

L3HARRIS
FAST. FORWARD.

Public Safety Radio Upgrade – P25 File ID: 23-0993

December 2023



L3Harris Technologies, Inc. - 6th largest worldwide

- \$20B Military Contractor
 - Integrated Mission Systems
 - Space and Airborne Systems
 - Aerojet Rocketdyne
 - **Communications Systems**
 - **Public Safety Personal Communications – Federal/State/Municipal**
 - **Police**
 - **Fire**
 - **EMS**

Jeff Olson – Director of Sales

- Over 25 years in wireless and telecom
- 17 years working in with local and state government
- 5 years with L3Harris
- Passionate about partnering with our first responders

Jack Scully – Area Sales Manager

- Over 40 years in wireless communications
- Over 25 years experience with top three Land Mobile Radio manufacturers
- 15 years in wireless test and measurement

Today's Agenda



CURRENT SYSTEM

- OpenSky® - EOL
- 8 sites
- Multicast – site handoff congestion

UPGRADE SYSTEM/BENEFITS

- P25 newest tech, the industry standard
- Simulcast with unnoticeable Site-roaming
- Balanced RF signal and in building coverage

TEN-YEAR BUDGET SECURED

- Everything radio covered for ten years
- Only changes will be additions/deletions mutually agreed upon



Current System Facts



- 15-year-old OpenSky system
- Technologically at end of life
- Equipment sun-setting or not available
- 8 RF Tower sites



OpenSky

P25 is a Technology Standard



OCTOBER 1989 APCO PROJECT 25

- APCO the Association of Public-Safety Communications
- NASTD, NTIA, NCS, NSA & DoD
- Department of Homeland Security
- Coast Guard
- National Institute of Standards and Technology (NIST)
- Office of Law Enforcement Standards was established to decide the priorities and scope of technical development of P25.[4]



L3Harris' P25 architecture is built upon open standards – all the P25 features in the standard are designed to function to their fullest regardless what radio being used.

The Time is Now



WE BEGAN OVER THREE YEARS AGO!

R19-209 Approved:

- Upgrading PSAP consoles to P25
- Upgrading core servers to P25

This Step:

- Upgrade RF Tower Sites and Radios

The “Core” servers support both OpenSky and P25 modes allowing for an easy migration.

Migration “Sweet-spot” – Core Servers support both standards



OpenSky

COMPLETE
TODAY!

P25



P25 Coverage and System Design



OUTDOOR

95%

of the area or better

95% of the outdoor area or better is covered

Extends past the city limits

Blankets outdoor users

INDOOR

95%

of the area or better

95% of the indoor area or better is covered

All identified and required buildings

- Hospitals
- Schools
- Key venues
- Etc.

