

Attachment 2



LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM AUTHORITY

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PATRICK J. MALLON
EXECUTIVE DIRECTOR

VIA EMAIL & U.S. MAIL

March 7, 2014

Dear City Manager:

As you are aware, your city became a member of the Los Angeles Regional Interoperable Communications System (LA-RICS) Authority ("Authority") in 2009. The Authority was established to engage in a region-wide cooperative effort to plan and establish a wide-area interoperable public safety communications network known as the Los Angeles Regional Interoperable Communications System ("LA-RICS"). The LA-RICS network consists of a Land Mobile Radio (LMR) System and a Public Safety Broadband Network-Long Term Evolution (LTE) System. Motorola Solutions, Inc. is the vendor selected to design and build out both Systems.

As a member of the Authority, your City is receiving a copy of the attached Funding Plan for review and comment over the next sixty (60) day period. The LA-RICS Board of Directors took action on March 6, 2014 to authorize distribution of the Funding Plan for member comment. This Funding Plan is being distributed to you per Section 5.01 (Adoption of Funding Plan) of the Joint Powers Agreement for the Authority.

The Funding Plan sets forth your City's share of the costs of full participation in the LMR and LTE Systems, as a full member of the Authority. For the LMR System, your City's share of the costs are based on the total actual radios in inventory, monthly average radios in daily use, the annual dispatch call volume and member residential population. As for the LTE System, the LA-RICS Finance Committee considered a variety of scenarios, each with different impacts on the anticipated costs. Of the 12 scenarios considered, the Finance Committee recommended Funding Plan Scenario 12, which consists of the following:

- Excluding In-Kind Match – Per the LA-RICS Board of Directors ("Board") action taken on March 6, 2014, Infrastructure Credits will not be given, and will not be included in the In-Kind Match in the Funding Plan.
- Excluding Capital Replacement Costs – Per the LA-RIC's Operations/Technical Joint Committee and Finance Committee recommendations, Capital Replacement costs for infrastructure for the LTE system will not be considered in

the Funding Plan at this time. Thus, the costs will be deferred to a later date, with the understanding the Committees will continue to review this item yearly.

- Adding Purchase of the Home Subscriber Server (HSS) and Associated Maintenance Costs to the Funding Plan - Per the LA-RIC's Operations/Technical Joint Committee and Finance Committee recommendations, the costs of the HSS and associated maintenance, which is a critical/essential component of the LTE System, has been added.
- Adding Purchase of the Redundant Evolved Packet Core (Core 2), and Associated Core 2 Maintenance Costs to the Funding Plan - Per Operations/Technical Joint Committee and Finance Committee recommendations, the costs of Core 2 and associated maintenance were added to the Funding Plan. The use of a second core will help to ensure redundancy in case of a failure/partial failure to Core 1, and allow for redundancy during maintenance.

Your City's comments, along with comments received from other members, will be shared with the Board when received. Comments should be received by no later than **5:00PM PST on May 6, 2014**. The Board has designated the following Authority contact person to receive all comments from members:

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I encourage your City to not wait until the end of the 60 day comment period to respond with comments and questions. Given the importance of the Funding Plan and the critical decisions that need to be made by the Board, it would be a substantial benefit to the Board if your comments are received earlier in the comment period.

As further information, following the expiration of the 60 day comment period, pursuant to Section 5.01 (Adoption of Funding Plan), the Board may adopt the Funding Plan as proposed; revise the Funding Plan to address some or all of the Member comments; or Reconsider the Funding Plan at a later date. Should the Board adopt the Funding Plan, notice will be provided to all members within 5 days of adoption of the Funding Plan, and the Board will designate a period of not less than 35 days after the Funding Plan is adopted, during which members may submit notices of withdrawal if they so desire.

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It is our hope that you will continue as a full member in the Authority and participate in both Systems for the benefit of your City, the Authority, and the region. As you know, interoperable communications represents the greatest regional need in the area of emergency preparedness and homeland security. Currently, there is no adequate interoperable and common communication system for all first responders in the Los Angeles region.

We look forward to receiving your comments on the Funding Plan, and look forward to your continued participation in assisting the Authority fulfill its purpose. Thank you for your continued support and leadership on this effort.

