board  
Miami Dade County School Board Police  
St. Thomas University Emergency Mgmt.  
University of Miami Emergency Mgmt.

### State Agencies

State Attorney's Office  
State of Fl. Dept. of Health

### Private Companies

American Ambulance  
American Medical Response  
Florida Eastcoast Railway Police  
Miami Dade Ambulance  
50 State Security

## INTEROPERABILITY PARTNERS

### Municipality Agencies

Coral Gables PD  
Hialeah PD  
Homestead PD  
Miami Beach PD  
Miami PD

### State Agencies

Fl. Dept. of Law Enforcement (FDLE)  
Florida Dept. of Corrections  
Florida Fish & Wildlife (FWC)  
Florida Highway Patrol (FHP)

### Federal Agencies

Alcohol, Tobacco, Firearms & Explosives (ATF)  
Biscayne National Park  
Environmental Protective Agency  
Everglades National Park  
Federal Bureau Investigations (FBI)  
Federal Protective Services Police  
Federal Reserve  
Secret Service  
U.S. Customs & Border Protection (CBP)  
US Marshal's

### Military Agencies

National Guard  
Southern Command  
US Coast Guard

### Private Companies

Florida Power & Light (FPL)

### Counties

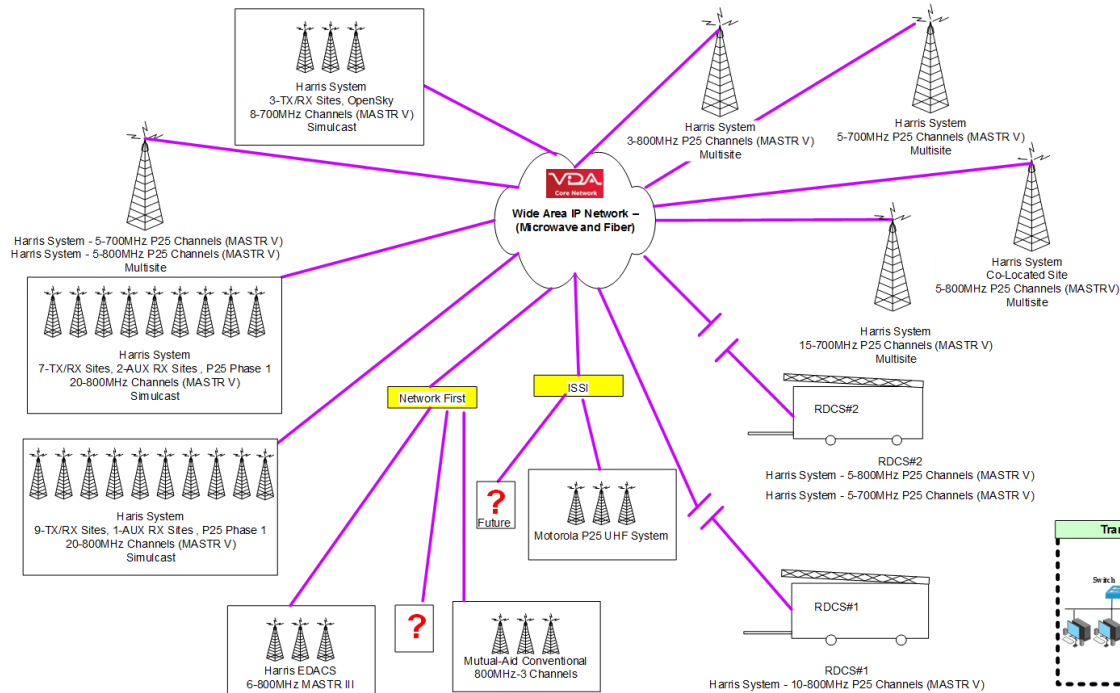
Broward County  
Collier County  
Monroe County



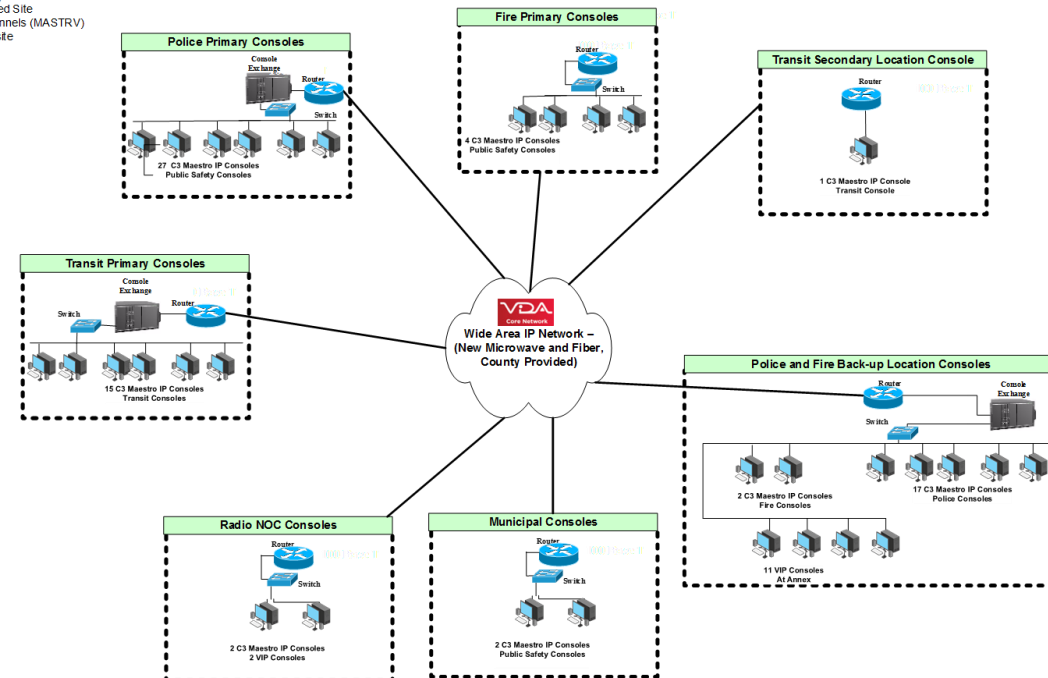
# P25 Radio Systems



## Several Systems Connected



## Several Dispatch Centers Connected



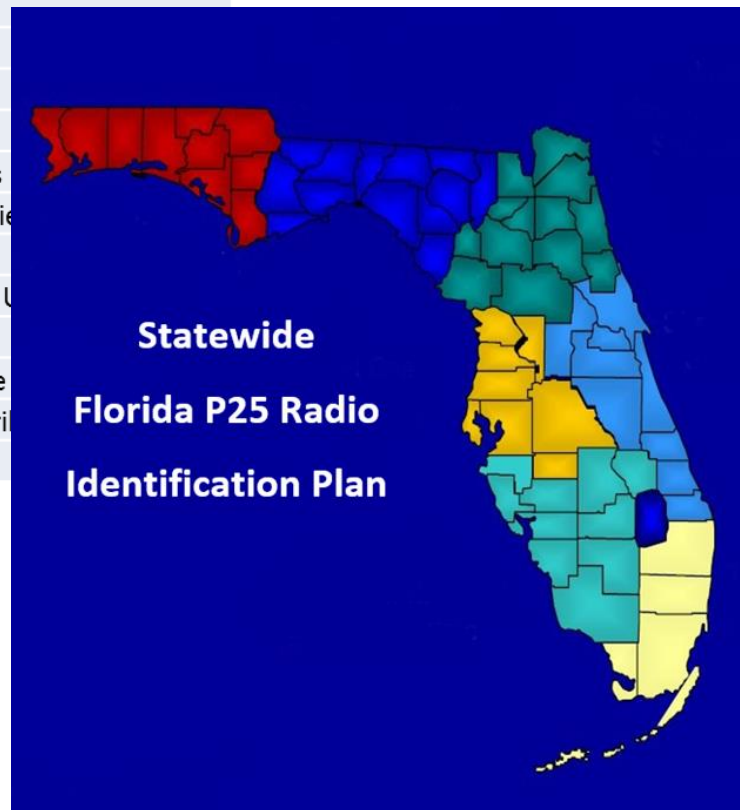
# P25 Benefits and Interoperability



## Unique P25 ID

| P25 ID Range: | Assignment:      |
|---------------|------------------|
| 1 – 999,999   | TBD              |
| 1,000,000     | Region 1         |
| 2,000,000     | Region 2         |
| 3,000,000     | Region 3         |
| 4,000,000     | Region 4         |
| 5,000,000     | Region 5         |
| 6,000,000     | Region 6         |
| 7,000,000     | Region 7         |
| 8,000,000     | State Agencies   |
| 9,000,000     | Federal Agencies |
| 9,500,000     | NGOs/CIs         |
| 9,700,000     | Transportable U  |
| 9,750,000     | TBD              |
| 9,980,000     | Seminole Tribe   |
| 9,990,000     | Miccosukee Tri   |
| 10,000,000 +  | TBD              |

