



MINUTES

LOS ANGELES
REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

SPECIAL FINANCE COMMITTEE MEETING

Wednesday, February 19, 2014 • 1:00 p.m.
LA-RICS Headquarters, Large Conference Room
2525 Corporate Pl., Monterey Park, CA 91754

Official Voting Members Present:

Ed Roes, City of Los Angeles Administrative Office
Stephen Sotomayor, Chair, representative for City of Los Angeles Police Department
Matias Farfan, representative for City of Los Angeles, Chief Legislative Analyst
Jan Takata, County of Los Angeles Chief Executive Office
Doug Cline, representative for County of Los Angeles Fire Department
Dave Culver, representative for County of Los Angeles Sheriff's Department
Olivia Valero, representative for City of Long Beach
Joe Leonardi, representative for Los Angeles County Police Chiefs Association
Eric E. Tsao, representative for City of Torrance, At Large #1
Erick Lee, representative for Culver City, At Large #2
Greg Simay, Vice Chair, representative for City of Burbank, At Large #3
Steve Smith, representative for City of Covina, At Large #4

Representatives For Official Voting Members Present:

None

Others Present:

Pat Mallon, LA-RICS
Susy Orellana-Curtiss, LA-RICS
Truc Moore, County Counsel

Official Voting Members Absent:

June Gibson, representative for the City of Los Angeles Fire Department
James Alther, representative for the LAUSD Police Department
Kay Fruhwirth, representative for County of Los Angeles Department of Health Services
David Lantzer, representative for Los Angeles Area Fire Chiefs' Association
Daniel Jordan, representative for California Contract Cities Association



I. CALL TO ORDER

II. ANNOUNCE QUORUM – Chair Stephen Sotomayor took roll call, quorum was reached.

III. REPORTS –

Executive Director Mallon stated that there was an error in not including the System Description along with today's Finance Agenda packet.

Executive Director Mallon stated that LA-RICS had some discussions with FirstNet which could significantly affect the cost of maintenance and system refresh; at this time there are still no definitive answers from FirstNet.

Executive Director Mallon stated that the Funding Plan, should presented to the Board members at their meeting tomorrow even if the Committees not able to provide comments.

Committee member Erick Lee asked if LA-RICS is looking to the Finance Committee to make recommendations to the Board on the draft Funding Plan, even if there is no consensus from the Committee. Executive Director Mallon said that per the Board Chair and time constraints, yes.

IV. NEW BUSINESS – None

V. OLD BUSINESS –

1. Action Item: Review and make recommendations to the Joint Powers Authority on the proposed LA-RICS Funding Plan.

Chair Sotomayor thanked PMC Consultants for their work of being able to edit and change numbers at a moment's request.

Executive Director Mallon introduced Phil Carter and Dereck Wong, of PMC, to go over the Proposed Funding Plan (Agenda Attachment 1). Dereck Wong stated that since last month's Finance Committee meeting there have been a lot of changes and updates to the Funding Plan. The main objective was to develop a process to get local buy-in through workshops, surveys, and Finance Committee meetings. One of the items added into the Funding Plan was the 2nd responder users' information. Out of the 86 JPA Members, only 48 submitted responses, which some of them were full contract cities. Therefore, since there was missing information from some agencies, PMC had to extrapolate based on the available data in order to come up with regional averages. These averages were applied to those jurisdictions that did not submit a survey response. LA-RICS provided outreach to the forty-two agencies that did not submit surveys. PMC provided daily updates to the LA-RICS staff and they sent out emails and made phone calls. Out of the 42, currently there are about 14 agencies that still have not responded.



At this point Mr. Wong referred to the attachment. He stated that there are two primary driving forces:

- Cost allocations– the cost of the both LMR and LTE systems
- Survey information – this would drive the variables and the weighting

Mr. Wong went on to say that there was one change in which Administrative Cost was lowered for both LMR/LTE systems. PMC developed a Baseline Funding Plan and Alternative Scenarios. They developed 10 different scenarios with different costs for LTE and one straight forward scenario for LMR. He referenced Scenario #7 and pages 1 & 2.