Sincerely,

A handwritten signature in black ink, appearing to read "Patrick J. Mallon", with a long, sweeping horizontal stroke extending to the right.

PATRICK J. MALLON
EXECUTIVE DIRECTOR

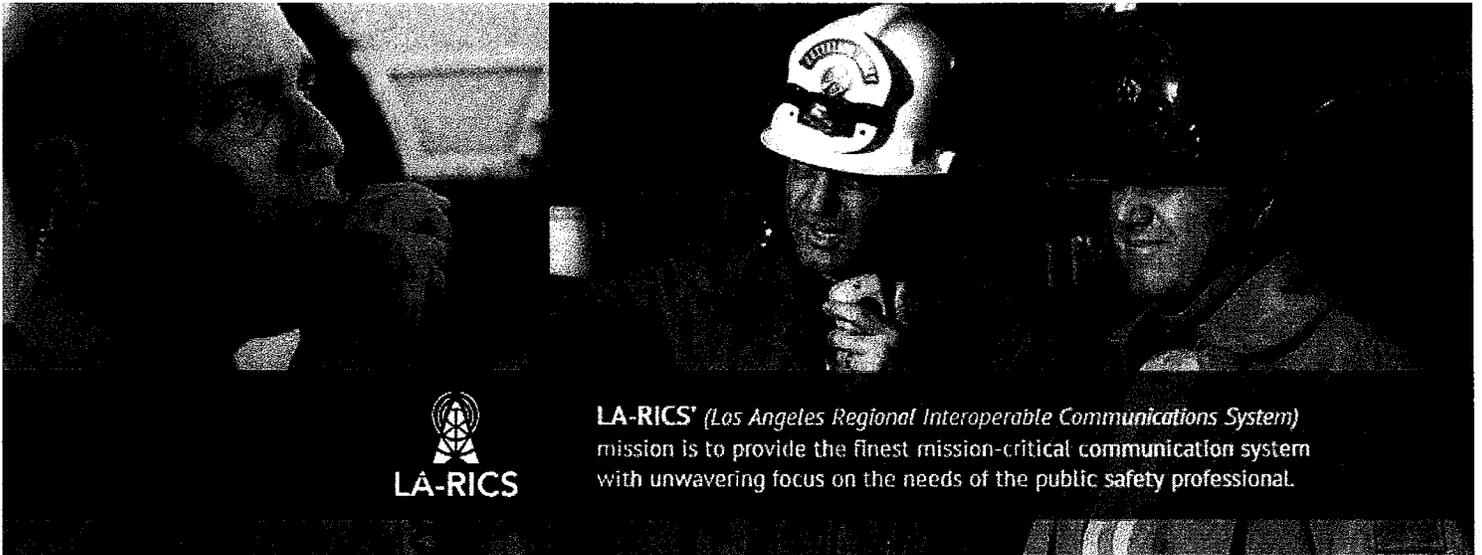
Attachments

PJM:wst



LA-RICS

DRAFT PROPOSED FUNDING PLAN



LA-RICS' (*Los Angeles Regional Interoperable Communications System*) mission is to provide the finest mission-critical communication system with unwavering focus on the needs of the public safety professional.

Authorized for Distribution by the LA-RICS Board
on
March 6, 2014

MARCH 2014

PREPARED BY: 

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Executive Summary

The Los Angeles Regional Interoperable Communication System (LA-RICS) is a modern, integrated wireless voice and data communication system designed to serve law enforcement, fire service, and health service professionals throughout Los Angeles County. LA-RICS is a joint powers authority (“Authority”) with 86 members including the County of Los Angeles, 82 cities, two school districts, and the University of California, Los Angeles.

The new system will include voice (land mobile radio, or LMR) and broadband data (long-term evolution, or LTE) components. LA-RICS will provide day-to-day communications within agencies and allow seamless interagency communications for responding to routine, emergency, and catastrophic events.

Per the Joint Powers Agreement (Agreement), the Authority must develop a Funding Plan before it commits resources to *constructing* the LMR or LTE Systems (Ref. Art. V, Sec. 5.01.). The Funding Plan applies only to the *backbone* LMR and LTE Systems, even though the Agreement addresses only the LMR System. (The opportunity to build an LTE System came in 2010, a year after the Agreement had been adopted.) Member subscriber units lie outside the Funding Plan.