## Access to Multiple Systems



## Global Policies

| STANDARDS  |
|------------|
| MDC        |
| 7MUTAITD   |
| 8MUTAITD   |
| TRAILER-1  |
| TRAILER-2  |
| TRAILER-3  |
| AUXILARY1  |
| AUXILARY2  |
| BACK-UP    |
| IO-1       |
| IO-2       |
| DISPATCH   |
| AGENCY SYS |



## Multiple Vendor Radios



# P25 Benefits and Cost Savings



## *Shared Systems:*

- Reduction on costs for radio equipment and accessories
- Eliminates duplication of staff or multiple vendor contracts for services
- Reduction on operational costs (i.e. towers, microwave, antennas, HVAC, generators)





# P25 Challenges & Best Practices



- Coordinate with Agencies
- Train Users on the Radio
- Exercise Scenarios with Agencies
- Plan for worst case scenarios
- Communicate with Agencies



# P25 Shared System Usage

## *Operational Usage During Planned Events and Incidents*



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Office: (305) 596-8607





# Thank You

**Cindy Cast**

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Radio Systems Manager, Miami Dade County FL

Chairman, Project 25 Technology Interest Group

Chairman, State of Florida-Communications Focus Group





# State of Connecticut P25 System Overview

P25 Sharing = Cost Savings, Successful P25  
Encryption deployment and management

**Scott Wright**

Sr. Telecommunications Engineer II,

Connecticut Department of Emergency Services and Public Protection

# Connecticut Land Mobile Radio Network



Scott Wright  
Sr. Telecommunications Engineer II

IWCE September 30, 2021

# State of Connecticut - Demographics

Land area: 5543 sq miles (48<sup>th</sup>)

Population: 3,608,298 (29<sup>th</sup>)

Median Income: \$72,889 (4<sup>th</sup>)

Rail Transportation:

- Metro North - #3 commuter railroad

- Amtrak – NEC

Air Transportation

- Bradley International Airport

- Multiple regional airports

Bus Transportation

- CT Transit

Home to: 2<sup>nd</sup> and 3<sup>rd</sup> largest casino's in the US

- by gaming square footage

- Many tourism destinations



# State of Connecticut – P25 System Statistics



Sites: 131, Sub-systems: 24

2 Zones – each with both on site and geo redundant servers

(14 simulcast systems/5 single site systems/5 deployable single site systems)

Frequencies: 150+

IP Consoles: 175

Subscriber units: approximately 20,000

2020 Statistics:

PTT's: 59,163,117

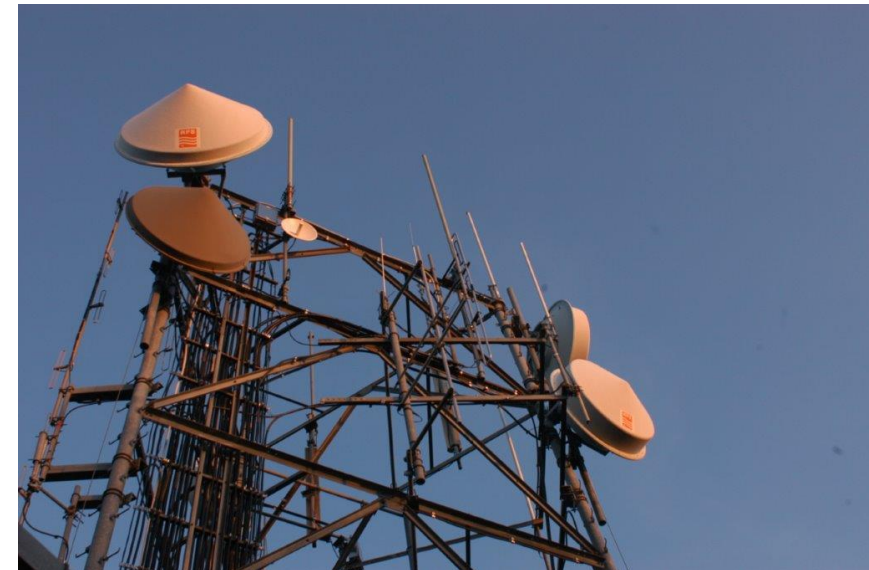
Seconds: 376,385,715

Connectivity:

Private/Shared Microwave

State Fiber Optic

Leased circuits



# State of Connecticut – CTS System

Contractor Support:



## **Adesta/G4S**

Microwave/Network

Network Control Center

## **Motorola**

P25 system maintenance

Subscriber maintenance

Development of additional sites



# State of Connecticut – CTS System

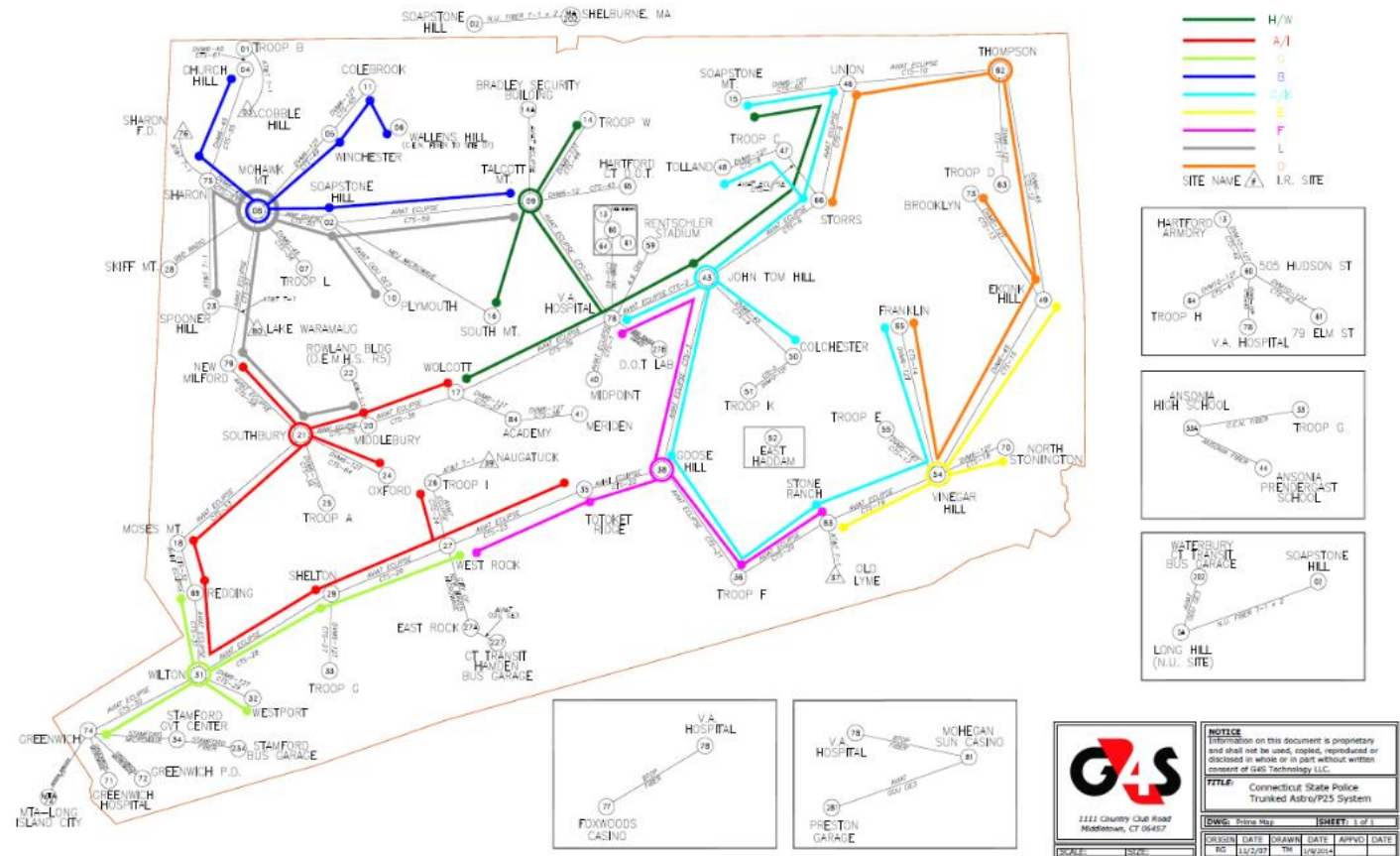


Microwave

IP MPLS Microwave

EXTREMELY stable and reliable

4 ring design



# State of Connecticut – CTS System

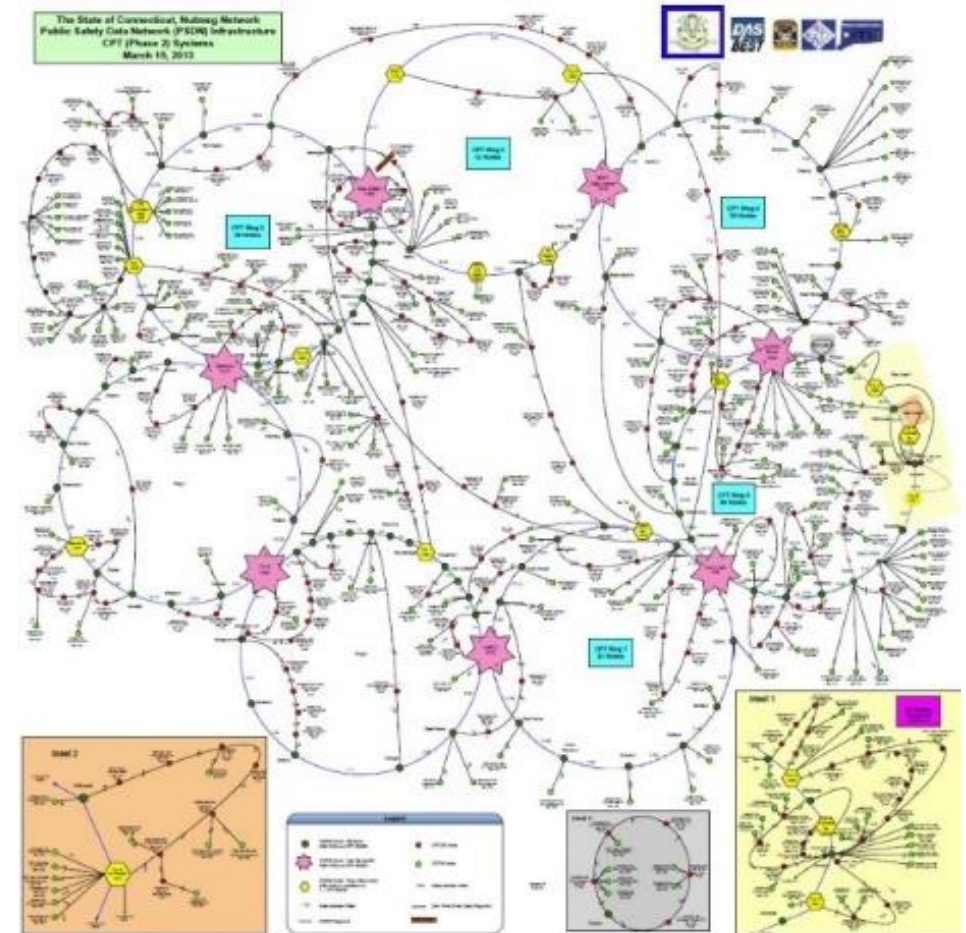


## Fiber Optic

P25 allows us to use the State fiber network (Public Safety Data Network)

Serves primarily as redundancy to microwave for radio network

Provides connectivity to PSAPs





# State of Connecticut – CTS System



## DEPLOYABLE EQUIPMENT

Emergency Restoration Vehicle (ERV) – Site on Wheels

- P25 6 channel site-“deployable trunked”

- Conventional Base/Repeaters (33-862)

Deployable Standalone Trunked Systems (5)

Mobile Communications Vehicle

Command Post

Tactical Console System

- 14 Laptop based consoles – either on or off network

- 6 RF cases

- 3 Dual band (V/7-800, U1/7-800, U2/7-800)

CACHE portables (single and tri-band)

All can be connected via microwave, state fiber, or public network



# State of Connecticut – CLMRN



## Cost Savings:

### Shared Core

- Maintenance costs don't change with the number of connections
- Leverage availability of State fiber (PSDN)
- Cost avoidance
- Use of ISSI/CSSI
- Discounts
- Multiple subscriber vendors



## State of Connecticut – CLMRN

### Cost Savings: Shared Core Example

One of our municipalities had their own stand-alone system, but were faced with significant upgrade costs (had purchased the software but NOT the hardware).

#### Leveraging using the State Core:

- Fixed network was updated for less than \$140k

- Future Core updates are eliminated

- Gained:

  - Statewide coverage

  - Redundancy

  - Significantly improved interoperability

- Network Control Center

# State of Connecticut – CLMRN



## Cost Savings: Shared Core

Models for coverage/capacity:

- Add sites to existing sub-systems

Typically lower utilization users

Avoids the costs of a prime site

- Add a new subsystem

Higher utilization users (cities, etc)

Improved coverage for all users

# State of Connecticut – CLMRN



## Cost Savings: Use of ISSI/CSSI

Currently using 3 ISSI / 5 CSSI connections with more planned

ISSI allows users to roam from their standalone system to the State

- Improved operability

- Improved Interoperability

- Redundancy

CSSI allows users to leverage investments in recently procured console systems

# State of Connecticut – CLMRN



## Cost Savings: Leveraging Availability of State Fiber (PSDN)

State Fiber is available at every PSAP and several tower sites in the state

Provides network backhaul connectivity at no additional cost to the users

Next generation hardware refresh currently underway

Building in additional redundancies

# State of Connecticut – CLMRN



## Cost Savings: Cost Avoidance/Discounts

Users have access to a much larger network than they could ever afford on their own

Additional discounting available based on quantities

Availability of common OTAP/OTAR facilities

Access to common spare parts

Multiple vendor subscriber units supported



# State of Connecticut – CLMRN



## P25 Encryption

Common Key Management Facility

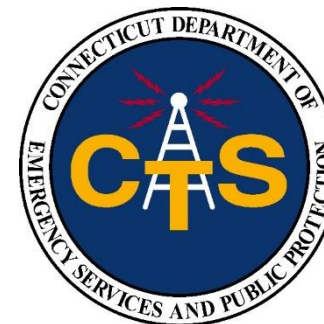
Coordinated encryption plan

Access to NLECC/FPIC interoperable encryption

Interoperable encryption IS possible



# Thank You



**Scott Wright**

Sr. Telecommunications Engineer II

CONNECTICUT

DEPARTMENT OF EMERGENCY SERVICE AND PUBLIC PROTECTION

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# State of Michigan P25 System Overview

## Best Practices for System Governance and Growth, P25 Paging

**Brad Stoddard**

Director, Michigan's Public Safety Communications System (MPSCS)  
Statewide Interoperability Coordinator (SWIC)



IWCE 2021  
P25 on Steroids  
Thursday, September 30, 2021



# MICHIGAN

P25: Best Practices, System Governance,  
Management and Benefits

**Brad Stoddard, Director**  
Michigan's Public Safety  
Communications System (MPSCS)  
Statewide Interoperability  
Coordinator (SWIC) Coordinator





# MPSCS SNAPSHOT

Brad Stoddard, Director  
Michigan's Public Safety  
Communications System &  
Statewide Interoperability  
Coordinator (SWIC)







# OUR TIMELINE OUR STORY



- Executive Branch and Legislative Fiscal agency committee evaluated the 1940s era system for replacement to support all state agencies.
- Governor Engler's Telecommunications Task Force supported the Steering Committee's recommendation; MPSCS was first authorized as the Michigan State Police (MSP) Statewide Two-Way Radio and Microwave Backbone System in Public Act 253



- MPSCS constructed in 5 geographically based phases; First P25 system in the nation revised cost \$215 million
- "Blackout" of entire east coast highlights MPSCS capabilities in a large-scale disaster
- Local, tribal, and private public safety invested additional \$150 million



- Kicking butt and taking names

1984 1994 2004 2014 Today



Before the mid-1990s, emergency responders across MI communicated using equipment maintained by their own law enforcement, fire and EMS.

- Michigan Legislature approved the funding for the new system and a contract was awarded to construct the 180 site MPSCS at a cost of \$187 million – will be the first statewide system in the country; provides 97% statewide all-weather mobile radio coverage



- 36,000+ radios added to MPSCS from federal grant dollars to locals
- No additional radio IDs available
- Integrated solution from dispatch operations to vehicle developed; CAD, AVL, and integrated dispatch consoles for end-to end communications solutions.
- System software upgraded to double amount of radio IDs
- Lifecycle Remediation



From unplanned emergencies...  
to planned events

## THE IMPORTANCE OF MPSCS

The ability to communicate across agencies is a widespread priority in the United States, largely so that we are prepared for potential acts of terrorism or rescue efforts in natural disasters. That ability for agencies to communicate – interoperability – is the primary function of MPSCS.



## Sustainment - Governance and Funding

- Single State agency leadership that morphed to a statewide governance approach of local, state, and private collaboration.
- Inclusion and trust coupled with cost savings and avoidance have shifted the mindset and evolved a system.
- State and local partnership aided legislator understanding of the breadth of the system capability and impact.
- Technology evolution based on the use case needs of the user community.