INTERFERENCE

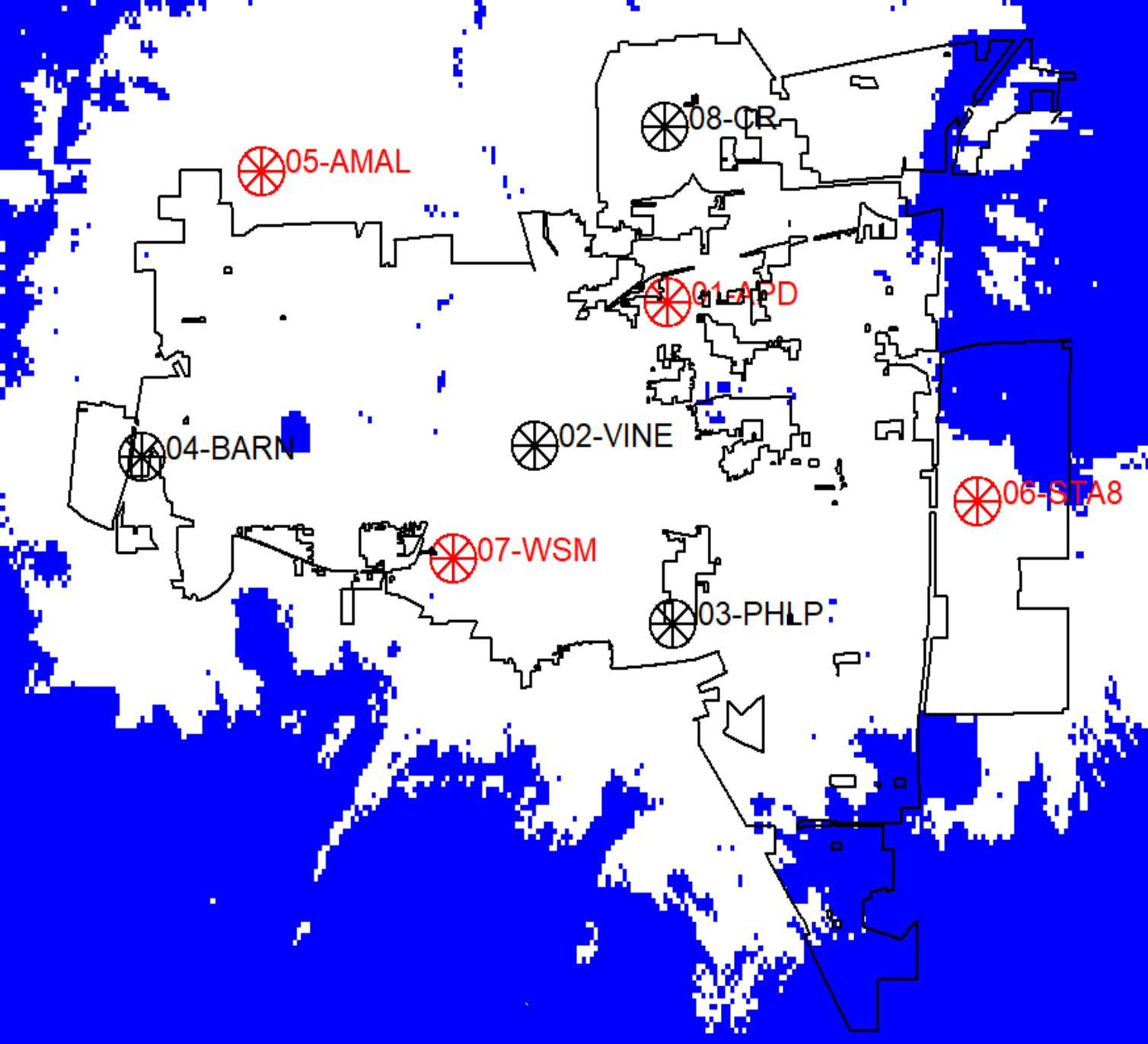
100%

FCC compliance

100% of FCC compliance on everything including:

- Licensing
- Frequencies
- Power levels
- Antenna heights
- Microwave backhaul

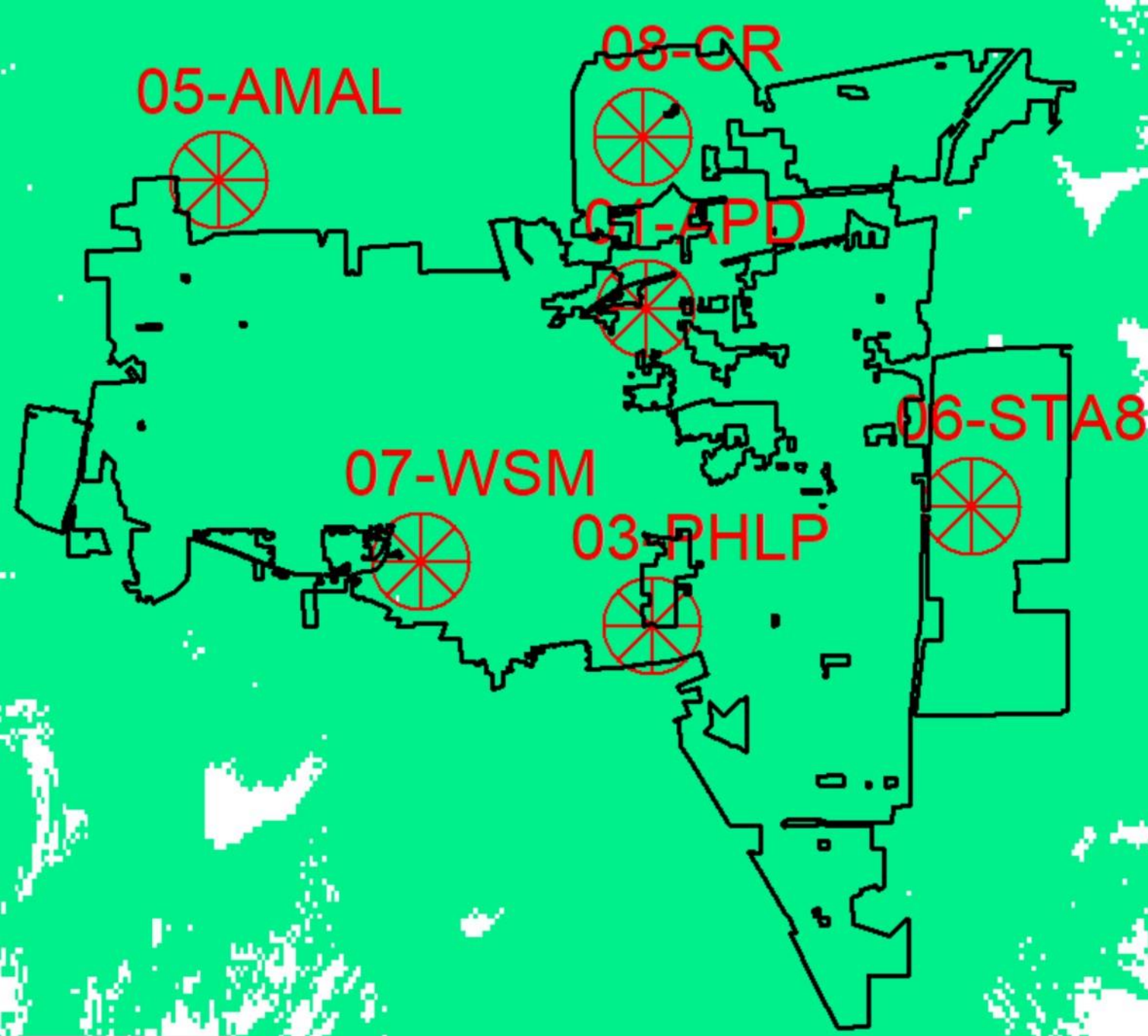
Ready for future growth



8 SITE DESIGN

Map at left shows
Aurora OpenSky
indoor coverage today.

- White area denotes the area in coverage
- 18dB portable talkback



P25 Indoor



6 SITE SIMULCAST DESIGN

Map at left shows **new P25 700 MHz** portable talkback.

- Green area denotes the area in coverage
- Portable Indoor Coverage (20dB)
- DAQ 3.4, 95% reliability
- 95% coverage

- Green area denotes the area in coverage

- Green area denotes the area in coverage

Two Ways to Get There



AL LA CARTE

- Upgrade current infrastructure
- Purchase new radios
- Continue current system maintenance plan
 - FX, SUMS
- Refresh infrastructure
- Refresh radios

THIS IS WHAT WE DO TODAY

EACH STEP is a separated procurement

- Funding required for each procurement
- Large-dollar items challenge the process
- Not easily budgeted or financed over time

MANAGED SERVICES

- **Requested by the City of Aurora** & requires only a one-time negotiation process
- Includes: Infrastructure, new radios, annual maintenance, infrastructure refresh (x2) and Premium technical support
- Budget set for life of contract (10+ years)
- No surprises

THIS IS A REAL OPPORTUNITY

Enjoy a lower Total Cost of Ownership while achieving mission-critical performance from your radio and broadband devices, systems, and infrastructure. **EVERYTHING** is included.

