



# AGENDA

## LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

### SPECIAL JOINT OPERATIONS & TECHNICAL COMMITTEE MEETING

January 13, 2015 • 9:00 a.m.

LA-RICS Large Conference Room, Suite 200  
2525 Corporate Place, Suite 200, Monterey Park, CA 91754

Los Angeles Regional Interoperable Communications System Authority (the "Authority")

#### **AGENDA POSTED: January 9, 2015**

Complete agendas are made available for review at the designated meeting location. Supporting documentation is available at the LA-RICS Office located at 2525 Corporate Place, Suite 100, Monterey Park, CA 91754 during normal business hours and may also be accessible on the Authority's website at <http://www.la-rics.org>.

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#### **OPERATIONS COMMITTEE:**

##### **Members:**

1. **Mehrdad, Larijaniha**, CAO, City of Los Angeles
2. **Kevin Nida**, Fire Chief, City of Los Angeles Fire Dept.
3. **Frank Horace**, City of Los Angeles Police Dept.
4. **June Gibson**, City of Los Angeles, Chief Legislative Analyst
5. **Ted Pao**, County of Los Angeles, ISD
6. **Chris Bundesen**, Asst. Fire Chief, Los Angeles County Fire.
7. **Scott Edson**, Chairman, Los Angeles County Sheriff's Dept.
8. **Cathy Chidester**, Dir., EMS Agency, County of LA DHS
9. **Jose Santome**, Deputy Chief of Police, LA School Police Dept.
10. **Randy Allen**, City of Long Beach Police Dept.
11. **Scott Ferguson**, Fire Chief, City of Santa Monica
12. **Paul Cooper**, Vice Chair LA County Police Chiefs Assn.
13. **Darrel George**, California Contract Cities Association
14. **Vacant, At Large #1**
15. **Milton McKinnon**, Culver City Police Dept, **At Large #2**
16. **Michael Ellis**, Captain, City of Pomona PD, **At Large #3**
17. **Paul Villalobos**, Monterey Park Police Dept., **At Large #4**

##### **Alternates:**

- Al Ruiz**, City of Los Angeles Fire Dept.  
**Bob Davis**, City of Los Angeles Police Dept.  
**Matias, FarFan & Joshua Drake**,  
**Kirby Neese**, Los Angeles County Fire Dept.  
**Alex Radovic**, Los Angeles County Sheriff's Dept.  
**Jose Betance**, EMS Agency, County of LA DHS  
**Laura Sansenbach**, City of Long Beach



**TECHNICAL COMMITTEE:**

**Members:**

1. **Mehrdad, Larjaniha**, CAO, City of Los Angeles
2. **Kevin Nida, Chair**, City of Los Angeles Fire Dept.
3. **Tri Nguyen**, City of Los Angeles Police Dept.
4. **June Gibson**, City of Los Angeles, Chief Legislative Analyst
5. **Ted Pao**, County of Los Angeles, ISD
6. **Scott England**, Los Angeles County Fire.
7. **Alex Radovic, Secretary**, Los Angeles County Sheriff's Dept.
8. **Jose Betance**, County of Los Angeles DHS
9. **Rick Beck**, Los Angeles Unified School District
10. **John Black, Vice Chair**, City of Long Beach
11. **Steven Page**, Los Angeles Area Fire Chiefs Association
12. **Vacant.**
13. **Phil Wagner**, California Contract Cities Association
14. **Vacant, At Large #1**
15. **Vacant, At Large #2**
16. **Vacant, At Large #3**
17. **Elliot Kase**, Captain, City of Alhambra Police Dept.

**Alternates:**

**Al Ruiz**, City of Los Angeles Fire Dept.  
**Bob Davis**, City of Los Angeles Police Dept.  
**Matias, Farfan & Joshua Drake**, City of Los Angeles

**Sven Congeyer**, Los Angeles County Sheriff's Dept.

**John Oropeza**, City of Bell Gardens



**NOTE: ACTION MAY BE TAKEN ON ANY ITEM IDENTIFIED ON THE AGENDA**

**I. CALL TO ORDER**

**II. ANNOUNCE QUORUM – Roll Call**

**III. APPROVAL OF MINUTES (None)**

**IV. CONSENT CALENDAR – (None)**

**V. REPORTS**

**VI. DISCUSSION ITEMS**

**A. Long Term Evolution (LTE) Connectivity status**

**1. Public Safety Enterprise Network (PSEN) to PSBN Connectivity Status and Next Steps**

Agenda Item A

**B. LTE User Equipment (UE) Status**

**1. RFSQ status and Next Steps**

Agenda Item B: Enclosure 1

**2. Device and UICC Logistics and Provisioning Status and Next Steps**

Agenda Item B: Enclosure 2

**C. LTE Special Operations Test Status and Next Steps**

Agenda Item C

**D. Public Safety Broadband Network (PSBN) Overview and Radio Frequency Emissions Safety**

Agenda Item D

**VII. ADMINISTRATIVE MATTERS**

**E. Lack of Frequencies for Land Mobile Radio System**

It is requested that your Committees':



1. Review Member agencies' frequencies and identify useful frequencies for completion of the system design and pursue execution of a Frequency Use Agreement with the Member agencies for those frequencies resulting in no impact to contractual requirements; or
2. Review the Member agencies' frequencies and identify the 5 frequencies required by the System vendor and pursue execution of a Frequency Use Agreement with the Member agency for those frequencies resulting in no impact to contractual requirements; or
3. Examine frequencies within the region, outside LA-RICS member agencies, that can be used by LA-RICS and do not cause self-interference and pursue California Public Safety Radio Association (CPRA) application for those frequencies; or
4. Amend the LMR contract to reduce the 700 MHz frequency count to align with available frequencies contributed by the County of Los Angeles and Reserve Channel pool.

Agenda Item E

**VIII. MISCELLANEOUS – (None)**

**IX. PUBLIC COMMENTS**

**X. ITEMS FOR FUTURE DISCUSSION AND/OR ACTION BY THE COMMITTEES**

**XI. ADJOURNMENT and NEXT MEETING:**



Members of the public are invited to address the LA-RICS Operations and Technical Committees on any item on the agenda prior to action by the Committee on that specific item. Members of the public may also address the Committees on any matter within the subject matter jurisdiction of the Committee. The Committees will entertain such comments during the Public Comment period. Public Comment will be limited to three (3) minutes per individual for each item addressed, unless there are more than ten (10) comment cards for each item, in which case the Public Comment will be limited to one (1) minute per individual. The aforementioned limitation may be waived by the Committees' Chairs.

*(NOTE: Pursuant to Government Code Section 54954.3(b) the legislative body of a local agency may adopt reasonable regulations, including, but not limited to, regulations limiting the total amount of time allocated for public testimony on particular issues and for each individual speaker.)*

Members of the public who wish to address the Committees are urged to complete a Speaker Card and submit it to the Committees' Secretaries prior to commencement of the public meeting. The cards are available in the meeting room. However, should a member of the public feel the need to address a matter while the meeting is in progress, a card may be submitted to the Committees' Secretaries prior to final consideration of the matter.

It is requested that individuals who require the services of a translator contact the Committees' Secretaries no later than the day preceding the meeting. Whenever possible, a translator will be provided. Sign language interpreters, assistive listening devices, or other auxiliary aids and/or services may be provided upon request. To ensure availability, you are advised to make your request at least 72 hours prior to the meeting you wish to attend. (323) 881-8291 or (323) 881-8295.

SI REQUIERE SERVICIOS DE TRADUCCION, FAVOR DE NOTIFICAR LA OFICINA CON 72 HORAS POR ANTICIPADO.

The meeting is recorded, and the recording is kept for 30 days.