Executive Director Mallon was asked if some agencies would be doing a cash contribution or In-Kind match because they are not offering anything. He stated that LA-RICS hopes that by using the In-Kind match (up to 10%) a cash match would be avoided. It is anticipated that the Cash match will be amortized over 15 years. Inaccurate numbers in the Funding Plan will be reviewed by Board Members during the 60-day comment period and a new Funding Plan will include more accurate figures. The first year will contain a cushion, since the first year is maintenance free.

Executive Director Mallon stated that the deadline is August 15, 2015 to complete the PSBN build-out, and assuming that the Board approves the contract to proceed into Phase 1 (Detailed Design) tomorrow, it will be 60 – 90 days before we can improve the Final Funding Plan. Even if the Finance Committee approves the draft Funding Plan today and the Board approves its release tomorrow for the requisite 60 day comment period and 35-day opt-out period, LA-RICS runs the risk of delaying the contractor. There are cost and schedule implications if the approval gets pushed back 30-days.

Executive Director Mallon stated that the Board's Agenda includes consideration of the LTE contract for Motorola Solutions, Inc. Also on the Agenda tomorrow is a policy decision to allow members to opt in or out of one or the other of the two systems (LMR/LTE).

Mr. Wong stated that reason behind these changes in forecast cost to cities was the inclusion of information on Second Responders.

Executive Director Mallon stated action to approve the funding plan is not required to award the LTE system contract. However, the JPA Agreement requires the development of a funding Plan prior to entering Phase 2 (Construction)

Executive Director Mallon stated that under this Funding Plan, that there could be a financing package for the \$19 million Cash match and that members would not have to start paying the debt service until completion of the project. The Cash match could be amortized over a 15-year Debt Service Agreement, assuming that members cannot come up the money right away.

Executive Director Mallon stated that the hope today is to present the Funding Plan to Board as a draft with the caveat that LA-RICS will incorporate comments at the end of a given time.



The Finance Committee, PMC, and Executive Director Mallon had a detailed discussion regarding assumptions of staying and opting out; cost; membership, etc. Ms. Susy Orellana-Curtiss brought up a significant point, whether the County takes the lead and builds the system. Are cities where the County is providing contract cities services going to agree to approve site access agreements and permit LA-RICS to build a system so that the regional services can be provided within their area? Through the Outreach meetings the information gathered regarding the Funding Plan and the Site Access Agreement go hand-in-hand, so the membership confirmation and the Site Access Agreement are being held together. How can LA-RICS build a system that serves only the County and County sites? Are the members going to commit their site to receive contract services from County Sheriff and County Fire, and then see if the system works? Those contract city sites cannot be build-out after August 2015.

Executive Director Mallon stated part of the process in developing the Funding Plan was that throughout the stakeholder sessions and outreach, the Funding Plan was built with the input of those very cities that have to make that decision.

A recommendation to approve the Funding Plan with concerns was recommended by Committee Member Erick Tsao, who called the 1st motion and Committee Member Greg Simay called the 2nd motion.

Truc Moore, County Counsel, stated that there are three options after the comments period has expired:

- 1) Approve Funding Plan
- 2) Revise Funding Plan and address all or some member comments
- 3) Reconsider the Funding Plan at a later date.

The committee held further discussion and made the following recommendations, contingent upon a policy decision of the Board to release this as a Draft Funding Plan for the 60-day comments period, and amended the motion to include further refinement as part of the process:

- Membership
- FirstNet's Role
- Cost Allocation
- True-up
- Cash Flow
- Phasing
- Phasing of Cost

Committee Member Erick Tsao called the amended 1st motion and Committee Member Greg Simay called the 2nd motion, there was a unanimous vote. **MOTION APPROVED.**

VI. PUBLIC COMMENT – None

VII. ADJOURNMENT AND NEXT MEETING:



Meeting adjourned at 3:23 p.m. by consensus.

The next regular meeting will be held on Thursday, April 24, 2014.

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**LA-RICS FUNDING PLAN
SYSTEM DESCRIPTION
February 20, 2014**

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Genesis of the Hybrid LMR System

In the summer of 2012, Jacobs Program Management, acting as the Authority's LMR Program Manager, performed a hybrid UHF T-band and 700 MHz analysis to ascertain if such a system could be deployed across the greater Los Angeles Region. The results of that study, as articulated in the "LA-RICS LMR Hybrid Feasibility Study" of July 7, 2012, indicated that a hybrid LMR System was feasible, and that such a system would meet both LA-RICS' near term and longer term public safety communications needs.