P25 Managed Services



FIRST RESPONDERS

Police Department

- Interoperability
 - Easily communicate with other outside agencies
- Capability
 - Cameras
 - Sensors
 - Broadband Hub
 - Situational Awareness
- Cybersecurity
 - Secure media & stop criminals

Fire Department

- Interoperability
 - Easily communicate with other outside agencies
- Capability
 - SCBA
 - Telemetry
 - In building location
 - Situational Awareness
- Cybersecurity
 - Secure media & stop criminals

OPERATIONS

Information Technology

- Open standard
- Current technology
- Cyber security
- Integration to current platforms

Management

- Users are content
- Focus on city, not radios
- GPS first responder tracking
- Media management, encryption
- Cybersecurity
 - Media
 - Criminals

FINANCIALS

- Eliminate CAPEX model with Managed Services OPEX model
- Predictable budgeting next 10+ years
- Shift Capex to Opex-low maintenance
- Cost reductions
 - Number of sites reduced by half
 - Maintenance of entire system
 - Equipment economy of scale
- Cost avoidance
 - Cost for 4 sites
 - Real estate repurposed-new revenue opportunity
- Interest-free financing

What does Migration to P25 Managed Services mean to Aurora besides better coverage?

10-year Total Cost of Ownership Savings



Current 10 Year Spend to Date = ~\$18,000,000

- Less radios in the current fleet than today
- Only 1 High-Availability Core supported by Aurora
- Didn't take into account record high inflation

Next 10 years AL LA CARTE program = \$21,674,896

- This is what we do today
- Standard services year to year
- Each step separate procurement

New 10-Yr. MANAGED SERVICES = \$15,900,000

- Includes:
 - Complete infrastructure upgrade
 - New, additional radios
 - Licenses for new technology and functionality (BeOn® and ISSI)
 - Complete independent core upgrade
 - Batteries and accessory change-outs
 - Two hardware refreshes (Year 1 & Year 6)



Long term plan



Years 1-2	Years 3-4	Years 5-6	Years 7-8	Year 9	Year 10
Upgrade current radios to P25 Program to surrounding agencies Install P25 Infrastructure upgrade All Radio Tower Sites	New radios with LTE/Cellular footprint Remote Wi-Fi radio updates Complete infrastructure upgrade Enhanced security	Second system upgrade P25 Services and Security updates Cybersecurity patches	Update entire mobile fleet/new radios Software update on all third-party system components Batteries Speaker microphones Antennas	Cybersecurity Network Operations Center (NOC) Preventative maintenance	Obsolescence Batteries Speaker microphones Antennas

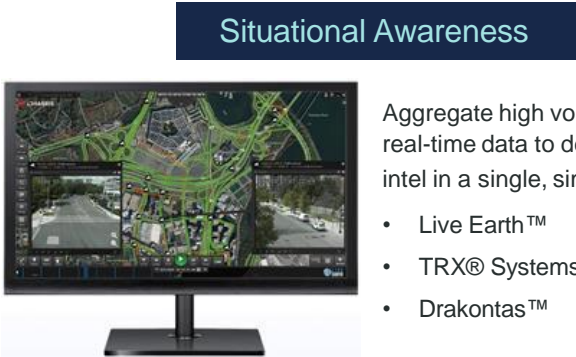


P25 ISSI & Software Upgrades



Cybersecurity

- VIDA StatusAware™
- Key Management Facility
- Cybersecurity Server
- Defense Center
- Network Intrusion Detection and Firewall
- ISSI/CSSI
- HMA



Situational Awareness

- Aggregate high volumes of real-time data to deliver actionable intel in a single, simplified interface.
- Live Earth™
 - TRX® Systems
 - Drakontas™

10-year Managed Service Plan



COVERS EVERYTHING RADIO

- Infrastructure
- Radios
- Batteries, antennas, speaker mics
- Installation
- Engineering services
- Testing
- Maintenance
- Program manager
- Service
- HW and SW equipment refresh
- Third-party Software maintenance
- Managed by L3Harris Aurora Service Shop

EXPERIENCE

- Lock down budget for 10 years
- No going back to ask for additional funds
- Transparency to City Council
- Framework of expectation well defined
- One throat for local choke
- Yearly evaluation
 - System
 - Technology
 - Contract
- Worry about other priorities

1	2	3	4	5	6	7	8	9	10
\$3,500,000.00	\$6,045,460.88	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39
Infrastructure	Infrastructure Radios	Radios	Radios	Maintenance	Refresh Maintenance	Maintenance	Maintenance	Maintenance	Maintenance

\$15.9 million covers all-things radio for 10 years!