# Agency Integration Architecture and Design

LARICs Consultation Project

13, January 2015

AGENDA ITEM A



# Agency Interconnect

## High Level Design

AGENDA ITEM A

# Agency Interconnection

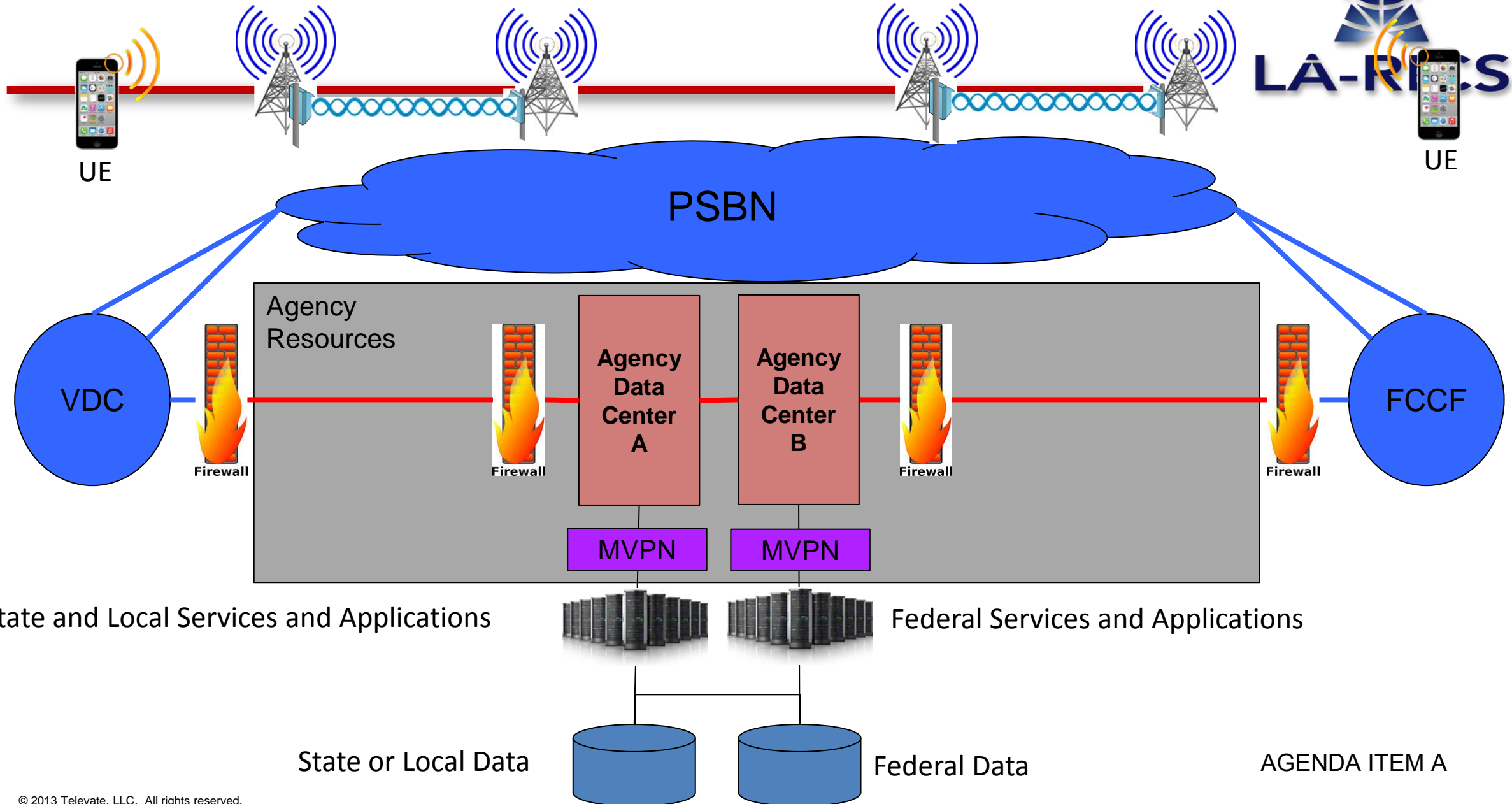
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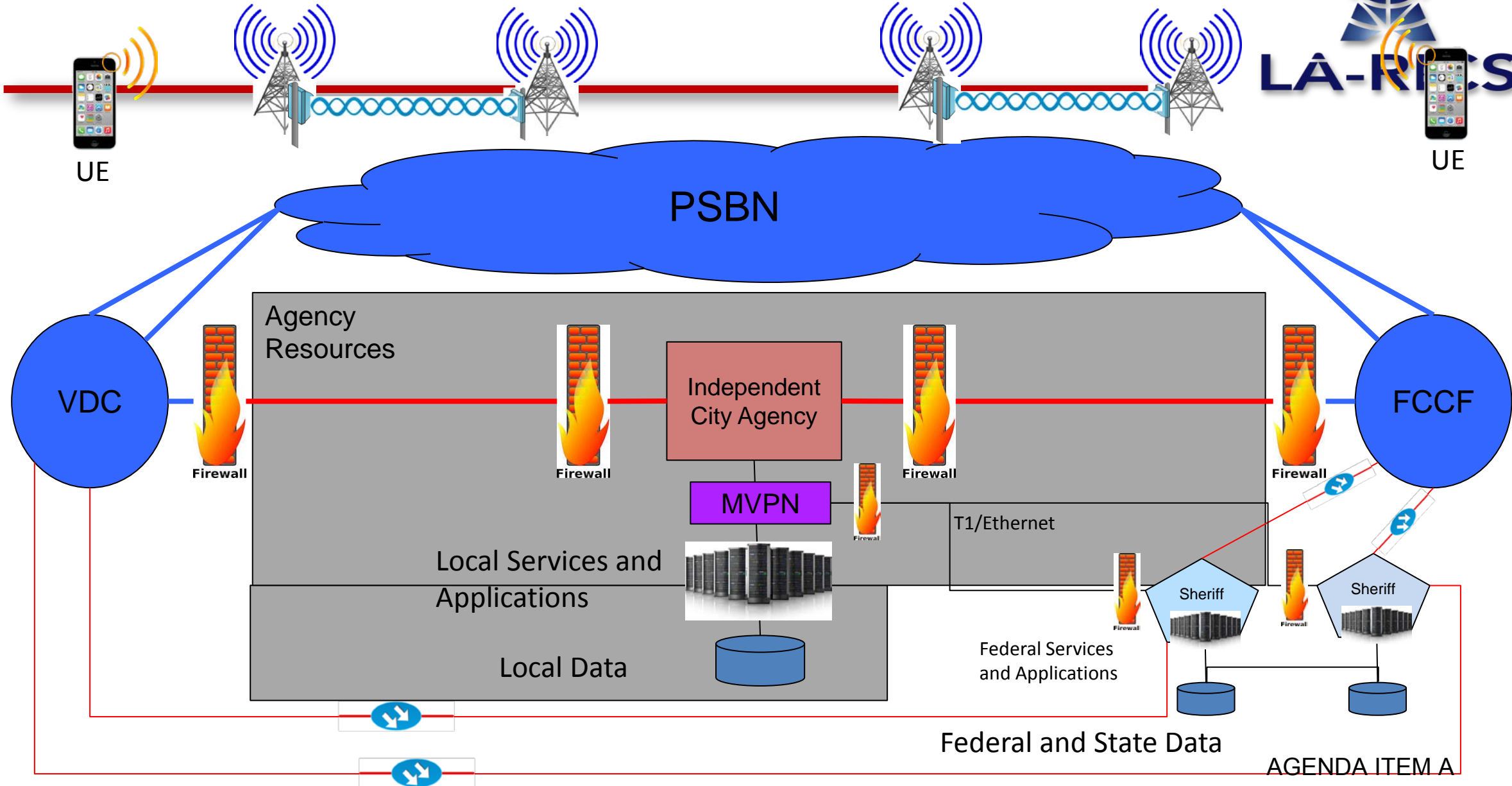
- Transport connectivity between the PSBN and the partner agencies (PSENs – Public Safety Enterprise Networks).
- Provides PSBN service to PSENs.
- Logical connectivity will be standardized.
- Physical connectivity will vary depending on existing PSEN architecture; mostly dependent on existing transport, physical location of applications and current wireless services.
- PSBN Security architecture based on 3GPP.
- Transparent to existing agency applications and processes
- No impact to current CJIS interconnection certification



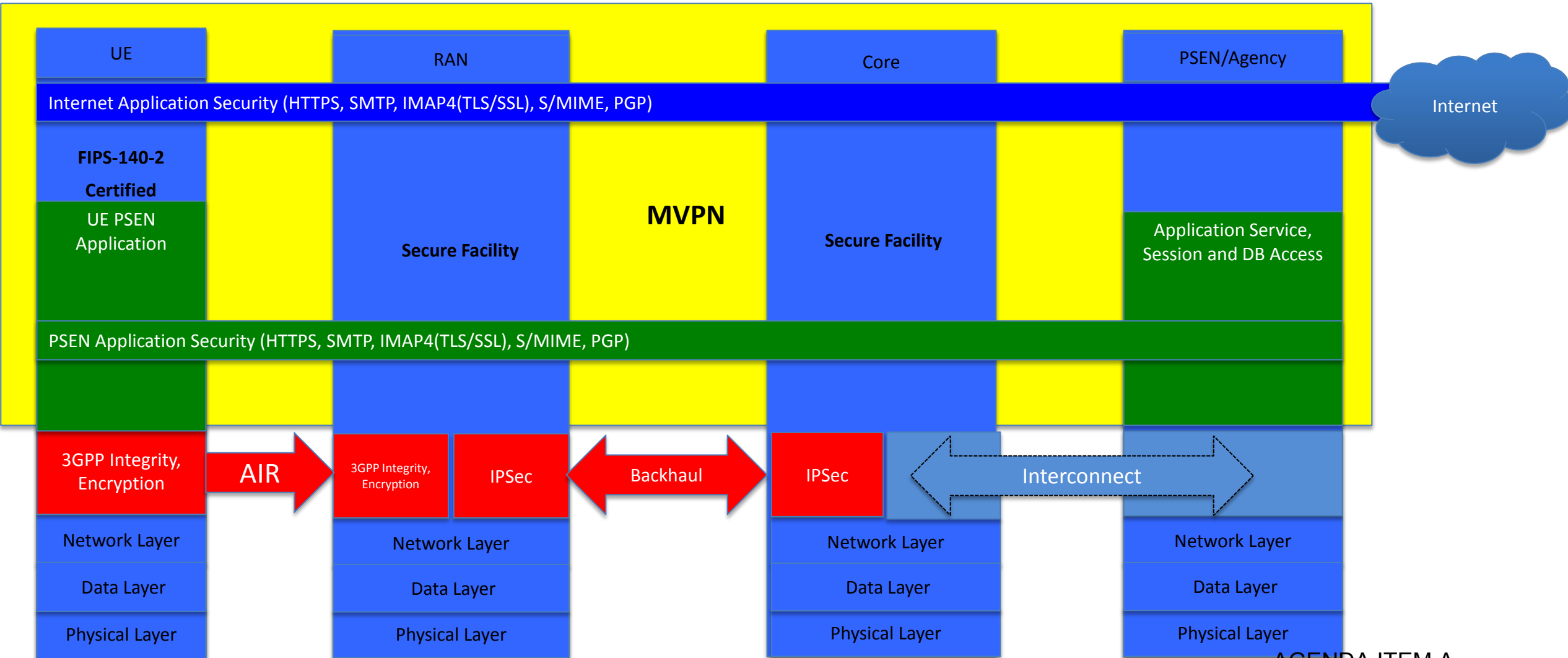
# Interconnection Physical Architecture



# Independent City Interconnection Physical Architecture



# PSBN to Agency Network Security



AGENDA ITEM A

# Accomplishments to Date

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- Physical Architecture Identified
- Physical connection locations for termination to PSBN identified at FCCF and VDC
- Physical connection locations for LA City and County Agencies have been identified
- Applications to be utilized over the PSBN by LA City and County Agencies have been identified
- Internet Access for PSBN end users will be provided by each users respective Agency
- Security Interconnection Designs and Security Policies mirror the connections and Policies made today with existing services provided by AT&T, Verizon and Sprint
- APN Architecture to designate and Identify specific Agencies has been completed

# Next Steps

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- Independent Cities outreach and Design with specific cities
- Secondary Responders outreach and design for specific secondary responders
- Detailed designs for each agency both physical and logical
- Each agency needs to order equipment (expansion cards, new termination equipment based on detailed design requirements)
- Each Agency needs to order Connection services from the Telecom Carriers
- Verify Applications capacity drivers to understand current and future throughput requirements
- Install, test and verify connections and throughput between Agency and PSBN