The Funding Plan must identify “funding sources and mechanisms” (Art. V, Sec. 5.01.). In particular, specification of a “means or formula for determining the timing and sequencing of construction” (Art. II, Sec. 2.05 (b) (1)), and an “allocation of costs among the Members, subscribers and other funding sources” (Art. II, Sec. 2.05 (b) (2).) is required. Further, the Funding Plan must provide a “development schedule and phasing plan, which will permit the maximum feasible participation by Members.” (Art. V, Sec. 5.01). This latter requirement in the Agreement recognizes the great diversity among Members in the caliber of their LMR and existing broadband systems, as well as in their ability to internally support capital improvements and maintenance.

The Funding Plan faces LMR capital costs of approximately \$205 million and annual costs of approximately \$10 million for operations and capital replacement. It also addresses LTE capital costs of approximately \$150 million, additional capital costs of approximately \$17 million for additive alternates, and annual costs of approximately \$15 million for operations and capital replacement. The Funding Plan must identify funding sources and a means for allocating these costs among the Members.

The Funding Plan relies on grant monies for the initial construction of the LMR and LTE Systems. Member Fees are to be the revenue source for the operations and maintenance (O&M) as well as all other capital costs. Voter assessments are not practical given the high cost of a ballot campaign coupled with high voter requirements to pass a special revenue measure. The LMR and LTE program costs can be divided into an infrastructure (initial capital or capital replacement) component and an O&M component. The financing model seeks to apportion costs to the members relative to each member’s system usage relative to these two major cost components. As stakeholder survey results revealed that members do not prefer a fixed fee that is not tied to a member’s specific impact to the communications system, it is necessary to

incorporate one or more measurable characteristics as a tool to determine each member's revenue contribution.

The Funding Plan measures each member's share of the communications systems cost based on their respective usage and apportions the costs accordingly. Furthermore, by assigning variables associated with system capacity and usage, the Funding Plan preserves the relationship between these cost components and the members' individual impact on these costs. These variables include: For LMR - Total actual radios in inventory, Monthly average radios in daily use, Dispatched calls for service, and Jurisdiction residential population; for LTE - High speed data units, Jurisdiction average daily data use, and Jurisdiction residential population. A weight factor determined by the members during the stakeholder meetings is then applied to the variable. The weight factor is used to measure the significance of the particular variable relative to other variables in predicting the cost share for each member.

The Funding Plan is predicated on the assumption of full participation of every member of the Authority. That is, the member shares will be calculated assuming every potential member is paying its indicated annual share. However, this scenario is not likely to occur in the initial years as some members may exercise their right to withdraw as allowed under the Authority agreement. An agency may make a financial decision to delay participation until such time as their communication system equipment completes its normal replacement cycle and thus the agency's capital investment is fully amortized.

For every member that chooses not to participate, its annual share of the cost must be assumed by the Authority should total system costs be higher than the revenues collected from early participating members. In this instance, bridge financing may be required to make up the difference. Alternatively, early participating members will be absorbing the costs of non-participants resulting in a higher cost for the early members.

Each year an agency does not become a member or join LA-RICS, its allocated but unpaid cost share of the LTE hard match and both LMR and LTE capital replacement will accumulate. The allocated share of a member's hard match will be based on a measure such as population or the cost allocation formula while capital replacement is based on the cost allocation formula. Further, the opportunity for an agency to buy in later into the program will include paying its accumulated unpaid LTE hard match share, plus one-time buy-in charges based upon a progressive rate schedule tied to the length of time a member does not join. Assuming the Authority or a member agency incurs carrying cost of loans or funds for advanced funding to pay the LMR and LTE agreements, the buy-in charges would contribute toward repaying these carrying costs and other advanced payments made by early adopters in absorbing costs of non-participants.

Some Members may have special radio or broadband coverage challenges (e.g., hilly terrain or clusters of tall buildings) that the standard backbone systems would be unable to meet. Those Members may require additional sites or facilities for an acceptable level of service. If so, those members, and not LA-RICS, would be responsible for the costs of building and maintaining these

facilities. (Note that this does not preclude LA-RICS from being the agency that does the actual work of constructing or maintaining these facilities.)