Grant Assistance Program through Lexipol



L3HARRIS RADIO GRANT ASSISTANCE PROGRAM

L3Harris is ready to support you throughout the grant funding process. From grant research to resources, and alerts to application reviews, we've partnered with a team of grant consultants who provide FREE customized assistance to help you fund your next communications system.

When approaching how to fund your system, it's most effective to encompass the entire life cycle in three phases:

ACCESS PROFESSIONAL GUIDANCE TODAY

Visit [L3Harris.com/GrantSupport](https://www.l3harris.com/GrantSupport) for more information about how we can help you.



Planning and Design Phase

Is critically important since it influences the overall system cost. Short and long-term needs are determined and financial risks are reduced.



Procurement and Installation Phase

Is capital intensive for a short period of time and becomes a capital appropriation.



Operations and Maintenance Phase

Involves the day-to-day functioning of the communications system. Funding sources are through the agency's budget and dedicated to daily operations.



Key Project Points : Simpler Migration, Lower Total Cost of Ownership



- L3Harris : a proven city partner with Aurora Service Shop for more than 12 years
- L3Harris : closely in-tune with city and the needs of its users
- A P25 Communications system architected for Aurora's needs & not a 'part of' someone else's
- Significantly shorter and easier migration path
- Direct fixed control of costs and OPEX expenses, i.e., no surprises, unplanned or escalating costs
- Already significantly invested in technology, infrastructure and migration
- Significant reuse of existing subscriber radio accessories with newer radios – helping control cost

Questions?



Appendix



Summary : A System for Aurora



A system architected, implemented and maintained by and for Aurora—not a part of someone else's system

Consoles and Cores are complete


Guaranteed coverage designed for Aurora

COMPLETE control of:

- Coverage
- Costs
- Users
- Security preferences
- Migration path
- Service and maintenance

Total Aurora Savings Over 10-year Period



										
Description	RF Site 1-6 Software Upgrade		807 Portables			Upgrade/Obsolescences Protection				
	Year 1 (2024)	Year 2 (2025)	Year 3 (2026)	Year 4 (2027)	Year 5 (2028)	Year 6 (2029)	Year 7 (2030)	Year 8 (2031)	Year 9 (2032)	Year 10 (2033)
Managed Service (Traditional Maint.)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Engineering Services/Program Mgn.	✓	✓				✓				
Cybersecurity Audit Services	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RF Sites Equipment (1-6)	✓	✓								
RF Implementation Services Sites (1-6)	✓	✓								
Portable Radios (807)		✓								
2 NEW High Availability Cores	✓	✓								
ISSI Plan and Integration	✓									
ISSI Plan Services Implementation	✓	✓								
557 Portable Software P25 Licenses	✓	✓								
Microwave Implementation/Maint.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Portable Battery Program	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Obsolescence's Protection	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Network Operations Service (NOC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3rd Party Maintenance Agreements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Security Updates (4xs a Year)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Software Updates (RF, Core, Consoles)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Annual Preventative Maintenance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Planned Network Upgrade	✓					✓				
Target Managed Services Price Annually	\$3,500,000.00	\$6,045,460.88	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39	\$794,317.39
Total Managed Services	\$15,900,000									

* Contract price is 26% off of equipment

Total 10 Year Ala-Carte Contract Price & Standard Maintenance	\$21,674,896
Total Managed Services 10 Year Price	\$15,900,000
TOTAL Savings	\$5,774,896
Average Managed Service Savings Per Year	\$577,489.61