# LA-RICS Device Planning and RFI Responses

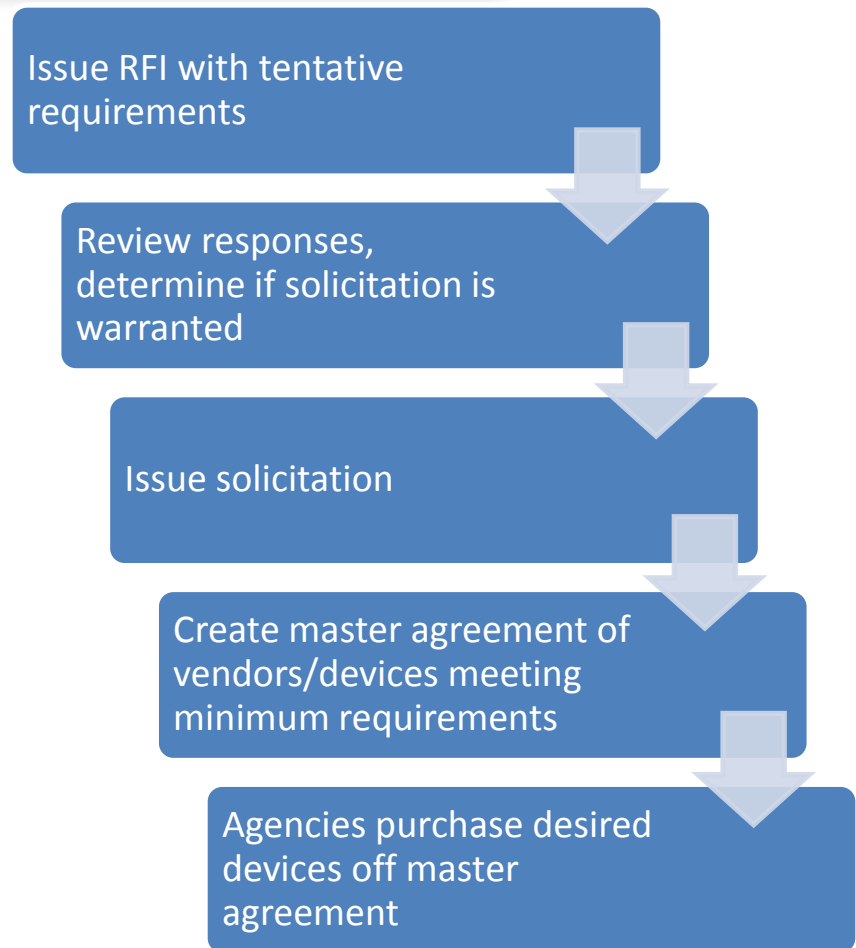
Presentation to Tech Ops

January 13, 2015

# Background



- LA-RICS Contract with Motorola provides infrastructure and some devices
- Motorola provided devices do not meet all of the requirements of the LA public safety community
- A high-level plan included an RFI to determine if other devices were needed and the requirements



# RFI Overview

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- Intended to uncover all current and future Band Class 14 devices
  - Distributed to over 40 entities
- Two Questionnaires:
  - Organizational
    - Size/scope of companies
    - Funding of testing
  - Device
    - Details of compliance with requirements esp. Minimum Mandatory
- Minimum Mandatory concept:
  - Desire greatest possible agency flexibility to purchase the “right” device with the right mix of features
    - 80 agencies, LA-RICS doesn’t have all requirements cataloged
  - Create LA-RICS Minimum Mandatory requirements that ensure LA-RICS network is safe, performs well, meets FCC requirements, and others while allowing greatest possible latitude for agencies



# RFI Response summary



- RFI sent to public safety and consumer oriented firms
  - E.g., Apple, Samsung, Blackberry also invited to participate – no response from these organizations
- Ten companies responded to RFI:
  - Boeing, CalAMP, Elektrobit, GE, General Dynamics, Harris, Motorola, Panasonic, Sierra Wireless, Sonim
- Thirteen total devices
- Three companies offered to provide LA-RICS with UICCs (Universal Integrated Circuit Card, aka “SimCard”)
- Delivery timeframes as much as 16 weeks
- Vendors tentatively agreeable to pick up IoT costs

Device Type / Scenario	Models Available Now	Models Available in Future
Band 14 Routers –	3	2
Band 14 Tablet -	1	
USB Modem	1	
mPCIe Modem	1	
Fixed Outdoor Unit	1	
Smartphone		3
Rugged PC	1*	

# Vendor Confidentiality



Vendor Name	Sharable	Notes
Boeing	Yes, with NDA	
CalAmp	Yes	
Elektrobit	Yes	
General Electric	Yes, with NDA	
General Dynamics	No	
Harris	Yes	
Motorola	Yes	Redacted version only
Panasonic	Yes	Distribution Copy only
Sierra Wireless	Yes	
Sonim	Yes	

Affects LA-RICS ability to share information fully...

# Routers Summary



Device	Size/Weight	Internal Modems	Ext. Ports	Carrier Certs.	Wi-Fi	MIL 810 / °F	User Field Changes
Motorola VML 750	8.1 x 7.9 x 1.8 (in) 88 oz	1 BC 14 1 mPCIe	1 RJ45 1 USB	VZ	no 802.11i No 4.9 GHz	Yes -22 to 140°	Modem - No UICC – Yes
CalAMP 140-93xx	5.5 x 6 x 1.9 (in.) 38 ounces	1 BC14 1 mPCIe	3 RJ45 1 USB OBDII	VZ, AT&T	High power 4.9 GHz support	Yes -22 to 140°	Yes
Sierra Wireless oMG2032	10.8 x 8.88 x 2.4 (in) 6.5 lbs	1 BC14 1 mPCIe 1 USB	4 RJ45 2 USB OBDII	VZ AT&T Sprint	High power 4.9 GHz	Yes -5 to 130°	Yes
Harris BB-B1314W	5.5 x 6 x 1.8 (in) 40 ounces	1 BC14 1 BC13 (mPCIe)	3 RJ45 2 USB OBDII	VZ	High power No 4.9 GHz	Yes -22 to 140°	Modem - No UICC – Yes
GE	NDA Required						

# Smartphone Summary



Vendor	OS	Screen Size	Weight	Other LTE bands supported	UICC Configuration	Battery	MIL 810G / Ingress Protection***	Camera	Wi-Fi
Motorola	Android	4.7"	6.9 oz	B4/13 (VZ)	Dual UICC	10 hr (standard) 20 hr (option)	Temp: No* Shock/Drop: Yes Vibration: Yes IP: 67	Front & Back	802.11 a/b/g/n SISO
Sonim	Android	4"	10.2 oz	B17 (AT&T)	Single UICC, multi-profile**	10 hours	Temp: Yes Shock/Drop: Yes Vibration: Yes IP: 68	Rear facing	802.11 a/b/g/n STA only. App available
Elektrobit	Android	5"	6.9 oz	LTE: B2, B3, B4, B5, B7, B12/B17, B13, B20 (AT&T/VZW)	Dual UICC	16 hours	Temp: Yes Shock/Drop: Yes Vibration: Yes IP: 67	Front & Back	802.11 a/b/g/n/ac

\*Operating range is 14 to 131° F

\*\*Single UICC capable of subscription on carrier and PSBN

\*\*\* IP 67 =water immersion < 1m, IP68 = water immersion > 1m

# Tablet – Harris RF-3590



Attribute	Spec
Screen Size / Weight	7" / 2 lbs.
Interfaces	<ul style="list-style-type: none"><li>• (1) Ethernet</li><li>• (2) USB 2.0</li><li>• HDMI</li><li>• Serial port via docking station</li></ul>
Other Networks	Certified on the Verizon network. Dual UICC implementation.
Operating System	Android
Ruggedness, Operating Temperature, Ingress Protection	MIL 810, -4 to 140° F, IP67
Other	External GPS port Stylus Front and rear cameras (2/8 Mpixel) Noise cancelling microphone and speaker

# Other Devices Summary



Device Type	Vendor	Notes
mPCIe	General Dynamics	Modem is form factor used embedded in PCs, General Dynamics declined permission to share information
USB	General Dynamics	General Dynamics declined permission to share information
Outdoor Modem	General Dynamics	General Dynamics declined permission to share information
Laptop		Panasonic provided response for rugged PC. That PC does not have embedded Band Class 14 modem, but can accept USB modem from other vendors

# Testing and Logistics Summary

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- Testing
  - Vendors willing to fund independent testing, but many require solidified test plans and sufficient market size from LA-RICS
  - Vendors looking for testing plan equivalent to FirstNet plan (yet to be defined)
- Logistics
  - Operational device requires BC 14 UE, UICC programmed with LA-RICS parameters, insert UICC into UE, and provisioning on LTE system
  - Several vendors do not provide UICC, several are willing to offer UICC
  - Multi-vendor UICC creates security risk (sharing security parameters)

# Next Steps for LA-RICS

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- Major Decisions
  - UICC supplier (single source, multi-source)
  - Logistics – LA-RICS role in UICC installation, device distribution, provisioning on system
  - Finalize test scenarios – secure FirstNet support
- Issue RFSQ
- Procurement completed by Spring 2015
- Available for device acquisition under BTOP – delivered NLT August 2015.