The funding plan makes a projection of cash flow for project expenses based on construction milestones and system operability, and the impact on members' fees. The cash flow required for the LTE system backbone is developed for a 15 year time period from FY 2015/16 through FY 2029/30. LMR will be implemented in FY 2017/18 which extends the cash flow period through FY 2031/32. Both tables and graphs depict the timeline of phasing expenditures and revenue.

Introduction

The Los Angeles Regional Interoperable Communication System (LA-RICS) is a modern, integrated wireless voice and data communication system designed to serve law enforcement, fire service, and health service professionals throughout Los Angeles County. LA-RICS is a joint powers authority (“Authority”) with 86 members including the County of Los Angeles, 82 cities, two school districts, and the University of California, Los Angeles.

System Description

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-RICS 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.
 - 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.

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 others. 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 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.

Funding

The new system will include voice (land mobile radio, or LMR) and broadband data (long-term evolution, or LTE) components. LA-RICS will provide day-to-day communications within agencies and allow seamless interagency communications for responding to routine, emergency, and

catastrophic events. Although a significant portion of system costs will be covered through grant funding, the Authority must identify a method to distribute its remaining cost among its members. LA-RICS established a Finance Committee to address these issues, among other financial considerations, and subsequently retained Pacific Municipal Consultants (PMC) to develop a methodology and funding plan.

A Cost Allocation Working Paper was prepared as the precursor to preparing the Funding Plan and is described through the following sections:

- **Section 1. Funding Plan Overview:** Explains the Funding Plan requirements; includes Funding Plan goals and an overview of covered costs.
- **Section 2. Background Research:** Reports cost allocation methods for similar interoperable communication systems.
- **Section 3. Member Outreach:** Identifies member characteristics and opinions about possible Funding Plan methods and variables. Includes results from two surveys conducted in November 2013 and February 2014 and a series of stakeholder workshops conducted between November 2013 and January 2014.
- **Section 4. Cost Allocation Method:** Presents the draft cost allocation method, buy-in, and cash flow phasing estimates.
- **Section 5. Data Monitoring and True Up Period:** Describes a process for independent verification of data inputs to the variables that derive the cost shares.
- **Appendices:**
 - Appendix 1 - Cash Flow
 - Appendix 2 - Buy in for Late Adopters
 - Appendix 3 - Draft Fee Estimates

Section 1. Funding Plan Overview

Requirements

The LA-RICS Joint Powers Agreement Section 2.05(b)(2) notes that it is the responsibility of the Board of Directors to “develop and implement a funding plan (the ‘Funding Plan’) for the construction and ongoing operation of a shared voice and data system.” Section 5.01 Adoption of Funding Plan, provides additional clarity for this responsibility:

It is a critical goal of the Authority to develop a Funding Plan that identifies funding sources and mechanisms, including a development schedule and phasing plan, which will permit the maximum feasible participation by Members. The Funding Plan shall be descriptive as to the contributions required from Members.

Prior to committing resources for the construction of the System, a proposed Funding Plan as designated in Section 2.05(b)(2) shall be developed.

Section 5.01 of the agreement also requires that the Funding Plan “...shall be accompanied by a description of the System, and reports and studies to allow Members to determine the System capability, cost, financing and the effects on individual Members.”

LA-RICS has completed work in support of achieving these requirements. The LA-RICS Board of Directors established a Finance Committee and Cost Allocation Working Group (CAWG) to assist in these efforts and they have identified possible Funding Plan variables and discussed potential technological and political challenges central to the Funding Plan. The Finance Committee and CAWG agendas and outcomes have been reviewed and incorporated.

Funding Plan Components and Goals

LA-RICS has received favorable status through receipt of significant grant funding for the LMR and LTE systems. These grant funds cover a substantial portion of the costs associated with constructing the physical infrastructure that supports both systems. The Funding Plan is responsible for proposing an allocation of the costs not covered by the grant funding including LMR operations and maintenance, LMR lifecycle capital replacement, LTE hard cost matches, LTE soft cost matches, LTE operations and maintenance, and LTE lifecycle capital replacement (Section 4 provides more detail about Funding Plan costs).