= Critical P25 Migration Deliverables

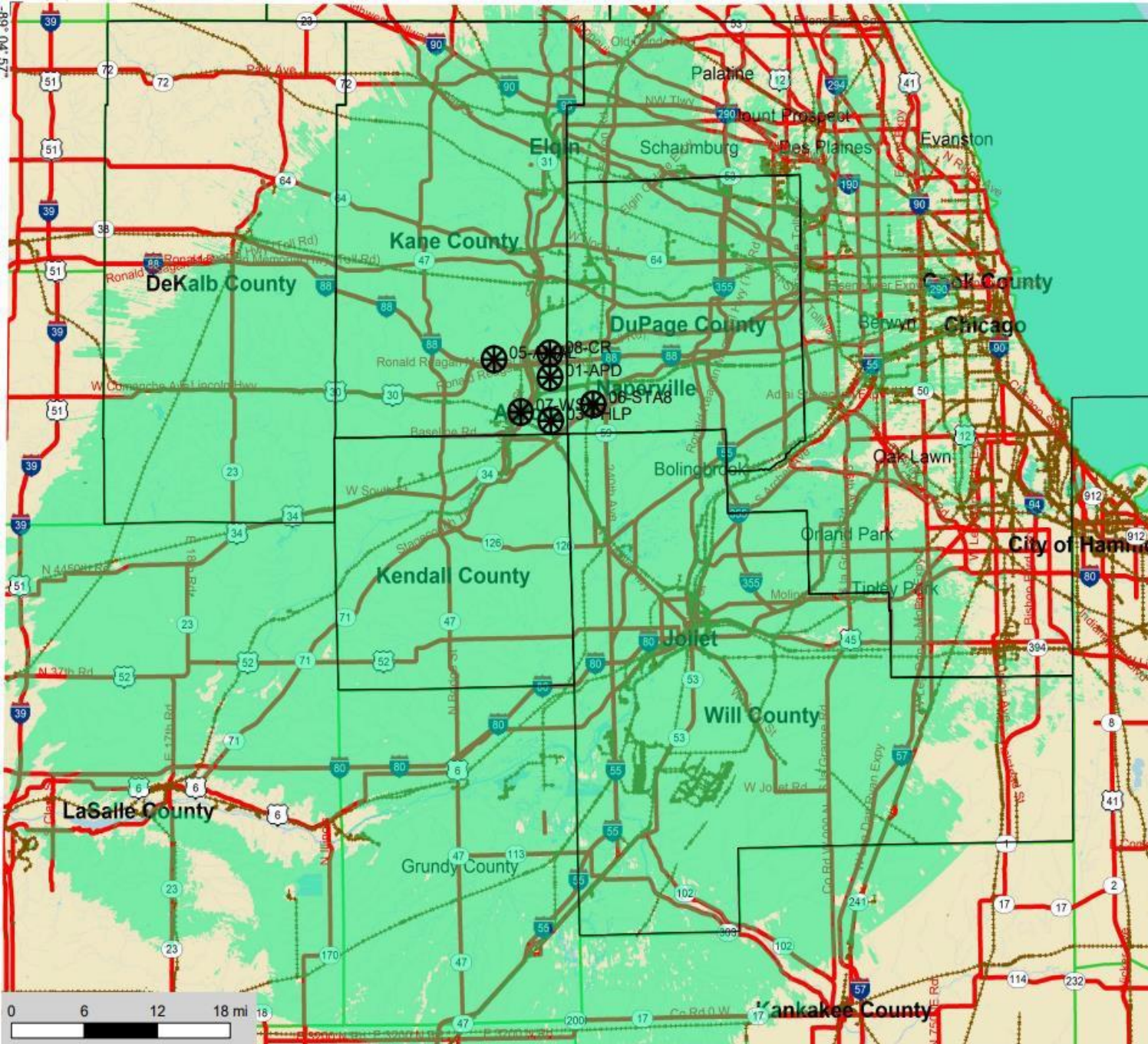
Savings of Over \$577k Annually!

P25 Mobile Talkback



Map at left shows **new P25 Mobile Radio** talkback in the areas surrounding Aurora.

- Green area denotes the area in coverage



Upgrade to P25 simulcast system



Reduces operational cost

- Reduces sites from 8 to 6
- Less equipment to maintain
- Recover 2 site locations for other use

Improves performance

- Better coverage – 20db indoor
- Better - more efficient digital technology
 - Multiple message copies
 - Message recovery
- Enhanced interoperability
 - System to system – ISSI
 - P25 radios program to any system

Cyber Security enhanced

- Media control thru encryption
- Internet breach control

Coverage extends well beyond city limits

- Neighboring agencies candidates for joining Aurora
- Business opportunity generating revenue



Interoperability in Detail



AURORA HAS MANY AGREEMENTS IN AFFECT TODAY!