**THANK YOU**



# Device Management

## LARICs Consultation Project

13, January 2015

**AGENDA ITEM B: ENCLOSURE 2**



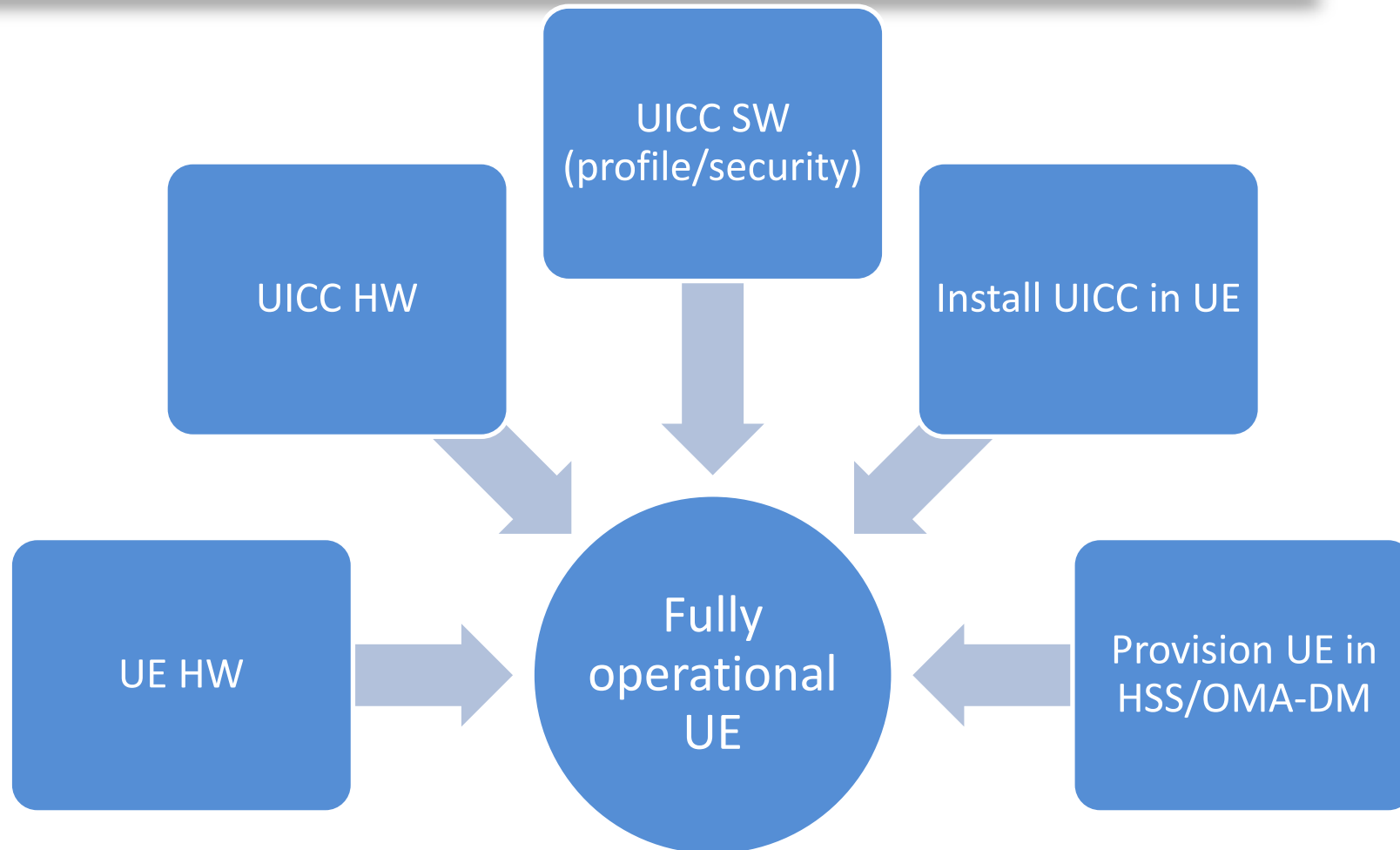
# UICC and Device Supply Chain Strategy

Processes

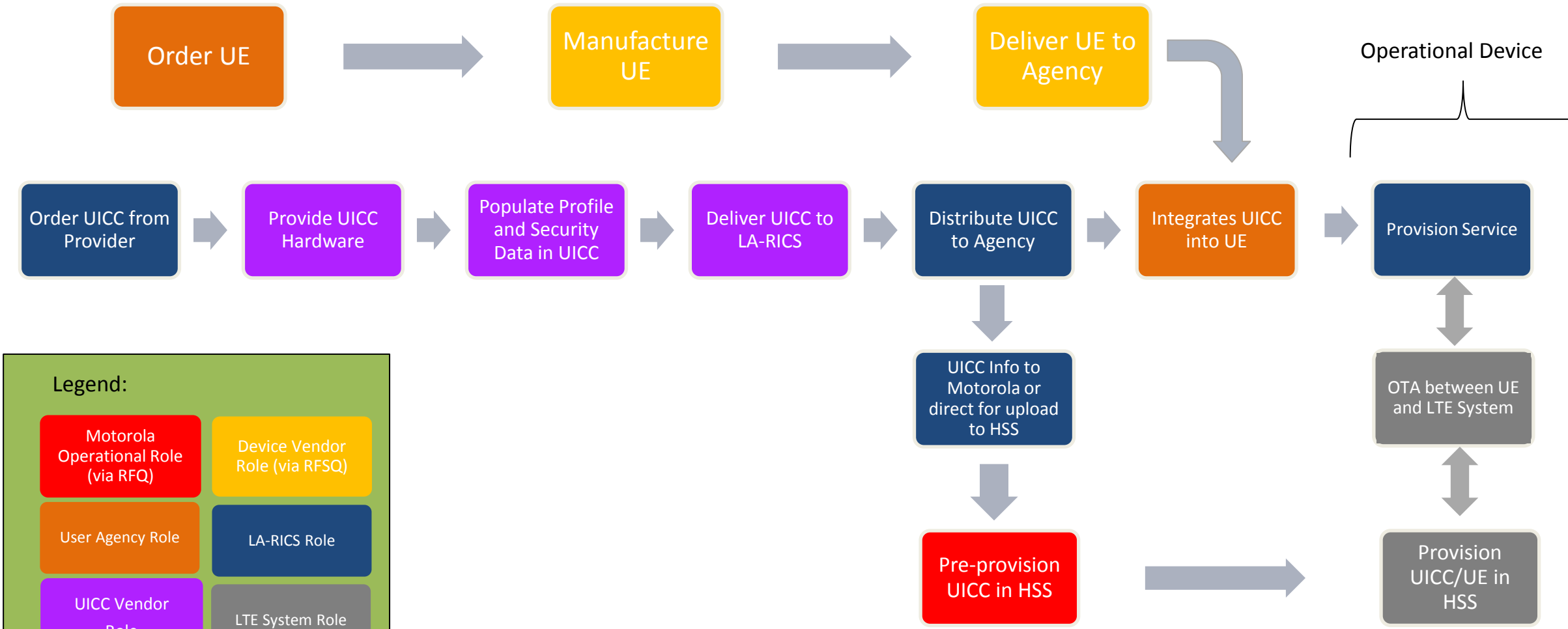
**AGENDA ITEM B: ENCLOSURE 2**

# Major UE Implementation Steps

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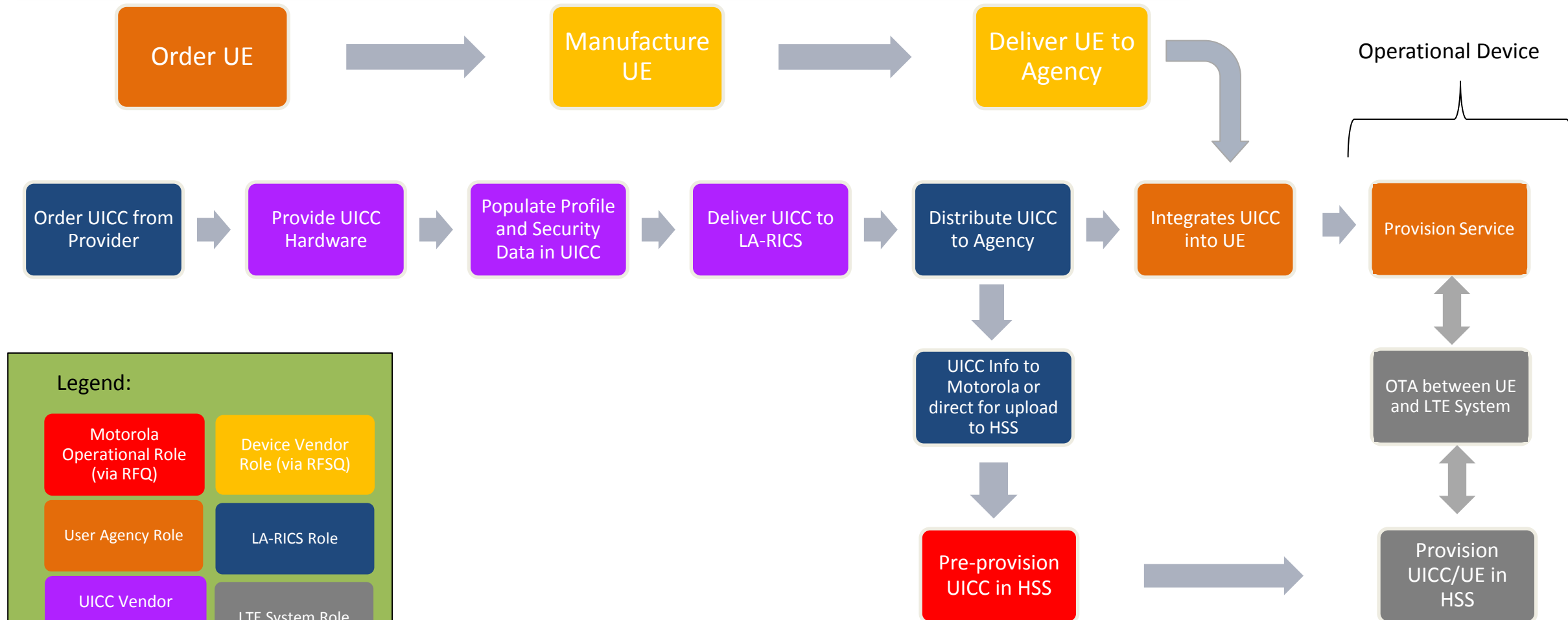
# Recommended Device Management Process Agency Ordered UE LARICS Provisioned Service – Option A



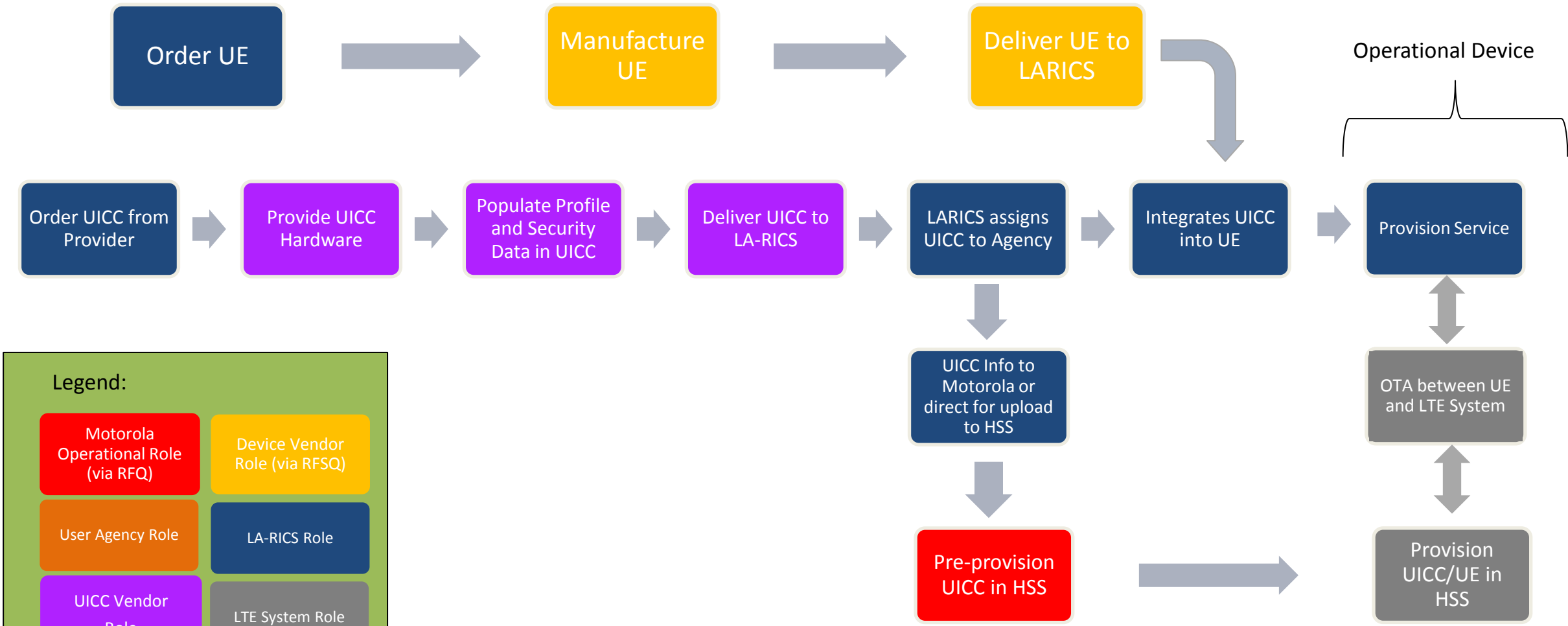
**Legend:**

Motorola Operational Role (via RFQ)	Device Vendor Role (via RFSQ)
User Agency Role	LA-RICS Role
UICC Vendor Role	LTE System Role