The methodology for the distribution of system costs between member agencies and their acceptance is a major challenge to the successful completion of the LA-RICS project. LA-RICS aims to develop a Funding Plan that, as a goal, seeks to retain membership in the Authority and includes the following characteristics:

- A cost allocation method that distributes costs based on communication-related metrics that have been vetted by Authority members.
- A cost allocation method whose outcomes are directly related to system usage and can be tracked by member agencies.
- Flexibility in the cost allocation formula whose primary inputs can be modified over time as warranted to account for improved data and changing conditions over time among the participating jurisdictions.
- A cost allocation method that provides a degree of predictability by members for their share of costs.

The most pressing deadline is September 2015, by which the starter LTE System is to be completed. To meet this deadline, LA-RICS staff needs to begin construction by April 2014. Fortunately, the vendor cannot force LA-RICS to proceed to the construction phase in the absence of funding.

ONCE A FUNDING PLAN IS DEVELOPED, APPROVAL WILL TAKE 60 DAYS OR MORE

Once a Funding Plan is developed, the Board is obligated to distribute it to Members before the Board can vote on it. The Board must also give their Members a description of the LMR and LTE Systems, as well as “reports and studies” that would allow members to make their own assessments of system capabilities, costs, financing, and fiscal impact. The Board must also specify a period of at least 60 days for Member comments. (Art. V, Sec. 5.01.)

After the end of the comment period, the Board may “adopt the Funding Plan as proposed,” revise it in light of Member comments, or “reconsider the Funding Plan at a later date.”

The Board needs to notify Members within five days of adopting the Funding Plan. Members then have at least 35 days in which to submit written notice of immediate withdrawal from the Authority. Very significantly, “there will be no costs for any Member that withdraws from the Authority within this time period.” (Art. V, Sec. 5.01.)

LA-RICS would need to revise the Funding Plan in light of any Member withdrawals following its adoption. The provision in the Agreement (last paragraph of Art. V, Sec. 5.01) that allows for a Board vote on a revised Funding Plan states:

“After the Funding Plan has been adopted, and until contracts are awarded to design and/or construct the System, if the Funding Plan is revised in a manner which will substantially increase the financial obligations of the members, then any Member so affected will have a further right to withdraw within a period designated by the Board, which shall not be less than 45 days after the adoption of the revised Funding Plan. There will be no costs or any Member that withdraws from the Authority within this time period, except for obligations incurred prior to the adoption of the Revised Funding Plan.”

The Agreement is silent on what would happen if a second wave of Member withdrawals were to “substantially increase” the financial obligations of the remaining Members. It would be rational for Members to withdraw the first time around unless they were absolutely sure they would be unharmed not only by the Funding Plan, but a possible Revised Funding Plan following the possible withdrawal of other Members. At least two actions are possible to avoid creating a strong incentive for members to withdraw membership:

- Create a Funding Plan that has the strong, unanimous support of all members from the very start, so that there are no significant withdrawals following the initial voting.
- Create a Funding Plan that remains viable for a core of members even if all other members have withdrawn.

Developing either type of Funding Plan crucially depends on finding a suitable “construction and phasing schedule.” But this takes time, which may further tax the patience of federal granting agencies. LA-RICS can remind these agencies that the major challenge of a regional communication system has little to do with the technical challenges and everything to do with uniting the efforts of highly disparate municipal governments, County governments and special districts.

BEFORE THE BOARD ADOPTS THE FUNDING PLAN, IT MUST DECIDE MEMBERSHIP POLICY

The LTE System arose a year after the Agreement went into effect, raising the question of whether a Member can join the LTE System without having to join the LMR System, or vice versa. If so, then only the LMR or LTE portion of the Funding Plan would be of concern to a Member choosing to join the one but not the other.

A possible alternative would be a Member’s willingness to commit to joining the LMR or LTE System at a specified time in the future. A Funding Plan could then take these future memberships into account, with Funding Plan approval hopefully turning the Member’s willingness into a firm commitment.

Section 2. Background Research

Comparable interoperable communication systems were researched to identify existing finance plan strategies. Select allocation methods and variables from these comparable systems, as vetted by Authority member agencies (Section 3), have been incorporated in the draft Funding Plan. This section describes interoperable systems reviewed during the development of this plan.

Existing Interoperable Communication Systems

The following communication systems and their respective finance plans were reviewed for comparability with the LA-RICS system. This section includes a description of each system as well as a text box that highlights each system's finance strategy. Following the system descriptions, Table 1 presents a summary matrix for easy comparisons.