It was the conclusion of the study that a hybrid system utilizing both 700 MHz P25 and T-Band P25 technologies could provide the LA-RICS user community with a LMR system capable of supporting first responders. The overall conclusion was predicated on the minimum requirement of utilizing seventy (70) 700 MHz channels. The utilization of T-Band spectrum within the hybrid system is fully scalable thus rendering the T-Band component configurable to address concerns regarding the concentration of first responder assets in areas during emergency response.

The study concluded that a hybrid UHF T-band and 700 MHz system could:

- Support 34,000 users on the 700 MHz spectrum with the capacity to accommodate a 25% incident increase of users maintaining a 1% GoS.
- Although T-Band channels will support 34,000 users on the T-Band spectrum with the capacity to accommodate a 25% incident increase of users maintaining a 1% GoS, real-life experience indicates the need for more capacity. The study recognized that there is additional T-Band capacity available to meet the real life requirements for 10 channels per site, as this was anticipated to be a requirement in the LMR RFP and ultimate contract.
- Provide voice coverage per anticipated RFP requirements with the exception of the Angeles National Forest (ANF) areas (this is primarily due to a limited number of available tower facilities in the ANF, and coverage could be enhanced as additional sites become available).
- Include a narrowband data subsystem that could replace three existing UHF mobile data systems with a single system having coverage and capacity that would meet anticipated LMR System requirements.
- Include the current ACVRS that will be maintained on UHF but could be upgraded to more modern equipment.
- Employ bi-directional amplifiers (BDAs) for in-building coverage as used in the existing T-Band subsystems. The existing BDAs will be replaced and/or supplemented with 700 MHz BDAs as needed.
- The selected Contractor's final design should be based on user input that would determine how the hybrid system implementation plan would be rolled out.

Following the July, 2012 Hybrid Feasibility Study, all pertinent requirements for a hybrid system were incorporated in the LMR System RFP. Due to the requirement to provide up to 10 channels per site for surge capacity, for both UHF and T-Band, it was determined that a pool of

700 MHz frequencies could be used to augment capacity at sites where event escalation might occur. As a result, LA-RICS required that Proposers not exceed 90 700 MHz frequencies. Two Proposers provided proposals that addressed a hybrid system, and Motorola Solutions, Inc. was invited to negotiate. Subsequent to successful negotiations with Motorola, a contract was executed that would provide a hybrid LMR System for the greater Los Angeles Region.

Description of the LMR System

The LMR System is a hybrid, integrated, regional, public safety wireless communications system operating primarily on UHF T-Band channels and 700 MHz spectrum. This Association of Public Safety Communications Officials (APCO) Project 25 Phase II capable wireless communications system will provide public safety first responders with mission critical voice and data communications supporting day-to-day, mutual aid, and task force operations. It will provide immediate and coordinated assistance in times of emergency, minimizing loss of life and property within the greater Los Angeles Region. Furthermore, the LMR System will provide enhanced, interoperable communications through the following Subsystems:

- Digital Trunked Voice Radio Subsystem (DTVRS): This DTVRS subsystem is considered the primary subsystem. It is a hybrid design that incorporates Project 25 Phase II equipment operating a voice communications network on both UHF "T-Band" spectrum and the 700 MHz band. Intra-subsystem network operations between users on the differing bands is transparent.
- Analog Conventional Voice Radio Subsystem (ACVRS): The interoperable ACVRS subsystem will interface with the hybrid UHF and 700 MHz DTVRS subsystem. ACVRS will use narrow-banded UHF channels available to LA-RICS.

ACVRS will consist of up to Twenty-two (22) Los Angeles County Fire Department (LACoFD) regionalized channels corresponding to each Telephone Radio Operator (TRO) operational service area.