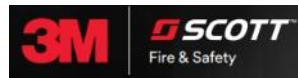
- P25 system-to-P25 system
- P25 will allow your radios onto other systems and other system radios onto yours if desired
- P25 ISSI allows users to roam away onto other P25 Systems and communicate back to home where-allowed
- Fully interoperable within city limits of Aurora and Naperville – no roaming – as is today (if partnership is maintained)
- MOU agreements with Interop partners
- Direct or thru the cloud, **Mutualink**
- Starcom 21:
 - DuPage County
 - Cook County
 - Kane County
 - and Elgin City

P25 Supports New and Developing Technologies



The Mission Critical Alliance is a partner program for best-of-breed technology solution providers to openly collaborate to advance the capabilities, compatibility and security of mission critical solutions.

Your system-solution is designed with **best-in-class** technologies – not a costly one-brand-choice design



READY



(Intrado interface to CAD not LMR)



Status with Naperville moving forward



Currently sharing backup core

- One core at Aurora

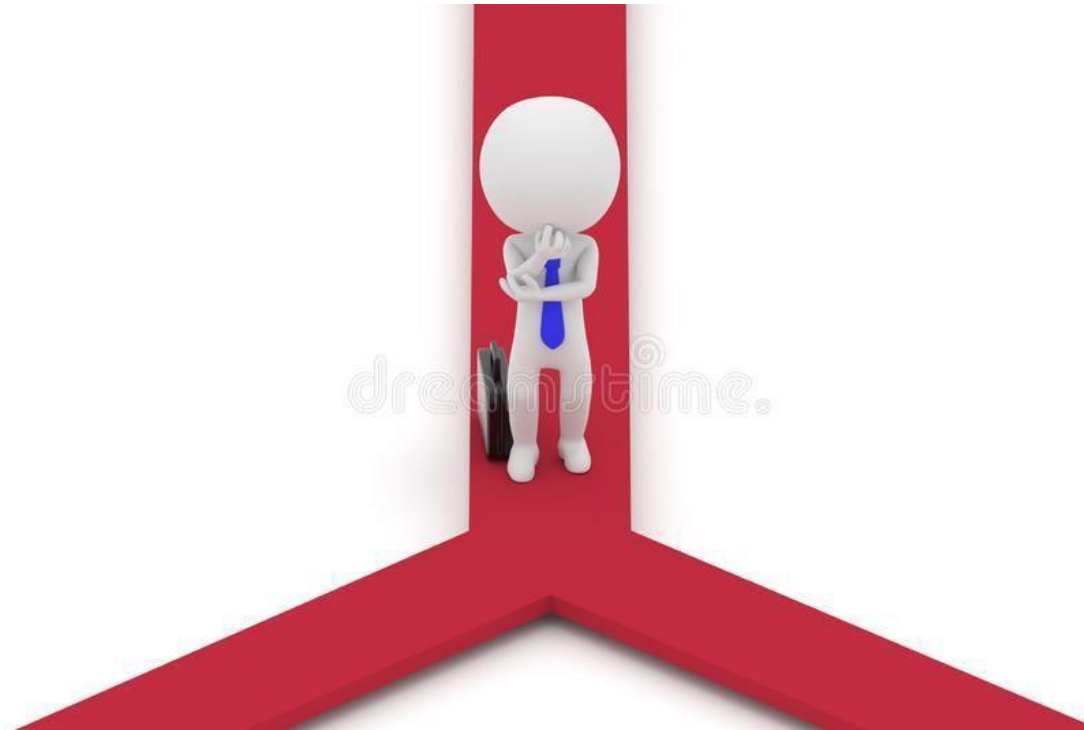
- One core at Naperville

Can manage upgrade with same arrangement

Will save on cost of backup core

Will save on maintenance of backup

Aurora can go either way



Managed Services Value



Additional
Managed Services
Offerings Included



	Standard Current Maintenance Services	MANAGED SERVICES	MANAGED SERVICES VALUE
Premium Technical Support (PTS) – 3rd Party Maintenance Agreement		✓	Reduce risk of 3 rd party support not covered
Security Update Management Services (SUMS*)	✓	✓	
Software Managed Services (SMS)	✓	✓	
SMS Installation Service	✓	✓	
Repair and Return Services	✓	✓	
Annual Preventive Maintenance	✓	✓	
SUMS* Installation Service	✓	✓	
System Planned Network Upgrades		✓	Reap benefits of latest features and functionality
Annual Microwave Preventative Maintenance	✓	✓	
Mobiles and Portable Corrective Maintenance	✓	✓	
Microwave Corrective Maintenance Support	✓	✓	
Weekly system Maintenance Report	✓	✓	
On-Site Corrective Maintenance	✓	✓	
Network Equipment Obsolescence Protection		✓	Remove risk of being without HW/SW & security patch support
Rapid Response SLA (2 hour on site)	✓	✓	
Network Operations Center (NOC) Monitoring	✓	✓	
Enhanced Annual Preventative Maintenance		✓	Reduce system and equipment failures
Cybersecurity Assessments		✓	Reduce the risk of being attacked
VIDA Secure Sentry & Installation		✓	
RF Site Equipment and Program Installation		✓	Increase coverage and network reliability
Portable Radio Fleet Refresh/Battery Program		✓	Increase reliability and Feature rich radio
Mobile Radio Fleet Refresh		✓	Increase reliability and Feature rich radio
Symphony Dispatch Console Refresh		✓	Increase reliability, performance, & functionality