San Diego Association of Governments (SANDAG) Automated Regional Justice Information System (ARJIS)

ARJIS is a JPA that was developed to share law enforcement data among agencies throughout San Diego and Imperial Counties. ARJIS is currently used by local, state, and federal agencies in the two California counties. According to the website, "the secure ARJISnet intranet integrates more than 6,000 workstations throughout the 4,265 square miles of San Diego County. There are more than 11,000 authorized users generating more than 35,000 transactions daily." Although the system uses a high speed data system, it is not clear whether it is comparable to the proposed LA-RICS LTE system.

System name: ARJIS

Technology type: High speed data (closest to LTE)

Finance strategy: SANDAG and criminal justice member jurisdictions pay based on their population relative to the total regional population; ARJIS member agencies pay based on the volume of data they use.

ARJIS has three forms of member assessments: SANDAG member assessments, criminal justice member assessments, and ARJIS member assessments. SANDAG and criminal justice member assessments are based on population estimates for each member agency relative to the total regional population. ARJIS member assessments are based on the volume of data each member agency uses.

Bay Area Regional Interoperable Communications System Authority (BayRICS)

BayRICS is a JPA that is working toward providing Bay Area first responders with the ability to share text, graphics, real-time video, and other mobile "apps" designed specifically for public safety. BayRICS has 13 member agencies including seven counties, three cities, and several "hub" city groups (which include all incorporated cities in the seven-county Bay

System name: BayRICS

Technology type: LTE

Finance strategy: Monthly membership fees plus charges for each unit on the network; local infrastructure and connectivity is the responsibility of each city.

Area). Although still in planning stages, BayRICS adopted a finance plan for the LTE component, also known as BayWEB. The BayWEB finance plan calls for member agencies to pay an annual membership fee and for members that own sites to be responsible for ongoing site costs. Members must purchase their own devices as well as pay a service fee to the operating contractor and a service fee to BayRICS for each device on the system. Back office connectivity costs are the responsibility of each agency.

Orange County's 800MHz Countywide Coordinated Communications System (CCCS)

Orange County's CCCS is a JPA that provides interoperable LMR communications services to law enforcement, fire services, public works, and lifeguard/marine safety departments in Orange County. Annual operating expenses and system maintenance are split between the County and the 22 member cities. The County pays a large proportion of annual expenses. Member jurisdictions pay the remainder of the expenses based on their portion of system-wide radios.

<p>System name: <i>CCCS</i></p> <p>Technology type: <i>LMR</i></p> <p>Finance strategy: <i>The County covers a certain amount of operating costs; member city costs are apportioned according to the number of radios they have relative to the number of total radios in the system.</i></p>
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Countywide Integrated Radio System (CWIRS)

CWIRS is an interoperable LMR system used by Los Angeles County agencies (with the exception of the sheriff and fire departments). The system allows County departments to communicate internally and across departments in day-to-day operations. The system includes a bridge contact to patch into fire and law enforcement communications. The County charges agencies system use costs based on the number of radios they use.

<p>System name: <i>CWIRS</i></p> <p>Technology type: <i>LMR</i></p> <p>Finance strategy: <i>Members pay a fee based on the number of radios they use.</i></p>
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Interagency Communications Interoperability System (ICIS)

ICIS is a JPA with seven member cities (Beverly Hills, Burbank, Culver City, Glendale, Montebello, Pasadena and Pomona). The ICIS system is a decentralized network of LMR components purchased and constructed by individual cities and linked together through a microwave and fiber network for regional coverage. Member agencies provide radio infrastructure and frequencies compatible with the existing ICIS network and equipment and pay annual member dues. Subscriber agencies do not own any network infrastructure and must contract with a member agency to utilize the network. Subscribers only pay a fee to ICIS for those radios the subscriber desires to have on system-wide roaming. Affiliates are mutual aid users and are not assessed any fees.