- Narrowband Mobile Data Network (NMDN): The NMDN Subsystem will be available to all member agencies. This subsystem's data network will operate on UHF channels and provides reliable Computer-Aided Dispatch (CAD) connectivity. .
- Los Angeles Regional Tactical Communications Subsystem (LARTCS): The LARTCS Subsystem will support public safety operations on VHF Low-Band, VHF High-Band, UHF and 800 MHz. This Subsystem provides DTVRS and ACVRS interoperating connectivity with legacy public safety systems users that would not normally operate on LA-RICS' primary subsystems.

Where possible, the LARTCS subsystem radio system attempts to logically share common infrastructure components.

System Capabilities and Advantages

The LMR System will facilitate and support Authority Stakeholders' day-to-day public safety voice and low-speed data communications needs, providing instantaneous mutual aid in the event of a man-made or natural disaster. As such, the LMR System provides communications

surge capability and resiliency. It provides generous allowances for disaster recovery and future system growth.

The Authority will possess a public safety LMR System that will be technically sufficient. In addition to supporting day-to-day public safety voice and data communications needs, the LA-RCIS LMR System also provides a much needed migration path off the UHF T-Band spectrum that must be vacated in 2023 pursuant to H.R. 3630; Middle Class tax Relief and Jobs Creation Bill of 2012.

Why is the Hybrid approach the best option for LA-RICS at this time?

- Removes LA-RICS from dependency on the Federal Government to make decisions regarding local spectrum and funding.
- Deploys an interoperable public safety radio network on Day 1 and buys time for later resolution with respect to future T-Band frequency availability.
- Buys time to position for the possibility of future spectrum availability in both 700MHz and 800MHz.
- Provides a baseline County-wide system now that will easily accommodate expansion as users come onboard.
- Allows for a smooth, coordinated migration over time, and stays positioned for future FCC assistance with spectrum and funding.
- Minimizes risk of breakage and stranded assets.
- Utilizes existing ACVRS and narrowband data.
- Allow us to prudently plan for yet-to-be-determined policies and direction from FCC.

Effects on Members Existing Operations & Benefits

The benefits and advantages that Member agencies' will gain with the LA-RICS hybrid LMR radio communications system, over their existing operations and for the next decade and beyond, are numerous and include:

- A truly County-wide Voice and Data System that provides coverage and capacity throughout the jurisdictions of all Member Agencies.
- Reuse of infrastructure assets leverages the investments that Members have made in existing sites and equipment.
- Cost savings are realized through centralized operations and maintenance of the LMR System.
- Cost avoidance will be achieved when the federal legislation to vacate the current UHF T-band occurs as the Authority will not have to re-procure and re-deploy a new regional communications system.

- Coverage and capacity will meet or exceed operational requirements for all LMR Subsystems and provide significant improvement over existing capabilities.
- Designed-in system growth will provide long-term usability in response to population growth and additional operational requirements.
- LMR System is being designed in a modular, scalable manner to allow the Authority to add or remove Members/users as needed, necessary and appropriate.
- LMR System will allow Member agencies the flexibility to assume responsibility for LMR System maintenance as desired.
- There will be no single-point-of-failure throughout the mission-critical DTVRS Subsystem.
- Geographically-isolated LMR System controllers will provide redundancy in the event of a disaster.
- System-wide encryption provides LMR System security against cyber-attacks.
- LMR System provides encrypted communications allowing for each member Agency to conduct secure operations.
- LMR System will achieve the Authority's vision of regional communications interoperability.
- LMR System will provide Member agencies operational and equipment options regarding end of life concerns for their current systems.
- All hardware, firmware, and software licenses will be current as of the final acceptance.
- Overall LA-RICS program objectives will be realized to the great benefit of all Members:
 - Pooling regional frequencies will be accomplished.
 - Reuse of existing infrastructure will be realized.,
 - Providing for interoperable day-to-day communications for all Members will finally become a reality.,
 - Providing instantaneous mutual aid communications will be realized.,
 - Regional disaster recovery capabilities will be enhanced.,
 - Factored-in future growth will be available.,
 - Positive reduction of duplication costs will be a reality.,
- Enhanced interoperable communications with federal, state and other outside local agencies.