# Recommended Device Management Process Agency Ordered UE Agency Provisioned Service – Option B



# Recommended Device Management Process LARICS Ordered UE LARICS Provisioned Service - Option C



**Legend:**

Motorola Operational Role (via RFQ)	Device Vendor Role (via RFSQ)
User Agency Role	LA-RICS Role
UICC Vendor Role	LTE System Role

# Device Supply Chain Structure



1. UICC Supplier
  - Single Supplier to LARICS
  - LARICS distributes to Agencies and pre provisions HSS
2. UICC load into HSS
  - Will be accomplished via Motorola as part of Maintenance Contract or LARICS direct
3. Device RFSQ to enable multiple LARICS/FirstNet certified UE Suppliers for future bids directly by LARICS or member agencies:
  - In-Vehicle Router
  - Smartphone
  - Tablet
  - Modems
4. LARICS Distributes UICC to Agencies based on need and UE orders
5. UICC install into UE
  - LARICS will perform for independent City Agencies unless the Independent city orders their own equipment then they will request UICCs and install themselves
  - Each Agency will perform based on UE Bid order from RFSQ
6. Distribution of UE and UICC to End User
  - Each Agency will distribute and track UE and UICC assignment information
7. Service Provisioning of UE and UICC to End User
  - Option A – All End user service provisioning will be done by LARICS
  - Option B – Each Agency's End Users will be service provisioned by their respective Agency.
  - Option C – LARICS provides end to end service to all First and Secondary Responders

**AGENDA ITEM B: ENCLOSURE 2**



# Proposed Next steps

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- Short Term
  - Write Specifications for Device types for RFSQ – Complete
  - Issue RFSQ's for Devices and UICC – In Process
  - Issue NTP for initial Motorola Devices and UICCs for SOT - Complete
- Medium Term
  - Identify all points of contacts for the agencies
  - Determine warehouse and storage process for City, County and or LA-RICs for UICC and UE deliveries
  - Provisioning process flows for Smartphone, Tablet and In-Vehicle-Router
  - In-Vehicle-Router Installation method and vendors/resources
  - Identify and work on device provisioning process with Motorola systems
  - Ensure accurate asset tracking throughout the provisioning process

# Device RFSQ Update

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- Seven Device type Specifications completed and under review by FirstNet and Authority
  - In-Vehicle Router
  - Tablet
  - SmartPhone
  - Computer Modem
  - USB Modem
  - HotSpot Modem
  - Outdoor Modem
- RFSQ process, and overall document is in process to be complete and ready for Review by Mid January
- RFSQ expected Release Date is by second week of February
- Responses from Vendors by end of February
- Approved Vendors for bidding by end of March



# LTE Special Operation Test Plan

## LARICs Consultation Project

13, January 2015

**AGENDA ITEM C**

# SOT Plan

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## Purpose of SOT

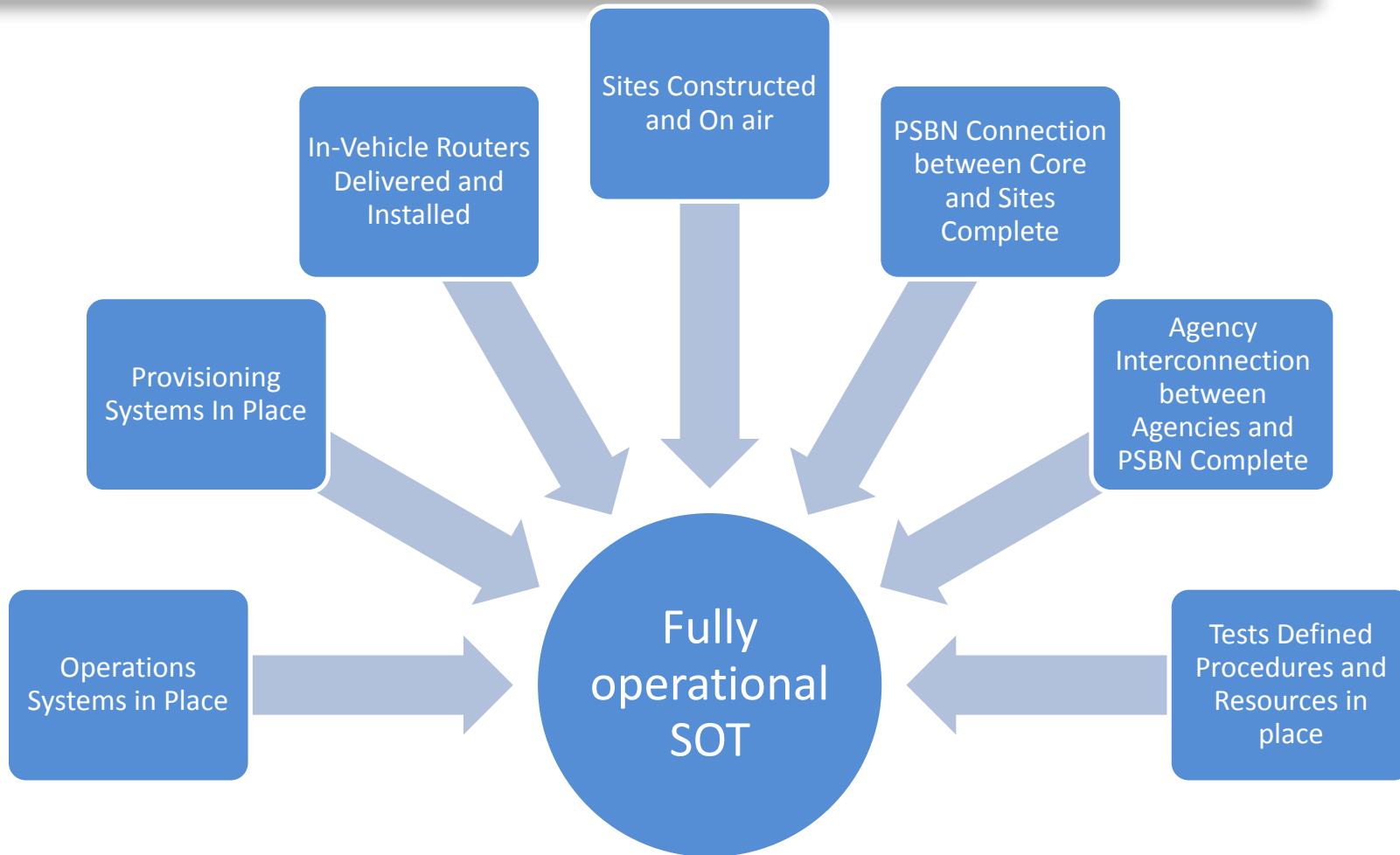
The purpose of the SOT is to provide a means to test and verify functionality of:

- B14 LTE systems
- LTE coverage and Handoff
- Verify data services throughput
- Verify In-Vehicle functionality
- Verify connectivity to Agency applications
- Verify Security requirements of the system and Applications are met
- Understand and trial service provisioning processes and procedures
- User Equipment installation and deployment procedures
- Understand and trial Operational Support System aspects of the system

**AGENDA ITEM C**

# SOT Implementation Steps

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# Timing, Users

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- Timing
  - Currently based on Motorola Construction and Systems availability schedule
    - Earliest start would be April 2015
    - Most Likely start is End of May/Beginning of June
- Number of Agency Users
  - Max
    - 15 County Fire
    - 30 Sheriff
    - 15 City PD
    - 15 City FD
  - Min – in house test – Issued NTP for 25 Units (In-Vehicle Routers)
    - 5 County Fire
    - 5 Sheriff
    - 5 City PD
    - 5 City FD
    - 5 LARICS

# Sites and Coverage



- Sites
  - County Fire: FCCF, LACF004, LACF090 and LACF087
  - County Sheriff: LASDIDT
  - City Police and Fire: LAPDHLB (Need to add LAPDNWT)



# System and User Tests

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- System support tests
  - Handover
  - Edge of network performance
  - MVPN connection verification and Application access
  - Security system and policies verification
- User experience and response times
  - User throughput and access
  - Wi-Fi access for download to station
  - Wi-Fi access as Hotspot at vehicle
  - Ethernet port Access for in-vehicle equipment



# Operations Tests

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## – Provisioning UEs

- Understand process and potential improvements
- Understand features and functionality
- Identify gaps in workflows
- Understanding linkage between asset management and provisioning

## – Operations

- Operational reports (if applicable at SOT time)
- Performance and Fault Monitoring
- Notifications and Break Fix
- Incident/emergency simulation

# Expectations and criteria for success

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- Discussion

# Proposed Next steps

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- Install and Deploy 25 In-Vehicle Routers
- Create workflows
- Create test plans
- Identify personnel for test
- Provide and complete training for systems and tests
- Set Test start date (based on current construction schedule)
- Create criteria for success and measure SOT against the Criteria for Success
  - Anticipated expected performance in the field
  - Measurement and assessment of actual performance
  - Identify steps to fix areas of deficiencies as needed



LA-RICS

# Public Safety Broadband Network Tech/Ops Briefing January 2015



PHOTO BY GREG DOYLE.



PHOTO BY GREG DOYLE.



“**Purpose:** To engage in regional and cooperative planning and coordination of government services to establish a wide-area interoperability public safety communications network.”

# Topics

- LA-RICS Overview
- LA-RICS Benefits
- Public Safety Broadband Network (PSBN) Overview
- Why the PSBN?
- Coverage, Timeline, and Typical Site Plans
- Radio Frequency Emissions Safety

# LA-RICS Overview



- Interoperable, mission-critical communications and data network for first responders
  - Major finding from 9/11 commission report
- Support 34,000 first responders protecting 10 million residents across 4,000 square miles
  - Places first responders at the core of our mission
- Governed by a single, JPA representing 86 jurisdictions and 81 separate agencies

# LA-RICS Benefits to Public Safety

- Improves operational efficiency and interoperability of first and secondary responders
- Land Mobile Radio (LMR)
  - LMR provides interoperable communications and shared data for multi-jurisdictional responses
  - Eliminates need for multiple localized public safety communications systems
  - Viable migration from T-Band
- Public Safety Broadband Network (PSBN)
  - 4G Long Term Evolution (LTE) solution delivered public safety grade
  - LTE is the global standard for the future of wireless communications
  - Adjustable prioritization, full public safety control
- LMR and LTE will improve operational efficiency of first and secondary responders



# PSBN Overview



# Public Safety Broadband Network (PSBN)

- LA-RICS PSBN is part of the National PSBN
  - Managed by the National Telecommunications & Information Administration (NTIA)
    - Executive Branch responsible for telecommunication & policy issues
  - Middle Class Tax Relief and Job Creation Act of 2012
    - Creates FirstNet to build and operate nationwide interoperable broadband network dedicated to public safety
    - Up to \$7B in total funding towards the nationwide network
  - Technology
    - Long-Term Evolution (“LTE”) standards and 20MHz of Spectrum in the 700 MHz band
- First Responder Network Authority (FirstNet)
  - Independent authority within NTIA
  - Mission to build, deploy, and operate NPSBN
- Funding: Broadband Technology Opportunity Program (BTOP)
  - NTIA funded grant program
  - \$154.6M awarded to LA-RICS PSBN



# Environmental Protection

- California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPA)
  - LA-RICS complied with environmental processes under both CEQA and NEPA
- LA-RICS has a limited CEQA statutory exemption until 2017
  - Project Site Criteria
    - Located on police, Sheriff, fire station or other publicly owned sites
    - Publicly owned transmitter sites
    - Cannot have a substantial adverse impact on wetlands, riparian areas, or habitat of significant value
    - Cannot have a substantial adverse impact on historical resources
    - Monopoles shall not exceed 70 feet
    - New lattice towers shall not exceed 180 feet
- Project has been through full NEPA clearance
  - Project must comply with all Federal environmental law



# Environmental Protection Details

- Project subject to NEPA due to federal grant
- Lead agency for NEPA review is NTIA
- An Environmental Assessment (EA) was prepared under NTIA guidance
- The EA report body is over 300 pages with an additional 4,400 pages of appendices.
- EA analysis was conducted over 12 resource areas (e.g., noise, aesthetic, etc.)
- Additional Federal and State agencies were consulted during EA analysis
- NTIA issued a Finding of No Significant Impact (FONSI) on October 15, 2014.
- The FONSI and the EA are available for review on the LA-RICS website.