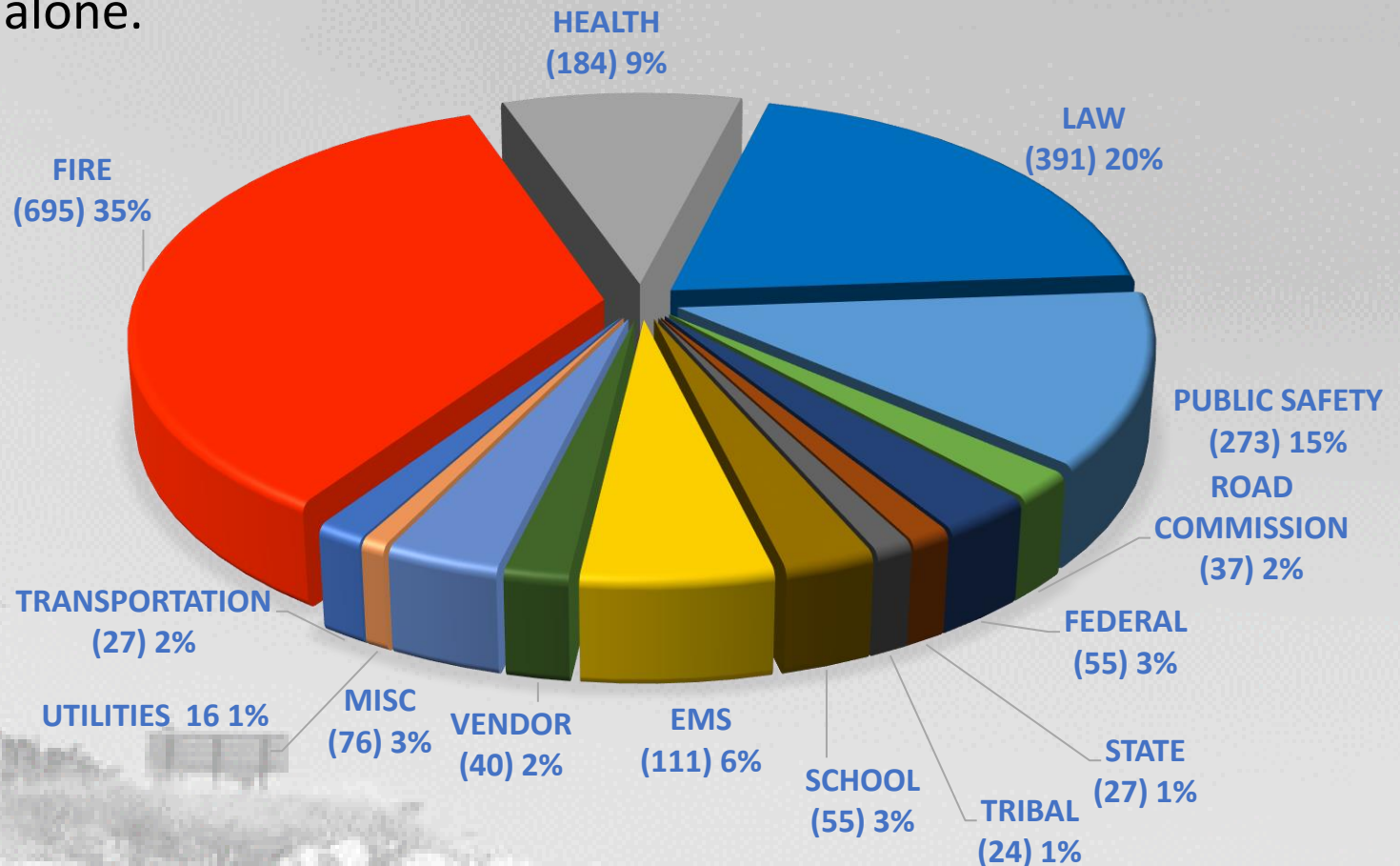
From just one agency...  
to a mature model leading the way



# MI'S STATEWIDE SYSTEM PROFILE & USERS



No single emergency communications system – no matter how large or how powerful – can meet its communications challenges alone. Today's systems demand new partnerships with local, state, federal, tribal and private first responders, achieving together what no one organization can accomplish alone.



# SYSTEM EVOLUTION



- **123,816** Total Radios - 8.6% increase of 9,854 radios since Aug. 2020
- **2,114** Agencies – 3% increase of 58 new agencies since Aug. 2020
- **277** Total Mission Critical Push-to Talk, formally WAVE (MCPTT) Users
- **39** Agencies utilizing Mission Critical Push-to Talk, formally WAVE (MCPTT) Users

| 2002                                                          | 2014                                                                            | 2018                                                                            | Today                                                                               |
|---------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 8,000 mobile and portable radios                              | 68,575 mobile and portable radios<br>(757% increase)                            | 89,177 mobile and portable radios<br>(1,015% increase)                          | 123,816 mobile and portable radios<br>(1,448% increase)                             |
| 180 sites                                                     | 244 RF Sites                                                                    | 253 RF Sites                                                                    | 298 RF Sites                                                                        |
| 6 Dispatch Centers<br>38 console positions                    | 55 Dispatch Centers<br>248 console positions                                    | 72 Dispatch Centers (1083% increase)<br>343 console positions (803% increase)   | 86 Dispatch Centers (1333% increase)<br>456 console positions (1097% increase)      |
| 2 million/month Push-To-Talks                                 | 11 million/month Push-To-Talks (PTT)<br>(450% increase)                         | 12 million/month Push-To-Talks (500% increase)                                  | 12,119,938 Push-To-Talks<br>(506% increase)                                         |
| 152 agencies with interoperable voice and data communications | 1,468 agencies with interoperable voice and data communications (866% increase) | 1,665 agencies with interoperable voice and data communications (995% increase) | 1,995 agencies with interoperable voice and data communications<br>(1213% increase) |
| 596 Multi-Jurisdictional events recorded in 2003.             | 1200 Multi-Jurisdictional events recorded in 2014                               | 1,446 Multi-Jurisdictional Events in 2017<br>(142% increase)                    | 1,660 Multi-Jurisdictional in 2019.                                                 |