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- Does not require members to invest capital dollars up front for UHF-capable subscriber units, but rather preserves individual agency equipment replacement/migration strategies. Members who operate exclusively on VHF, or who have outdated 700 MHz equipment, may choose to replace their subscriber equipment in order to take full advantage of the new hybrid network.
- Reduces the risk for all Members of deploying on a network that will be obsolete in less than a decade.
- Over the long term, 700 MHz will provide better interoperability with contiguous neighbors – Orange, Riverside, and other adjacent County users, since they are migrating to 700/800MHz.
- Potential exists for LA-RICS 700 MHz to be a direct backup for STRS and CWIRS – they currently have no backup capability.

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Description of the LTE System

The Public Safety Broadband Network (PSBN) is a state-of-the-art wireless broadband system that provides high mobility public safety grade outdoor data services across Los Angeles County. It uses the latest cellular technology, called Long Term Evolution (LTE), currently being deployed by the major cellular carriers worldwide. The PSBN is built to the higher public safety reliability standards in order to have service available when public safety needs communications most – during emergencies. The PSBN is capable of interoperability with the forthcoming FirstNet nationwide network as well as other Broadband Technology Opportunity Program (BTOP) grant funded public safety systems. It uses the radio spectrum assigned to LA-RICS in its (SMLA) with FirstNet. The PSBN consists of the following major subsystems:

- **LTE Subsystem** – The LTE Subsystem consists of a LTE compliant wireless broadband system. LTE is a global standard established by the Third Generation Partnership Project (3GPP) and represents the most advanced commercial wireless broadband technology available. The LTE Subsystem will enable the Authority to have the same system functionality as commercial wireless carriers. The LTE Subsystem will provide wireless mobile broadband service across Los Angeles County from 231 "cell sites" (known as eNodeBs). It will provide broadband coverage to outdoor users using portable devices. The LTE Subsystem will meet various Key Performance Indicator (KPI) thresholds to achieve reliable and high speed data connections. The LTE Subsystem also includes one Evolved Packet Core (EPC) implementation at the Los Angeles County Fire Department's Fire Command and Control Facility ("FCCF") to manage user mobility and routing throughout the entire system. A second redundant Evolved Packet Core is included as an additive alternate. The following table represents the percentage for each zone for the downlink (cell site to mobile device) and uplink (mobile device to cell site).

LA-RICS Coverage Zones	Percent Coverage of Geography	
	Downlink (768 kbps)	Uplink (256 kbps)
LA Basin	96.5	91.7
Santa Monica Mts.	62.6	36.2
Angeles Nat. Forest	35.0	11.6
Foothills	70.4	43.2
Foothills - Developed	91.2	76.8
CA-14 Corridor	42.2	16.9
Northern Desert	90.9	73.7
Waterway	70.8	66.0

- **Backhaul Subsystem** – The Backhaul Subsystem provides connectivity and data routing among the 231 cell sites and the Evolved Packet Core. Microwave communication is the method of choice in the Backhaul Subsystem and provides

connections for more than 80 percent of the PSBN Sites. The remaining sites as well as other intersystem connections are achieved through leased circuits.

- **Ancillary Site Subsystem** – The Ancillary Site Subsystem consists of “public safety grade” elements required to support the LTE and Backhaul Subsystems. This includes new robust monopole “towers” as well as battery backup and generator systems to provide short-term and long-term power backup in the event of commercial power failures. The Ancillary Site Subsystem also includes the necessary upgrades and improvements for existing rooftop and tower sites to support the LTE and Backhaul equipment.

System Capabilities & Advantages

The PSBN is capable of high speed and high mobility communication where service is provided. Data rates and performance on the system will be comparable to commercial cellular services. However, this network differs from commercial services in one key area – availability of service. Commercial cellular networks are not built to the same robust standard as the PSBN and are not expected to be as survivable. Furthermore, commercial usage by consumers is typically very high during emergencies. This creates congestion on the cell sites where the incident occurs. And, due to lack of priority service on the commercial networks, public safety communication is at risk due to the congestion.

The PSBN provides outdoor service to portable handheld devices over the area in the table above at data speeds at or above 768 kilobits per second (kbps) in the downlink and 256 kbps in the uplink. However, these rates represent the “edge” rates where the signal is low. LTE is capable of scaling to lower rates at lower signal levels, and therefore, the PSBN can cover more area at lower rates. This can include limited coverage inside buildings, especially inside buildings near PSBN cell sites. Typical capacity for a single cell site is expected to be on the order of 30 megabits per second (mbps). This capacity is shared by the users in that area.