# Public Safety Broadband Network

- LTE network exclusively for public safety
  - First and Secondary responders
  - Broadband capacity for video, audio, data
- Federal BTOP and local matching funds are sufficient to deploy the LA-RICS LTE system
- FirstNet Spectrum Manager Lease Agreement
  - FirstNet / LA-RICS agreement executed on July 1, 2013
  - Allows use of FirstNet's 20 MHz of spectrum in 700 MHz (nationwide worth +\$5B)
  - Key Learning Conditions such that FirstNet can learn from LA-RIC's efforts
  - Consult with FirstNet on RFPs

# LTE Sites in PSBN

- There are 231 planned LTE sites identified in the PSBN
  - FONSI issued covering 231 sites
  - Heights from 28' – 70'
  - Stealth and standard monopoles will be deployed



231 LTE Site Design

# Why the PSBN?

# Why The PSBN? Public Safety Grade

## Public Safety Grade = Higher Network Availability

- More resilient construction
- Power
  - Battery Backup – 8 hrs.
  - Generator Backup, up to 72 hours fuel
- Microwave Backhaul
  - Redundant paths or components
  - 99.999% availability for each link (Down only 15 min/Yr.)
- Components
  - Guaranteed levels on major components
  - Robust Class III towers

**The network is available when it's needed most – especially during natural and man-made disasters, but also on a daily basis due to infrastructure failures that occur frequently.**



# Why the PSBN? Public Safety Controlled

## Public Safety Controlled = Higher Service Availability

- Dedicated Capacity
  - Avoids congestion of public and media during incident
- Operational
  - Fully informed on system performance, outages, maintenance
  - Establish restoration priorities
- Quality of Service
  - Public Safety decides on device and application priorities
  - Pre-emption of lower priority services if necessary
- Emergency Deployable Control

**Service is available when it's needed most – during very high levels of public data consumption. These events occur during major public safety emergencies as well as on a much more frequent basis for routine emergencies.**



# Why the PSBN? Applications

## Daily and emergency applications/uses of the PSBN!

- Video
  - Surveillance
  - SitStat-ReStat
  - Dash Cam
  - Helmet Cam
  - Helicopter (distribution)
  - Training
- Computer Aided Dispatch
- CAD to CAD
- Vehicle/Personnel locators
- Incident Management
- EMS Patient Care
- Firefighter Biometrics
- Pre-fire plans / Building Plans
- Hydrant Status / Location
- And many, many more



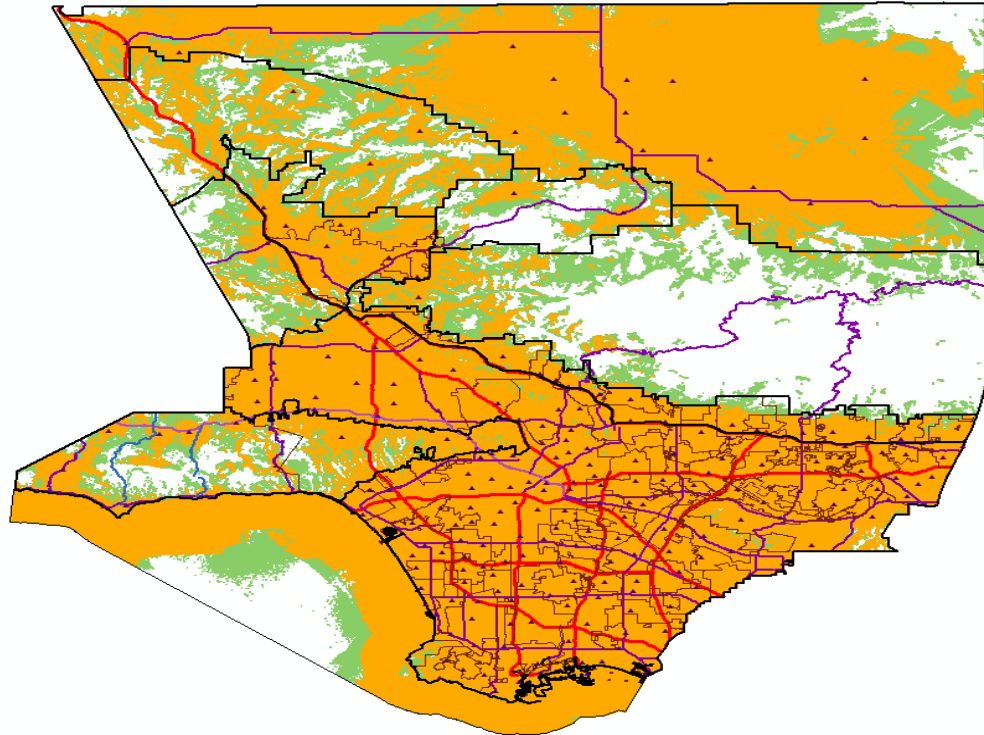
# Why These PSBN Sites?

- Coverage and Capacity
  - Provide optimal coverage to benefit operations of selected CAIs
    - Exclusion of sites would result in coverage and capacity loss
  - Provide high capacity broadband connectivity to police and fire stations (wireless or wired)
- Enhanced security at these sites
- BTOP Grant Requirements
  - Broadband service to Community Anchor Institutions (CAI)
    - Law enforcement, fire stations, hospitals, court buildings
    - Support of the National Broadband Initiative
- Sites screened to minimize potential environmental impacts

# Coverage, Timeline, and Typical Site Plans

# Base System County Wide Coverage

## County-Wide Coverage



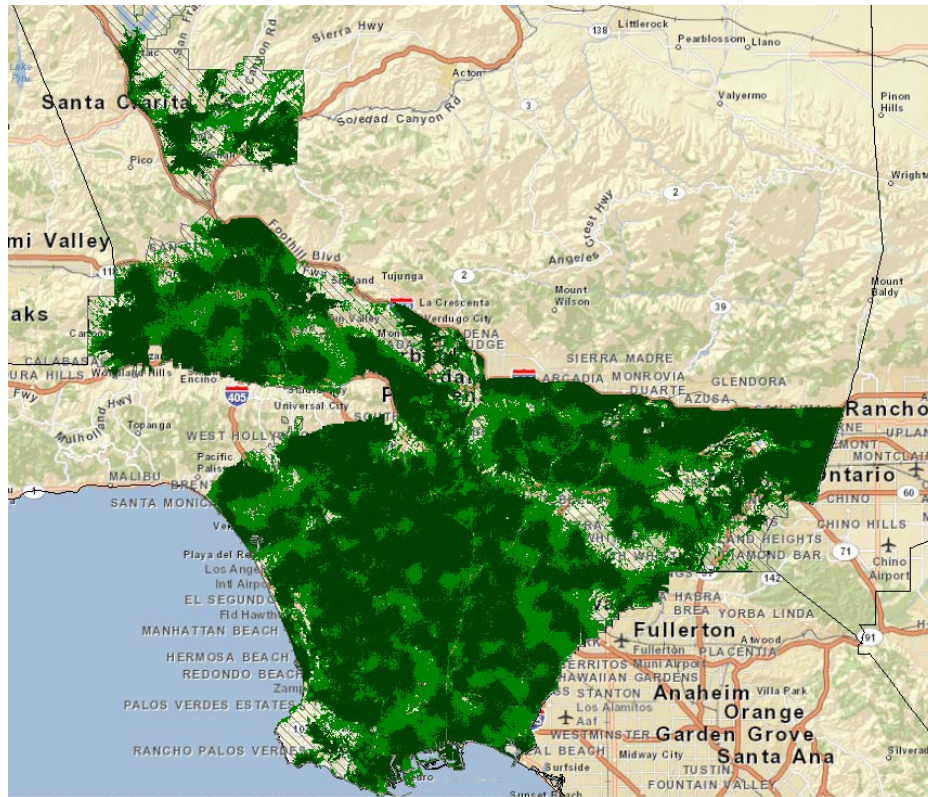
System Designed for portable  
outdoor coverage

Uplink @ 256 kbps  
Downlink @ 768 kbps

# Potential Indoor Service

System is not designed for indoor service, but some indoor coverage is anticipated