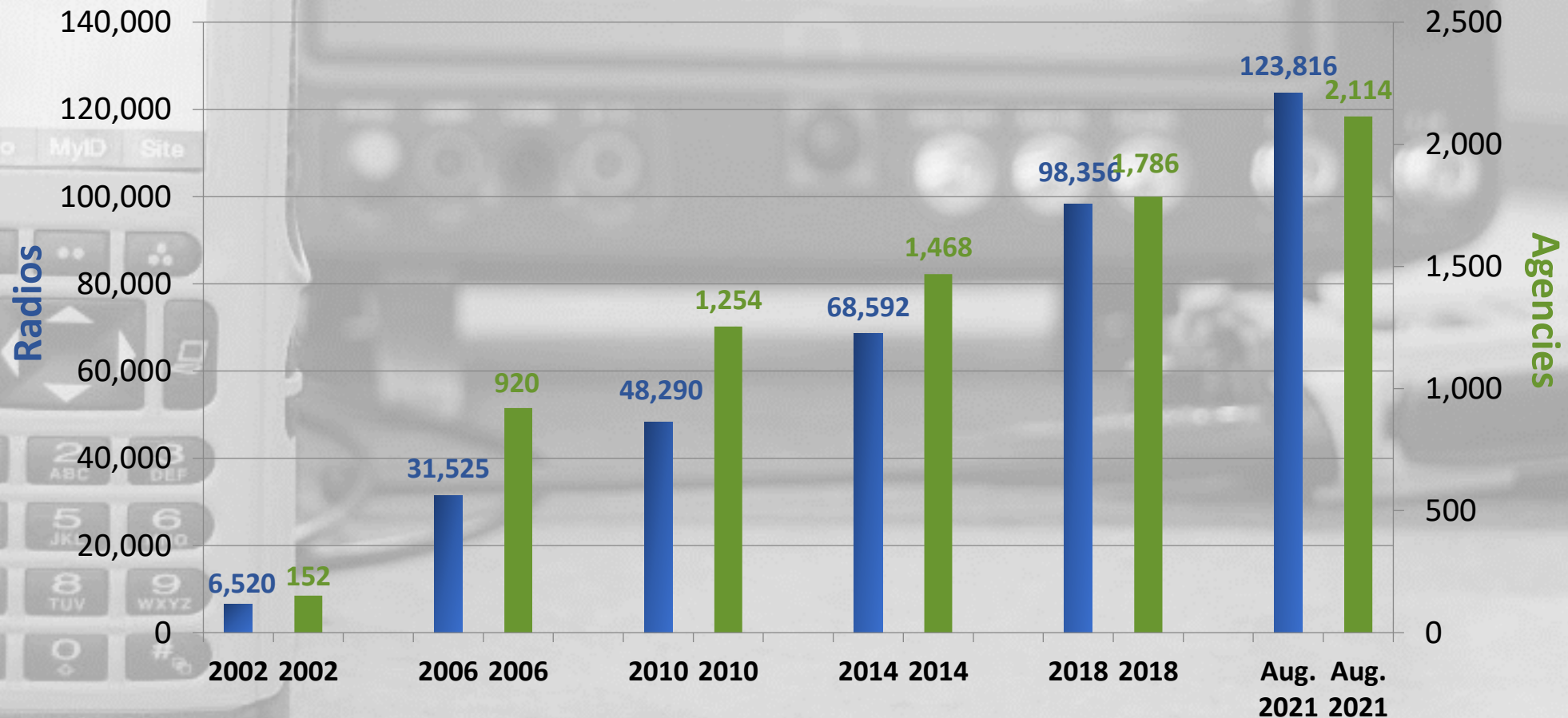


# MICHIGAN'S FORWARD - THINKING STRATEGY

## MPSCS + Partnerships = Interoperability

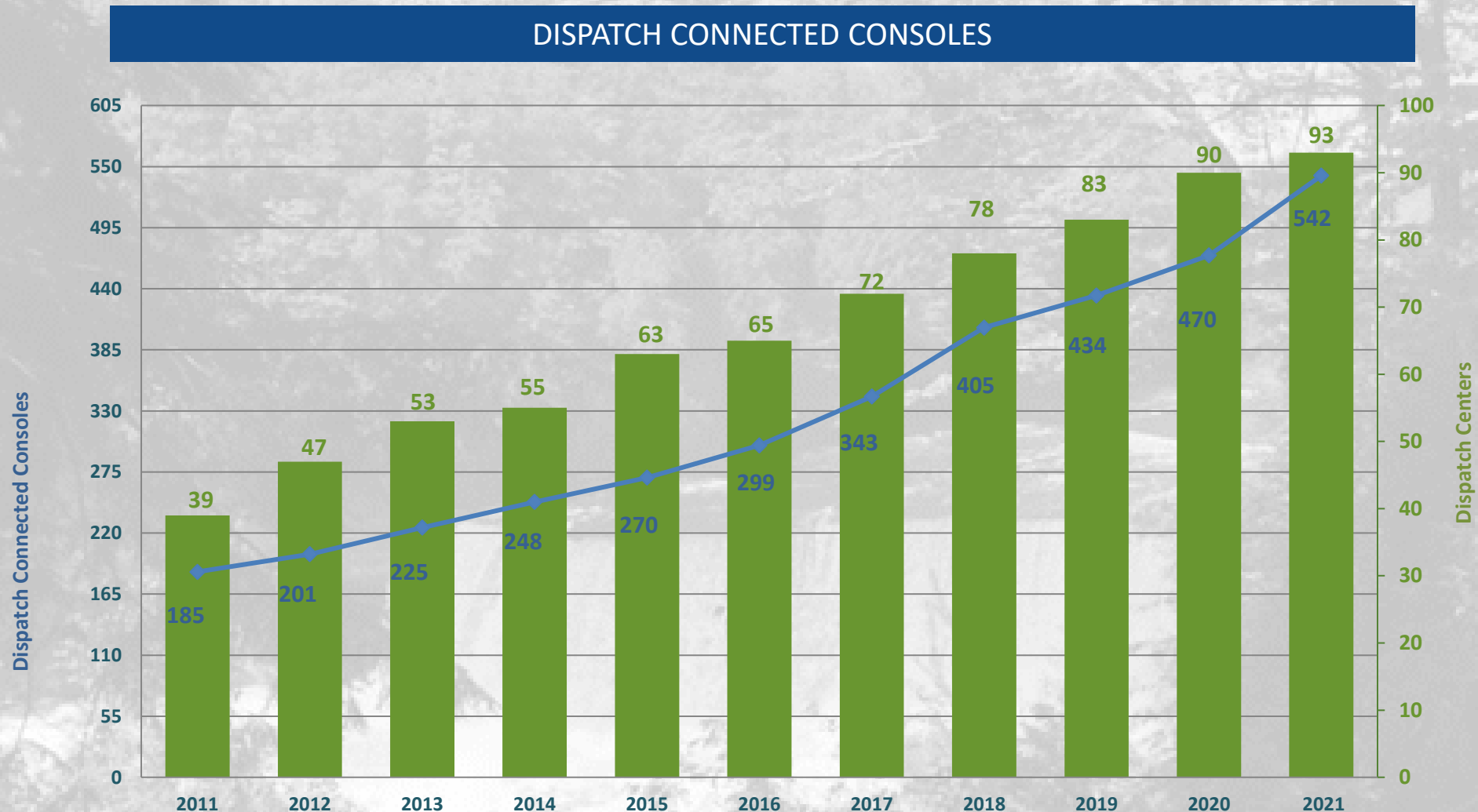


RADIO AND AGENCIES ON SYSTEM 2002-2021



# MICHIGAN'S FORWARD - THINKING STRATEGY

Voice + Data = Interoperability





# TECHNOLOGY EVOLUTION-TODAY

## MPSCS Paging Solution

- **8,344** Pagers LIVE on the system, and an additional **3,695** are pending
- Digital P25 audio is much clearer than narrow band analog fire paging audio
- Allows agencies to end maintenance responsibility and cost of a separate system
- Simplifies dispatcher process and reduces time needed to send critical messages

## TECHNOLOGY EVOLUTION-TOMMOROW

- P25 AVL







**Brad Stoddard, Director**

Michigan's Public Safety Communications System  
& Statewide Interoperability Coordinator (SWIC),  
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Office: (517) 284-4101



# Thank You

## **Brad Stoddard**

Director, Michigan's Public Safety Communications System  
(MPSCS) Statewide Interoperability Coordinator (SWIC)





# Montgomery County Texas P25 System Overview

Regional Sharing with the P25 ISSI  
COVID 19 Telehealth

**Justin Evans**

Radio Systems Manager

Montgomery County (Texas) Hospital District

# Proper Planning and Implementation

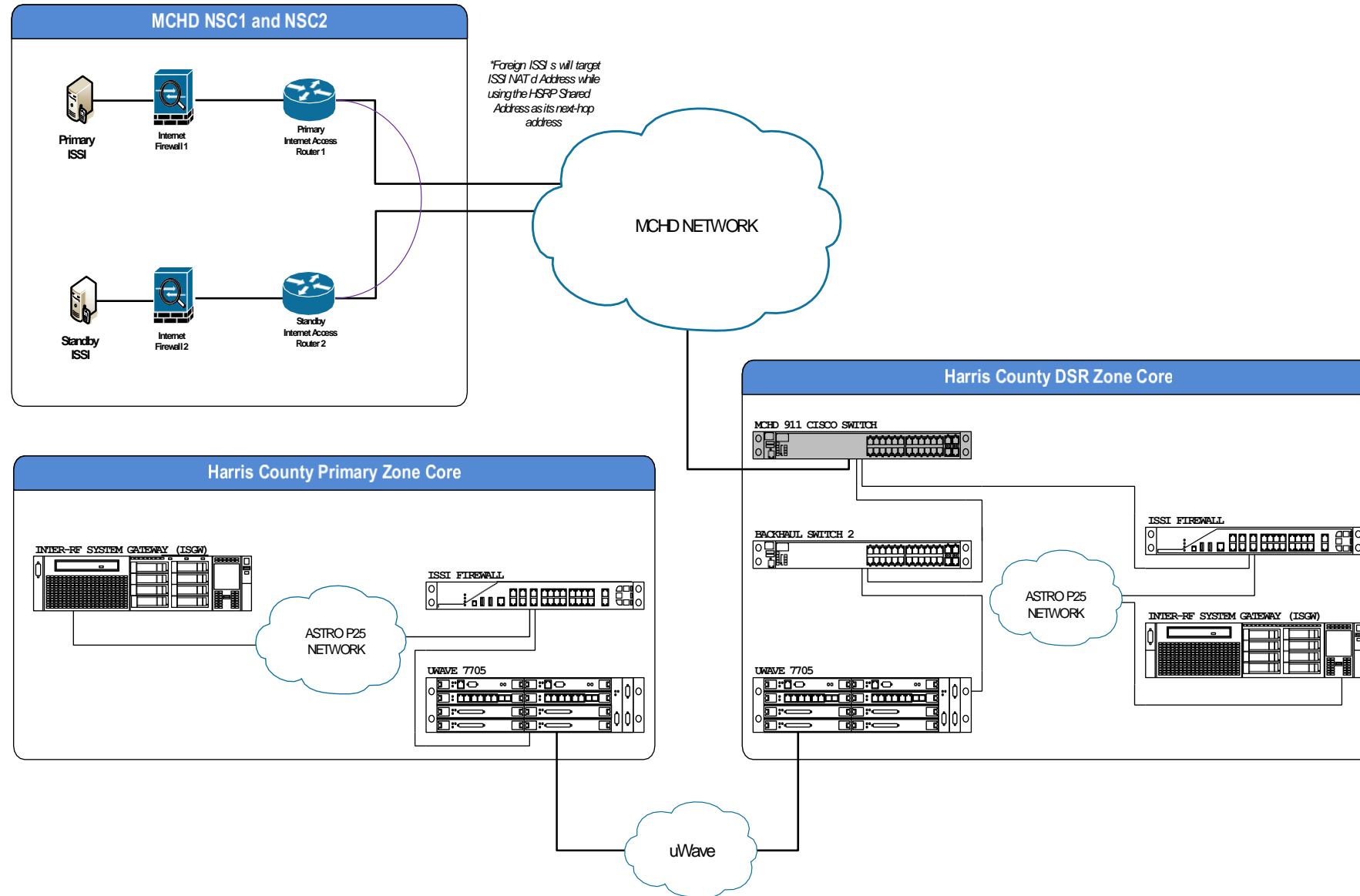


- Statewide ID plan
- Encryption Key Management
- Inter-local Agreements (ILA)/MOU