ISSI Implementation Program		✓	Link for communicating with surrounding communities
P25 Software Licenses for Interop			Interoperability with surrounding communities

Upgrade Rollout Plan



3-4 MONTHS	6-9 MONTHS	9-12 MONTHS	12-18 MONTHS
Fixed Firm Proposal <ul style="list-style-type: none">• Site surveys• System design• Performance specifications• Acceptance test procedures• Cost Contract Negotiation <ul style="list-style-type: none">• Customer design review• Coverage and acceptance testing• Schedule confirmation• Cost• Contract signing• Order equipment	Factory Stage & Test <ul style="list-style-type: none">• Fully tested and documented with Aurora• Shipped to Aurora Upgrade Sites to P25 <ul style="list-style-type: none">• Grounding• Generators• Microwave	Transition <ul style="list-style-type: none">• Program radios• Install and distribute• Training for users and administration• Managed transition to P25 from OpenSky	Acceptance Test for <ul style="list-style-type: none">• P25 Core and backup site• RF Equipment radios• Consoles and dispatch backup• Radio functionality• Indoor coverage• Outdoor coverage (foliage testing, aka: leaves on)

You now seamlessly transitioned from OpenSky to P25!

UNLEASHING POTENTIAL: Transforming from Basic Functionality to Future-Ready Technology

What does it take to get user location on an L3Harris P25 System?



GPS Capable Devices

- XL devices have GPS embedded
- XG devices varies by model
- 3rd party devices vary by model
- Mobiles require external antenna

Transport on P25T

- Two methods:
 - Tier 2 GPS
 - Compatible with 3rd party devices
 - **Requires P25 data capacity** on the network
 - Site/Simulcast requires PMIPS/MME (use of ADC recommended)
 - Report based on distance traveled or time interval
 - In-Band GPS
 - L3Harris exclusive licensed feature = embeds location updates on voice & emergency calls
 - **No additional data loading** beyond voice needs
- Core Licensing
 - StatusAware VM resides inside the VIDA Core
 - Licensed based on the # of users being tracked
 - Pushes location updates to subscribing visualization platforms (i.e. CAD, LE, DF).

Visualization

- Situational Awareness Mapping powered by:



- DragonForce




- Existing CAD Systems





Emergency Notifications



10B20 Emergency - Emery, Jerrold

Unit Personnel: Karcher, Earl; Emery, Jerrold


Received: 10/24/2014 16:01:28

Location: [47.60477926~-122.175004715](#)

Nearest Location: MAIN ST / MAPLE AVE

Call: [887 Homicide](#)

Device: Radio



Receive a notification in CAD and MDTs when a First Responder presses their Emergency button

Mapping



View the location of a responder using their radio. The Tyler CAD system can track multiple locations for a unit, inclusive of their radios.

StatusAware provides many options for location services