## Countywide Indoor Coverage (single wall)



Uplink @ 64 kbps

Downlink @ 64 kbps

# LTE Project Timeline

– Placeholder Slide

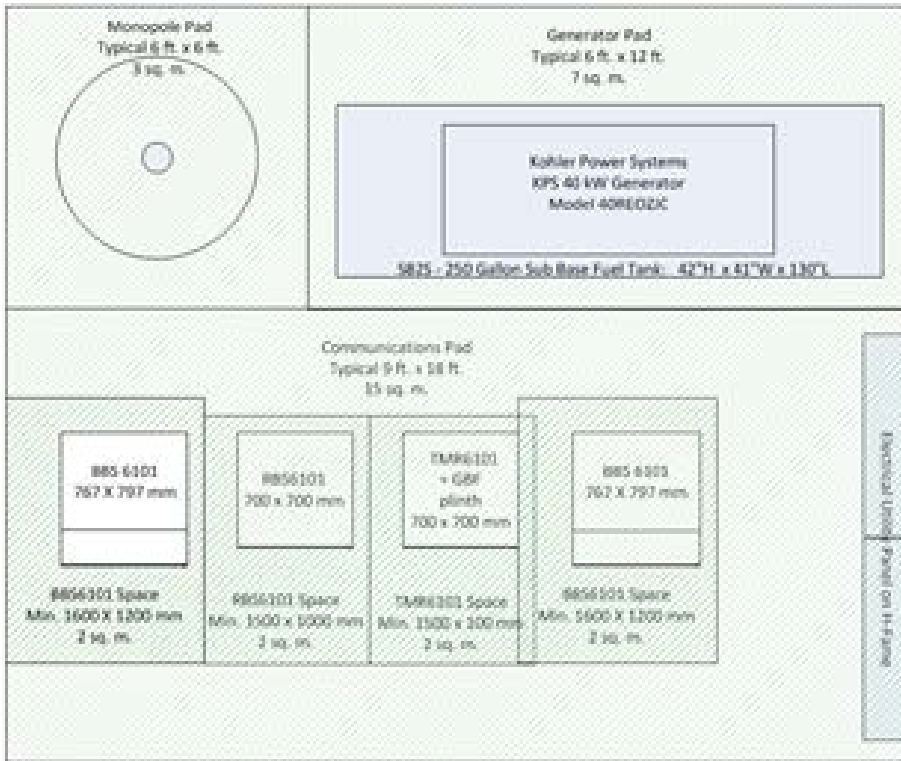
# Typical PSBN Site Configurations

# Fire Station Pole and LTE Equipment



## Sample Photo Simulation

### Sample Site Plan



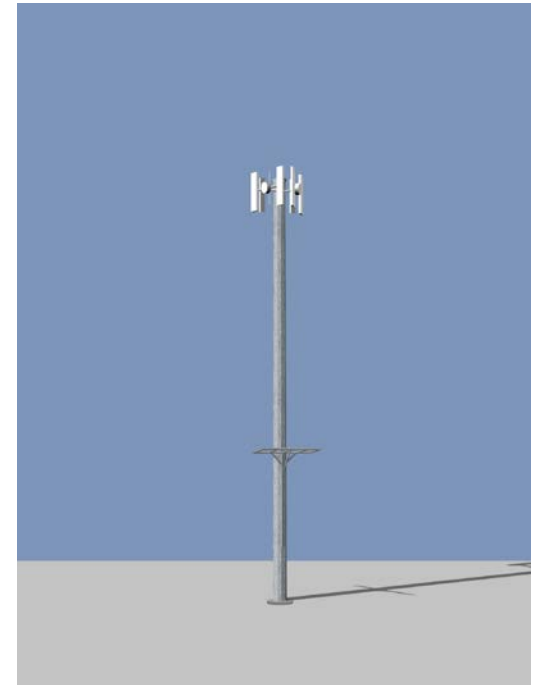


# Potential Hose Tower Replacement

- Integrates the LTE monopole into the lifting system
- Used where space limitations dictate
- Eliminates risk of falls
- Reduces back injuries
- Preserves Yard Space



Hose Tower



Hose Tower Monopole  
Photo Simulation

# Radio Frequency Emissions Safety

# Radio Frequency Emissions

## Background

- The Federal Communications Commission regulates the occupational and general public exposure levels in the United States
- The FCC has established these levels based on scientific studies and evidence
- The LA-RICS broadband network will comply with the FCC requirements. **LA-RICS is not exempt from them.**
- Typically, LTE sites like those used in the PSBN would be exempt from study using FCC guidelines, but LA-RICS is requiring computational and measurement analysis of every site in order to ensure the safety of on-site personnel.

# What the international health organizations say

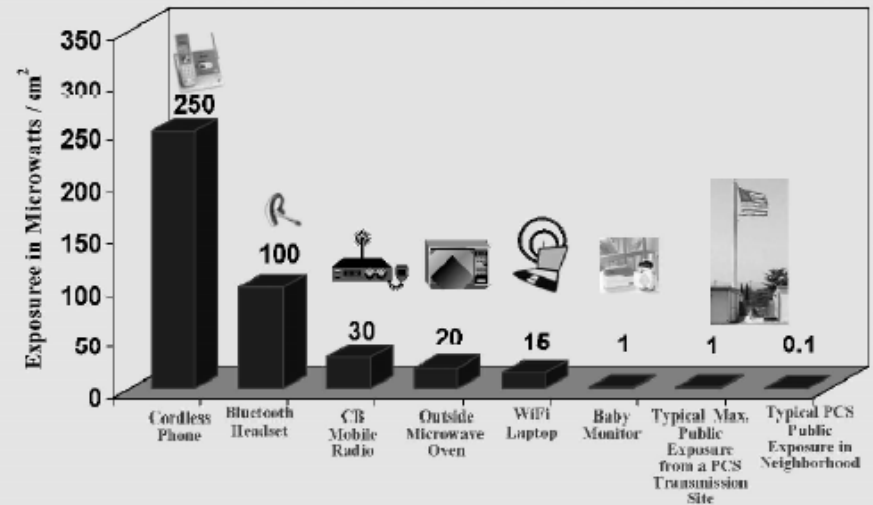
- American Cancer Society
  - “[T]he RF waves given off by cell phones don't have enough energy to damage DNA directly or to heat body tissues. Because of this, many scientists believe that cell phones aren't able to cause cancer. Most studies done in the lab have supported this theory, finding that RF waves do not cause DNA damage.”
  - “For these reasons, most scientists agree that cell phone antennas or towers are unlikely to cause cancer.”
- National Cancer Institute
  - “Studies thus far have not shown a consistent link between cell phone use and cancers of the brain, nerves, or other tissues of the head or neck.”
- National Institute of Environmental Health Science
  - “[t]he weight of the current scientific evidence has not conclusively linked cell phones with any health problems”
- World Health Organization
  - “Studies to date provide no indication that environmental exposure to RF fields, such as from base stations, increases the risk of cancer or any other disease.”
- Food and Drug Administration
  - “The majority of studies published have failed to show an association between exposure to radiofrequency from a cell phone and health problems.”

**These organizations have reviewed the wealth of science available on the subject to reach these conclusions. They are independent of entities that profit from wireless communications and have no incentive to put the public in harm's way.**

# What the experts say...

- Dr. Jerrold Bushberg, 10/20/14 presentation to Local 112:
  - “Maximum SAR\* from an LA-RICS site in fire house is 0.16 microwatts/kg or 125 x’s lower than the lowest level than any scientists have ever observed any biological effects [20 microWatts/kg”
  - “No Adverse Health Effects At These Low Exposure Levels Has Been Established.”
  - “Scientific knowledge in this area is now more extensive than for most chemicals”
  - Current exposure levels use “Scientific Consensus Approach” that leverages many “points of view”, “doesn’t overreact to a single study”, and “have the benefit of scientific peer review”

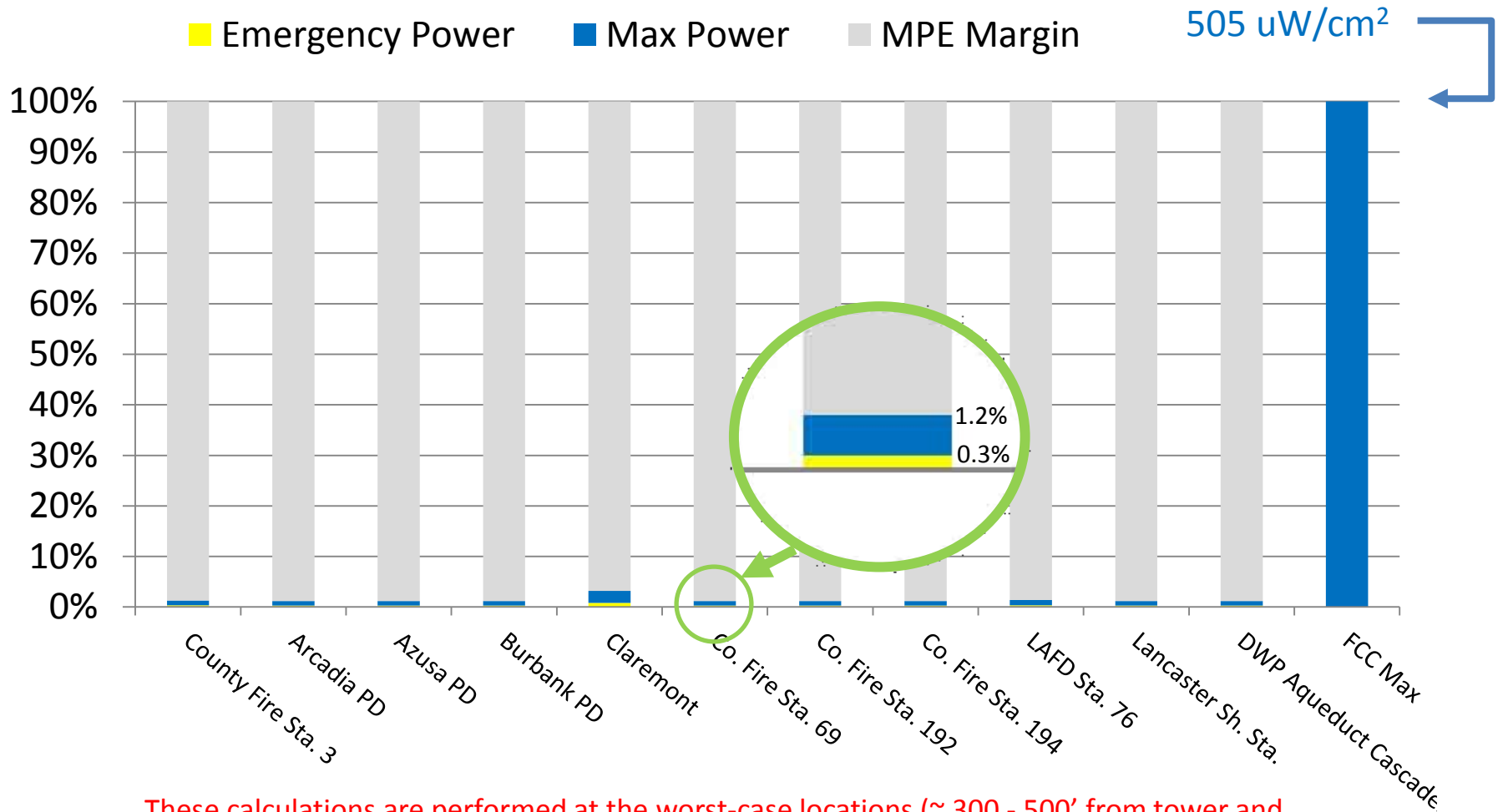
Typical Exposure from Various Radio Frequency / Microwave Sources



\*Specific Absorption Rate (SAR): a measure of the rate at which energy is absorbed by the human body when exposed to a radio frequency electromagnetic field.