# MCHD/HC ISSI Network Layout

| REVISIONS |             |           |          |
|-----------|-------------|-----------|----------|
| REV       | DESCRIPTION | DATE      | APPROVED |
| A         | ORIGINAL    | 17-OCT-18 |          |
|           |             |           |          |

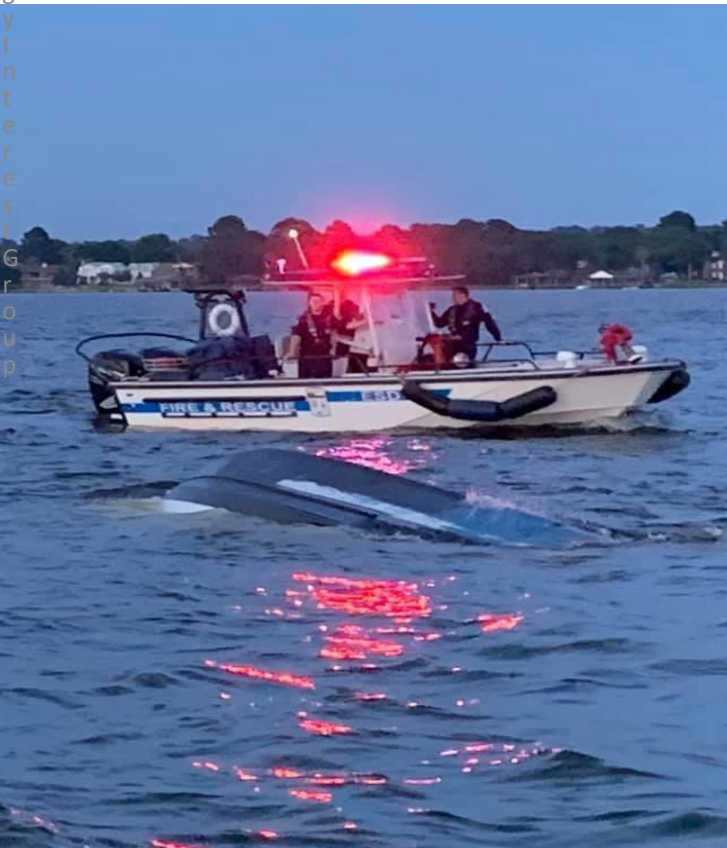


# Marine Operations

Public Safety Agencies (Local, State, Federal)

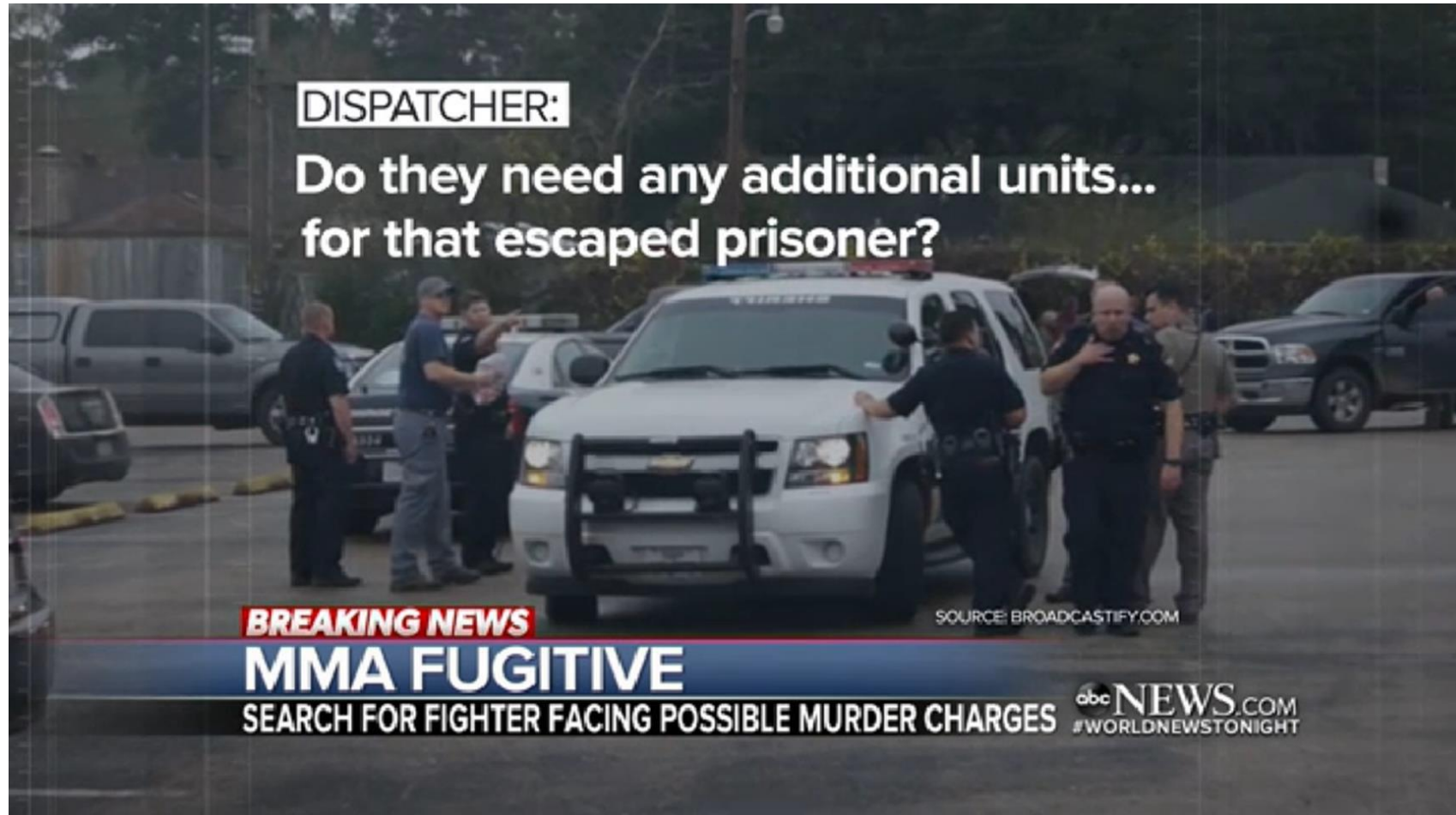


- P25 Inter System Interface ISSI
- AES 256-bit Encryption





# Unplanned Events





# Disaster Deployments



# COVID 19 Telehealth Deployment

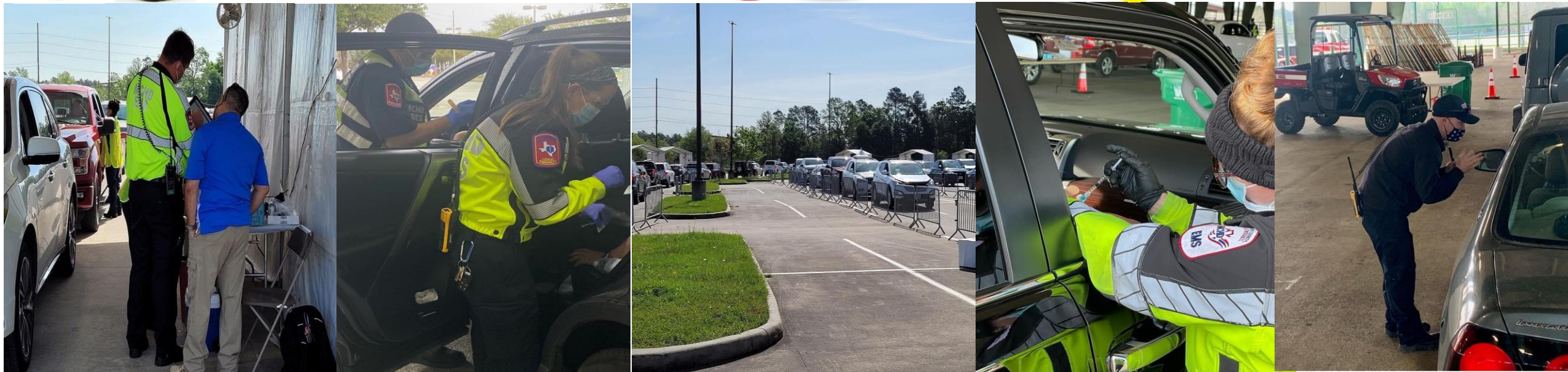


- P25/LTE Radio
- Our paramedics now have a communications hub as soon as they make patient contact. This gives them the ability to connect all of our patient care devices to the wireless access point located in the radio
- Our physicians to do a telehealth patient assessment real-time (transmit and review electrocardiograms (EKGs) and pulse/oxygen readings, and triage without having to transport patients)