The PSBN is designed to be “public safety grade.” The towers are more robust than typical cell phone towers, the sites are equipped with multiple forms of power backup, and wherever possible, components and connections are redundant such that when one element fails, another is immediately available to maintain system operation.

The PSBN is capable of transporting any Internet Protocol (IP) application data. This includes Computer Aided Dispatch (CAD), voice over IP (VoIP), electronic Patient Care Records (ePCR), web applications, email, streaming video, Geographic Information Systems (GIS), and many others¹. It is designed to accommodate very low system delays (latency) to provide high quality services to delay sensitive applications. However, the system’s designed capacity is limited, and therefore, the degree to which these applications can be run simultaneously on the same cell site is limited. And, the system may not provide the needed coverage (e.g., in-building) required by some of these applications.

The system is also capable of roaming to commercial cellular networks where PSBN service does not exist. Therefore, outside of Los Angeles County, in areas outside of the PSBN coverage footprint, and inside buildings, the system is capable of supporting a transition (with a short delay during the transition) to the commercial network. Additionally, subscriber device

¹ These applications were not purchased as part of the PSBN. They would be provided by the member agency and their data would be transported over the PSBN.

options (including one from Motorola in the base agreement) that will support the use of multiple modems that can seamlessly transition between the commercial and PSBN networks.

Effects on Members Existing Operations & Benefits

Due to the higher availability of the PSBN from both the robustness of the network to the dedicated capacity, public safety users will be able to rely more on the PSBN in emergencies. This will enable public safety personnel to have sustained communications in life threatening scenarios that may normally be constrained by congestion or complete loss of service. For example, in the event of an earthquake, existing systems may be crippled by the event itself or by the extremely high usage levels. The PSBN is expected to be more survivable in such an event and the dedicated capacity means public safety does not have to compete with the public for data resources. Finally, because the PSBN is fully controlled by public safety, the Authority and its members can adjust network priorities to address congestion within the public safety community to ensure the most critical communication gets through.

In some cases, member agencies may withhold deployment of data solutions because of the reliability or capabilities of existing systems. The higher reliability of the PSBN may enable increased use of broadband data applications in "mission critical" scenarios. Therefore, in addition to higher reliability of existing data solutions, new life saving benefits may now be possible over the PSBN as a result of the higher data availability. For example, due to congestion on commercial networks, real-time streaming video use may be limited. The PSBN has all of the advanced capabilities of an LTE network and can prioritize video traffic to ensure the needed resources are made available.

And because the PSBN is under the control of public safety, public safety determines the priority of response to system failures, when they occur. This includes public safety control of emergency deployable systems, such as a "Cell on Wheels (COW)." It also includes public safety determination of system maintenance timing to ensure that potential outages that result from maintenance minimize their impacts on public safety, not consumer, operations. It also means that restoration of service can be prioritized due to public safety, not commercial, needs.

The PSBN includes a robust backhaul network connecting the PSBN cell sites with the core network "switch." These sites are predominately located at police and fire stations. The connections could then be used to provide robust data connections to these facilities. And, to the extent that these facilities are on member agency networks, may enable connectivity among Public Safety Access Points or other data communication within the region. While the PSBN connection is currently planned to end at the tower outside these police and fire stations, a connection to the inside of the co-located facility can complete the circuit. This could enable direct phone calling between member agencies in the event that the public telephone network fails, among other applications. It should be noted that the capacity of these connections are based only on the PSBN traffic, and therefore, they may require upgrades to support new applications. However, the system is planned for 50 percent growth which could be used for limited external applications.

In order to benefit from the PSBN's capabilities, member agencies will need new Band Class 14 devices. While member agencies may have LTE capable devices from commercial carriers, those devices do not currently support the dedicated public safety spectrum. Those new devices will need to be configured and installed. Additionally, member agencies will need to connect their fixed networks, data centers, and applications to the PSBN. This will require coordination

and collaboration between IT departments to including physical connectivity, data routing, and security.

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