# Maximum Emissions Levels at Select Sites

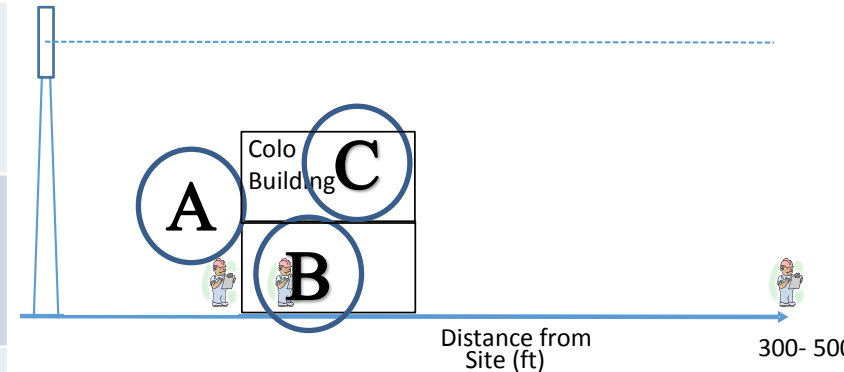


These calculations are performed at the worst-case locations (~ 300 - 500' from tower and 50' Above Ground Level)



# Exposure Levels At Co-Located Facilities

Location	Power Level Scenario	Times Lower Than The FCC Standard (level)	Notes
A – Outside Fire Station (10' elevation)	Absolute Maximum – Worst Case	~ 4,300 times (0.11597 $\mu\text{W}/\text{cm}^2$ )	Antenna directs energy over the co-located structure
B – Inside One Story Fire Station (10' Elevation)	Absolute Maximum – Worst Case	~ 43,000 times (0.0116 $\mu\text{W}/\text{cm}^2$ )	Building itself absorbs or blocks most of the signal
B – Inside One Story Fire Station (10' Elevation)	Emergency Levels – Expected Heavy Usage	~ 174,000 times (0.0029 $\mu\text{W}/\text{cm}^2$ )	Even in emergency situations, we expect only 25% utilization
C – Inside Two Story Fire Station (25' Elevation)	Absolute Maximum – Worst Case	~ 17,000 times (0.0303 $\mu\text{W}/\text{cm}^2$ )	Second story slightly closer to antenna. Slightly more elevated levels.
C – Inside two Story Fire Station (25' Elevation)	Emergency Levels – Expected Heavy Usage	~ 67,000 times (0.0076 $\mu\text{W}/\text{cm}^2$ )	25% utilization of spectrum in emergency situations



# Protecting First Responders

- The PSBN contractor is required to comply with FCC OET Bulletin 65, which is based on thousands of scientific studies
- The PSBN calculations are performed at the worst-case locations and in worst case circumstances. The co-located fire station is not the worst-case location and the worst case circumstances are not likely to be achieved
- PSBN sites are expected to have actual exposure levels millions of times below the maximum allowable levels established by the FCC
- The FCC levels are based on the current available science and using a large safety margin
- **The Contractor is required to demonstrate compliance with the rules and LA-RICS will require the Contractor to conduct measurements to ensure Los Angeles first responders are safe**



# Questions?



## LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

2525 Corporate Place, Suite 100  
Monterey Park, California 91754  
Telephone: (323) 881-8291  
<http://www.la-rics.org>

PATRICK J. MALLON  
EXECUTIVE DIRECTOR

January 13, 2015

Operations and Technical Committee Members  
Los Angeles Regional Interoperable Communications System Authority (the "Authority")

Dear Committee Members:

### **LACK OF FREQUENCIES FOR LAND MOBILE RADIO SYSTEM**

#### **SUBJECT**

The LA-RICS Land Mobile Radio System design requires 700 MHz frequencies to achieve the contractually required coverage and capacity for the Digital Trunk Voice Radio System (DTVRS 700MHz). The County of Los Angeles (County) contributed 70 700 MHz frequencies for use on the LMR System. In addition to the 70 County frequencies, LA-RICS has petitioned the FCC for allocation of 700 MHz Reserve Channels. The FCC recently approved allocating the 24 700 MHz Reserve Channels to public safety agencies with priority consideration to jurisdictions required to vacate their T-Band channels per HR 3630. The FCC has charged the local Regional Planning Committees to determine the most effective use of the channels. LA-RICS has requested these channels with the intent to use eighteen (18) of the Channels in the LA-RICS (DTVRS 700MHz) layer, with the remaining six Channels set aside for a deployable system. These Reserve Channels have not been formally approved by the region or licensed by LA-RICS. Once the Region 5's Regional Planning Committee (RPC) has submitted its updated 700 MHz plan to the FCC, LA-RICS will submit its applications. Motorola analyzed the frequencies contributed by Los Angeles County and the Reserve Channels. Its analysis revealed that five (5) of the channels provided by the County will cause interference with the other frequencies in the LA-RICS frequency plan and are not suitable for deployment on the System. In order to achieve the System's contractual capacity requirements, Motorola requires the Authority to find an additional five (5) frequencies in order to meet the minimum number of frequencies identified as required to achieve the System design.

**AGENDA ITEM E**

### **RECOMMENDED ACTION**

It is requested your Committee consider and make a recommendation to the Board to pursue one or more options identified below to resolve the LMR Frequency shortage issue:

1. Review Member agencies' frequencies and identify useful frequencies for completion of the system design and pursue execution of a Frequency Use Agreement with the Member agencies for those frequencies resulting in no impact to contractual requirements; or
2. Review the Member agencies' frequencies and identify the 5 frequencies required by the System vendor and pursue execution of a Frequency Use Agreement with the Member agency for those frequencies resulting in no impact to contractual requirements; or
3. Examine frequencies within the region, outside LA-RICS member agencies, that can be used by LA-RICS and do not cause self-interference and pursue California Public Safety Radio Association (CPRA) application for those frequencies; or
4. Amend the LMR contract to reduce the 700 MHz frequency count to align with available frequencies contributed by the County of Los Angeles and Reserve Channel pool.

### **BACKGROUND**

The Land Mobile Radio System Request for Proposal required the proposing vendors design the System with 90 or less frequencies in the 700 MHz Public Safety Narrowband pool as allocated by FCC, in accordance with findings from the T-Band vs. LMR Hybrid System study completed by Jacobs Project Management team, and recommendation from your committees (Attachment A, September 2, 2012 minutes). During the proposal evaluation phase, points were awarded to proposing vendors employing less than 90 frequencies in their design, while achieving the required coverage and capacity. The resultant executed contract for the LMR system, reviewed and/or evaluated by representatives from your respective committees, required frequencies to accommodate the coverage and capacity required for the System. The County of Los Angeles (County) contributed 70 frequencies for use on the 700 MHz layer of the DTVRS. Twenty four (24) Reserve Channels were recently released by the FCC, six (6) of which the Authority is designating for mobile use according to Federal interoperability recommendations (Site on Wheels). The remaining eighteen (18) are designated for inclusion in the 700 MHz layer of the DTVRS. These licenses have not been issued to the Authority at this time. Utilizing these two pools of frequencies, Motorola performed an analysis that revealed five (5) of the channels provided by the

**AGENDA ITEM E**

County will cause interference with the other frequencies in the LA-RICS frequency plan and are not suitable for deployment on the System. In order to provide Motorola with the number of frequencies identified as required to achieve the System design, the Authority needs five (5) additional frequencies.

The System Design deliverable was scheduled for completion by December 2014. The Urban Areas Security Initiative (UASI) grant administrator is requiring an explanation supporting the delay in completing the System Design deliverable. The System Design for LMR is nearing completion. The overall architecture of all subsystems: Digital Trunk Voice Radio System (DTVRS), Analog Conventional Voice Radio System (ACVRS), The Los Angeles Los Angeles Regional Tactical Communications System (LARTCS), and Narrowband Mobile Data Network (NMDN) is complete and the only outstanding significant task is finalization of the DTVRS 700 MHz frequency plan.

The Authority needs to find replacement frequencies from other agencies in the region. Motorola, the Authority's vendor, conducted this analysis and found frequencies that would work in the System, however, it is unclear whether these frequencies are available for deployment on LA-RICS. Staff is working to pursue those frequencies. However, the amount of time it will take to secure these/receive concurrence from other agencies currently utilizing the channels is questionable. The Authority needs to secure regional frequencies expeditiously or change the terms of the contract, including capacity and coverage guarantees, to accommodate the reduction in frequencies.

### **PURPOSE/JUSTIFICATION OF RECOMMENDED ACTION**

The purpose of this letter is to resolve the frequency shortfall, and move forward towards a solution to achieve completion of the System design. Identified below are the options and corresponding benefits and/or risks for your review and consideration.

1. Review Member agencies' available frequencies and identify useful frequencies for completion of the system design and pursue execution of a Frequency Use Agreement with the Member agencies for those frequencies resulting in no impact to contractual requirements.

This option will allow the Authority and Motorola to identify useful frequencies, not limited by the number of frequencies identified to satisfy the coverage and capacity System requirements, and pursue an Agreement with the Member agency, for use of additional frequencies. This option is strongly recommended, as the Member agencies would benefit from the agreement, by including their frequencies early in the process and ensuring they are deployed in the System in the most efficient manner. The frequency use agreement could include an option to adopt language that the Authority would not deploy the frequencies if they are not required to meet operational and technical System performance.

## **AGENDA ITEM E**

2. Review Member agencies' frequencies and identify the five (5) frequencies required by the System vendor and pursue execution of a Frequency Use Agreement with the Member agency for those frequencies resulting in no impact to contractual requirements.

This option will allow the Authority and Motorola to identify replacement frequencies for the shortage, satisfying the minimum number identified to achieve coverage and capacity system requirements, and pursue an Agreement with the Member agencies for use of those frequencies. This option is recommended. The frequency use agreement could include an option to adopt language that the Authority would not deploy the frequencies if they are not required to meet operational and technical System performance.

3. Examine frequencies within the region, outside LA-RICS member agencies, that can be used by LA-RICS and do not cause self-interference and pursue California Public Safety Radio Association (CPRA) application for those frequencies.

This option puts our System design deliverable with the UASI grant administrator at risk, as staff has identified the application and concurrence process has some risks. There is no guarantee the CPRA will approve our request or that the Authority will achieve concurrence from the frequency-owning agency within the design schedule. Staff anticipates push-back from the frequency-owning agency regarding our lack of pursuit of use of Member-available frequencies.

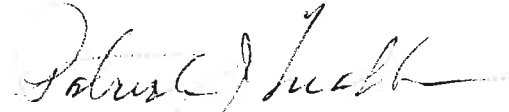
4. Amend the LMR contract to reduce the capacity requirements of the 700 MHz subsystem to align with currently available frequencies contributed by the County of Los Angeles and Reserve pool. This may require a redesign of the frequency plan if frequencies become available at a later date.

This option will reduce the current capacity requirements established by the executed contract. In addition, if frequencies become available after completion of the frequency plan, the addition of channels at a later date will have a cost associated with it.

**CONCLUSION**

It is requested your Committees consider the options presented and recommend the favored solution to the LA-RICS Board.

Respectfully submitted,



PATRICK J. MALLON  
EXECUTIVE DIRECTOR

PJM:soc

c: Counsel to the Authority

**AGENDA ITEM E**