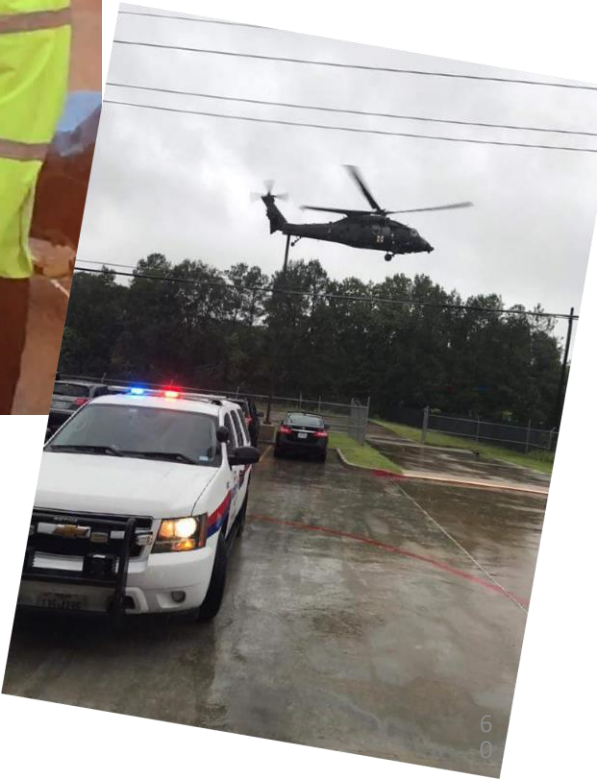


# P25 Communication During COVID-19 Vaccine Distribution





# P25 location services GPS



# Montgomery County Special Threat Response Plan Communications



## Implementation

- Adding new “COMMON” talk group to all PS radios in knob position #16
- Adding new “COM D” P25 conventional to all PS radios in knob position #15
- Adding 14 MIR (Major Incident Response) talk groups to all PS radios
- Using same AES 256 Encryption key on all new talk groups/channel except MIR 1-3



# New Talk Groups/Channels in PS Radios



| <u>ZONE 73(MCHD)</u> | <u>Encryption</u>  | <u>ZONE 74(TxWARN)</u> | <u>Encryption</u>  |
|----------------------|--------------------|------------------------|--------------------|
| MIR_01               | CLEAR              | MIR_01                 | CLEAR              |
| MIR_02               | CLEAR              | MIR_02                 | CLEAR              |
| MIR_03               | CLEAR              | MIR_03                 | CLEAR              |
| MIR_04               | AES 256 Encryption | MIR_04                 | AES 256 Encryption |
| MIR_05               | AES 256 Encryption | MIR_05                 | AES 256 Encryption |
| MIR_06               | AES 256 Encryption | MIR_06                 | AES 256 Encryption |
| MIR_07               | AES 256 Encryption | MIR_07                 | AES 256 Encryption |
| MIR_08               | AES 256 Encryption | MIR_08                 | AES 256 Encryption |
| MIR_09               | AES 256 Encryption | MIR_09                 | AES 256 Encryption |
| MIR_10               | AES 256 Encryption | MIR_10                 | AES 256 Encryption |
| MIR_11               | AES 256 Encryption | MIR_11                 | AES 256 Encryption |
| MIR_12               | AES 256 Encryption | MIR_12                 | AES 256 Encryption |
| MIR_13               | AES 256 Encryption | MIR_13                 | AES 256 Encryption |
| MIR_14               | AES 256 Encryption | MIR_14                 | AES 256 Encryption |
| COM D                | AES 256 Encryption | COM D                  | AES 256 Encryption |
| COMMON               | AES 256 Encryption | COMMON                 | AES 256 Encryption |



# Thank You!

**Justin Evans**

Radio Systems Manager

Montgomery County (Texas) Hospital District



# Prince William County VA

## P25 System Overview

### Regional Sharing and Interoperability

**Eddie Reyes**

911 Director

Prince William County VA



# **P25 on Steroids:**

## **How to Get the Most Out of Your P25 System**

Director Eddie L. Reyes

Prince William County, VA

Department of Public Safety Communications

September 2021



## Prince William County, VA

### Public Safety Communications Center

- Part of the National Capital Region (DC, MD, VA)
- Population ~500,000
- ~350 square miles
- 33-seat Center
- Prince William County: ~700 law enforcement officers | ~700 fire/rescue personnel
- 3 Police Districts / Stations | 26 Fire Stations
- Mutual aid is often hourly with four large neighboring municipalities
- Participant in the National Capital Region's CAD-to-CAD Consortium
- Police and FRS vehicles have AVL that is integrated to CAD
- Provides 9-1-1 service for six (6) municipalities:
  - City of Manassas
    - PWC dispatches for their Fire Department
    - Only receives landline 9-1-1 calls
  - City of Manassas Park
    - PWC dispatches for their Fire Department
    - Only receives landline 9-1-1
  - Towns of Dumfries, Haymarket, Occoquan & Quantico
    - Has no 9-1-1 or Fire | Rescue service
    - Dispatch for their police officers
    - PWC FRS responds to all their fire and rescue calls for service





## Prince William County, VA 2020 Metrics

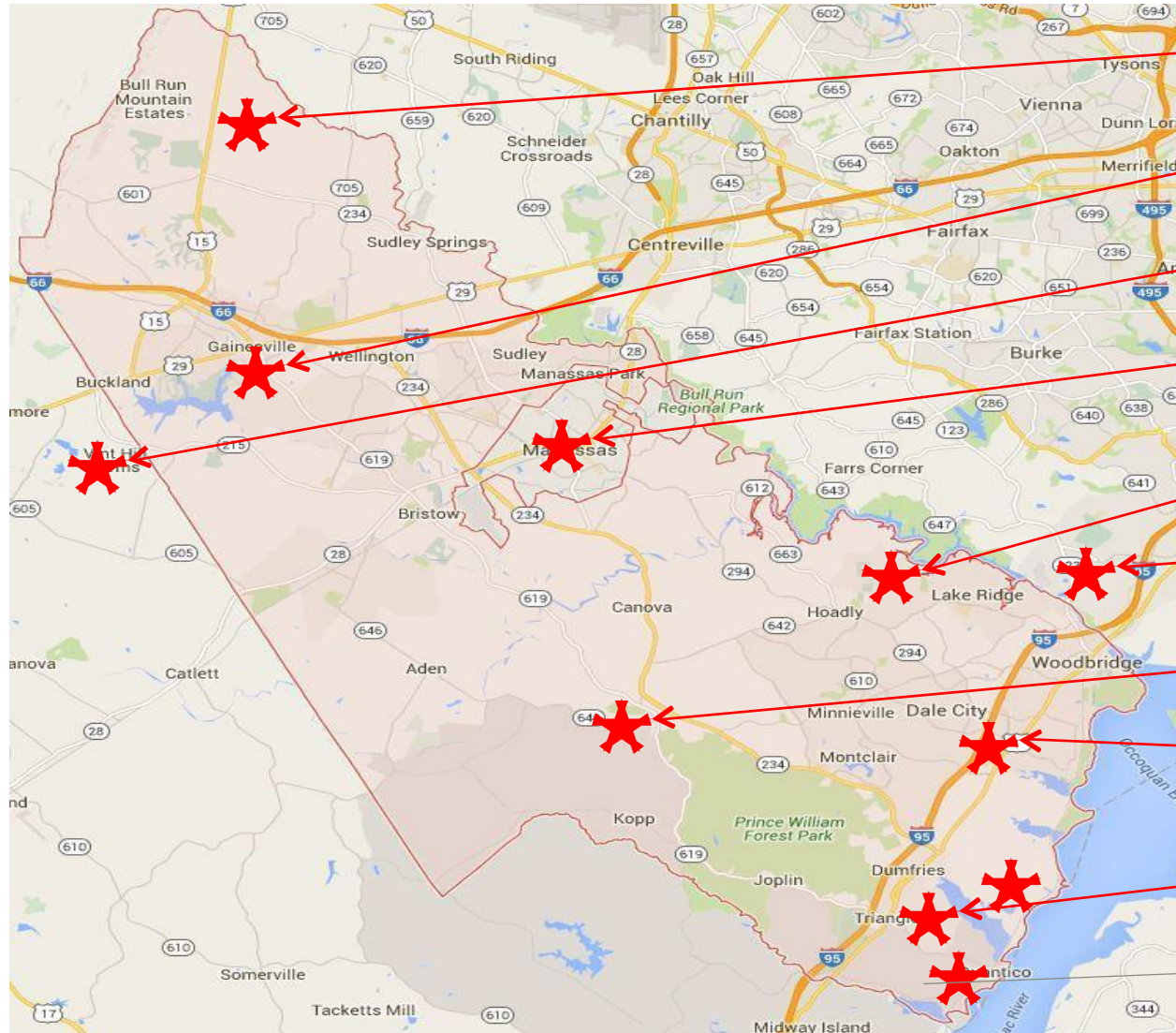
- Text-to-911 capability (37 calls for service)
- ~134,500 wireless 9-1-1 calls
- ~20,600 landline 9-1-1 calls
- ~390,300 non-emergency calls
- ~545,400 total calls
- ~164,700 outbound calls annually
- ~3,700 foreign language calls for service (Spanish, Farsi, Korean)
- ~257,250 Police dispatched calls
- ~47,300 Fire & Rescue dispatched calls
- ~2,100 impounds per month = ~1,800 private | ~300 police
- 24x7x365 coverage – 1 manager | 3 supervisors | ~20 telecommunicators
- 12-hour shifts: 0600 to 1800 | 1800 to 0600



## Radio System Information

- Prince William has a 7.19 Motorola Trunked Simulcast System.
- 17 radio channels (Channels 14, 15, 16, and 17 are TDMA).
- Total of 10 radio sites
- Three VHF Fire Paging Base Stations
- Microwave links is the backhaul to all radio sites.
- Estimated 4,500 Subscribers.

# Prince William County Sites / Towers



■ Camp 26

• OCR

• Vint Hill

• Manassas

• McCoart

• Lorton

• Indep. Hill2

• Gar-Field

• Oakmont

• Cherry Hill



# Radio Towers

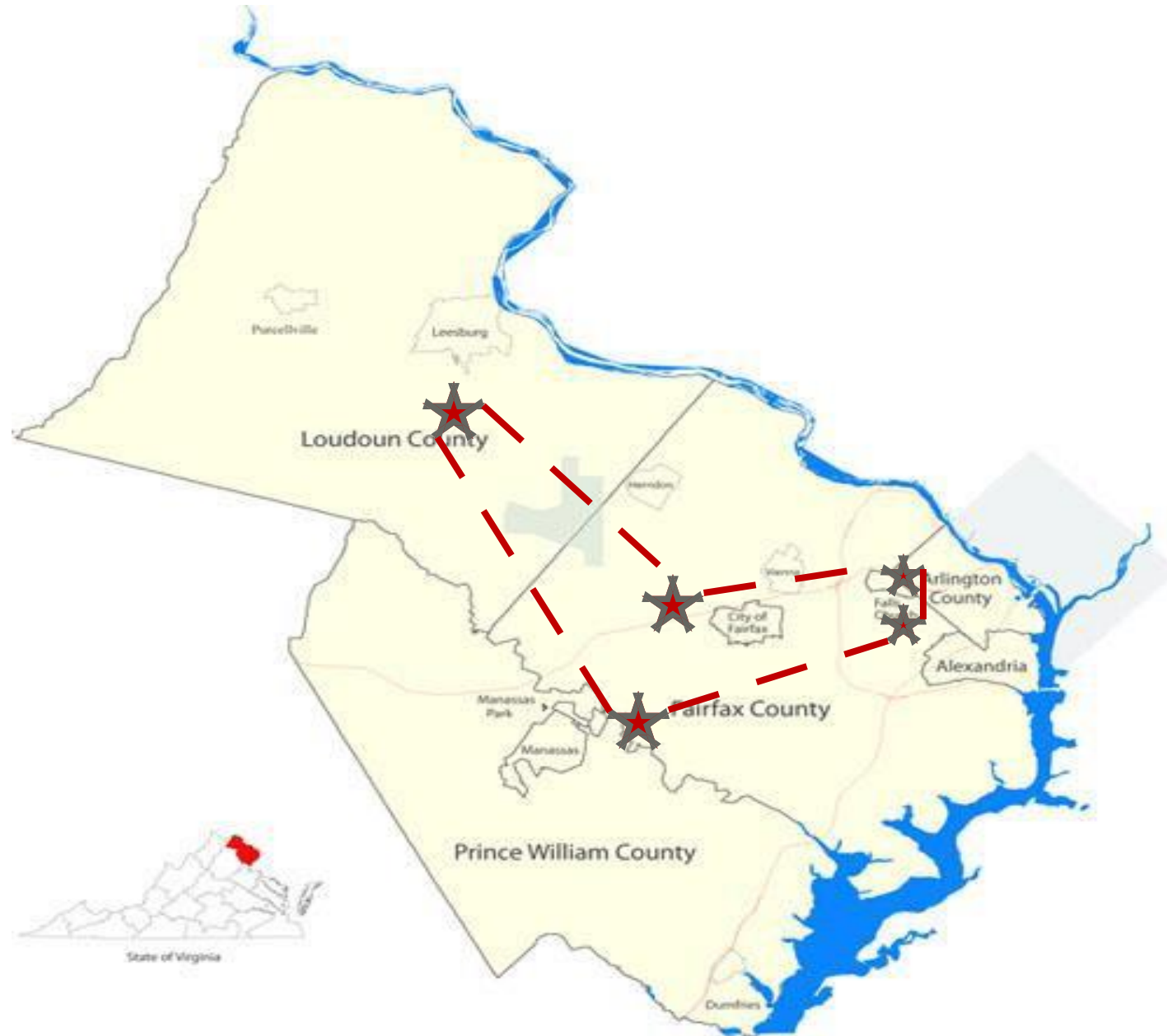


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Project 25 Technology Interest Group

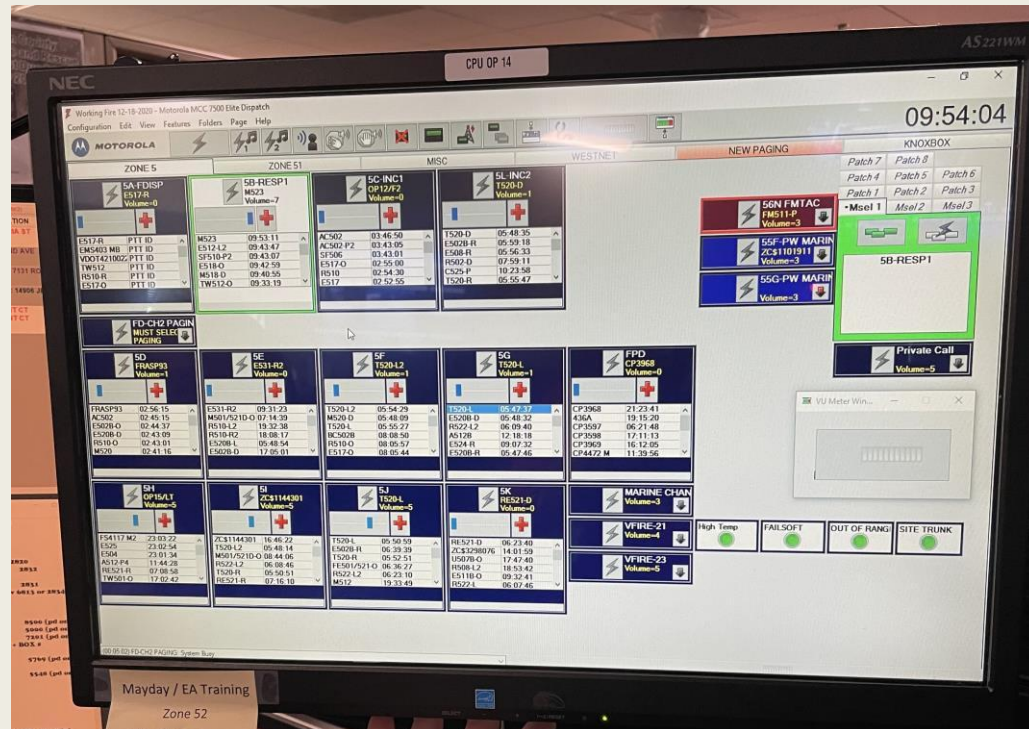


# Northern Virginia ISSI Layout





# Hardware



Dispatcher's Console



Police Portables APEX 6000



Fire Portables APEX 7000 (800/VHF)



Mobile Radios APEX 6500 (Police)  
7500 For Fire (800/VHF)



## Granular LMR Stats

- Monthly AVG LMR system use is ~16.38%
- Monthly AVG MAX LMR system use is ~30.57%
- This data is including conventional and GPS information. Data is higher because of GPS.
- Site channels are monitored for PTTs and each talk group (20 total ) is monitored for hourly use
- Average 4.5 million PTTs per year (Police | Fire | Schools | Public Works)
- Test Failure of Prime Site LAN Switch 1 at GEO-Prime Site
- 3,300 portable | mobile subscribers eligible on system – 2,000 Fire | 1,300 Police



# Elements that make your P25 System a "P25 System on Steroids"



- System Management – triple layer maintenance
- Encryption practices – follow national encryption plan and use national keys
- Single site simulcast
- Dynamic geo prime site with automatic dynamic recovery site
- ISSI Capable – roaming in a “system-of-systems”
- OTAR Capable – dynamic over air rekeying of encryptions keys
- OTAP Capable – currently using kiosk configuration.
  - Planning dedicated WIFI hotspots @ police and fire stations for programming in the field 24x7
- Pre-Programmed neighboring systems into all subscribers for interoperability and redundancy



# Thank You!

**Eddie Reyes**

[ereyes@pwcgov.org](mailto:ereyes@pwcgov.org)

**703-792-7146**

911 Director Prince William County VA

# P25 Basics Video



<..\..\..\P25 VIDEOS\Basics of P25 10Nov2020.mp4>



**International Wireless and Communications Expo  
Las Vegas, Nevada  
September 30, 2021**



# P25 on Steroids



**[www.project25.org](http://www.project25.org)**