<p>System name: <i>ICIS</i></p> <p>Technology type: <i>LMR</i></p> <p>Finance strategy: <i>Member agencies pay annual fees; subscribers pay a per-radio fee based on system-wide roaming; affiliates are not assessed a fee.</i></p>

Marin Emergency Radio Agency (MERA)

MERA is a JPA that provides essential LMR communications among local and regional public entities including fire, police, and public works departments, special districts, transportation agencies, and other emergency responders in Marin County. The system was designed for routine communications within

agencies and emergency communications across agencies during mutual aid and disaster operations in the county. To cover operation and maintenance costs, member agencies pay a percentage of annual system expenses. The percentage is calculated using a formula that considers the jurisdiction's area, population, and agency types.

System name: *MERA*

Technology type: *LMR*

Finance strategy: *Members pay a percentage of annual operating expenses based on a formula that factors the jurisdiction's area, population, and agency types.*

Michigan Public Safety Communications Systems (MPSCS)

The MPSCS is the largest public safety communications system in North America and provides interoperable voice communications for many of Michigan's first responders and state government agencies including fire, health, law enforcement, public safety, transportation, transit, schools, and private public safety and health groups. The MPSCS owns most of the infrastructure; member

agencies own some infrastructure as well. Member agencies are responsible for maintaining their own infrastructure, but may be eligible for credits by doing so. The entire system is heavily subsidized by the state of Michigan which lowers overall cost to the users.

System name: *MPSCS*

Technology type: *LMR*

Finance strategy: *Members pay an annual fee per radio that varies depending on the number of talkgroups the member wants to access; members that maintain their own infrastructure are eligible for system credits; system is heavily subsidized by the state of Michigan.*

For LMR, user fees are assessed on a per-radio per-year basis with four tiers of annual radio costs and the MPSCS provides a tiered access approach that allows agencies to determine how much they would like to use their radios in day-to-day operations. The base level has no cost, but base level talkgroups are only activated during emergencies. The other three levels are incrementally more expensive per radio, but the increase in cost corresponds with an increase in talkgroup access.

Table 1. Finance Strategy Comparison Table

	System Type	Finance Strategy
ARJIS	<i>High speed data (closest to LTE)</i>	<i>SANDAG and criminal justice member jurisdictions pay based on their population relative to the total regional population; ARJIS member agencies pay based on the volume of data they use.</i>
BayRICS	<i>LTE</i>	<i>Monthly membership fees plus charges for each unit on the network; local infrastructure and connectivity is the responsibility of each city.</i>
CCCS	<i>LMR</i>	<i>The County covers a certain amount of operating costs; member city costs are apportioned according to the number of radios they have relative to the number of total radios in the system.</i>
CWIRS	<i>LMR</i>	<i>Members pay a fee based on the number of radios they use.</i>
ICIS	<i>LMR</i>	<i>Member agencies pay annual fees; subscribers pay a per-radio fee based on system-wide roaming; affiliates are not assessed a fee.</i>
MERA	<i>LMR</i>	<i>Members pay a percentage of annual operating expenses based on a formula that factors the jurisdiction's area, population, and agency types.</i>
MPSCS	<i>LMR</i>	<i>Members pay an annual fee per radio that varies depending on the number of talkgroups the member wants to access; members that maintain their own infrastructure are eligible for system credits; system is heavily subsidized by the state of Michigan which lowers system cost to users.</i>

Section 3. Member Outreach

Introduction

Authority stakeholder engagement and participation is a crucial component of the funding analysis and development of an equitable Funding Plan. To that end, PMC sent an initial survey to fire and police chiefs, as well as city managers, of each Authority member city. The list of agencies was provided by the Authority. The survey included questions intended to better understand each agency's current communication system and communication needs. Sixty-five survey responses were received, the results of which have been incorporated into a summary report that was used as a resource in developing the proposed Funding Plan. Highlights of the survey are included later in this section.

To share the results of the survey and get additional feedback from Authority members, three rounds of stakeholder meetings were held between November 2013 and January 2014. Each series included hosting several meetings on different days and in separate locations with the intention of increasing Authority member participation. Meetings were held in the

Cities of Whittier, Glendale, and Torrance. Attendees at each meeting were varied and consisted of police and fire chiefs, city managers or their assistants, and other city financial personnel. Several consultants also attended; therefore, not everyone in attendance participated in the small group discussions or activities conducted during the meetings. The descriptions and results of these activities are presented further on in this document. LA-RICS Authority Stakeholder Meeting #1

Details of the dates and locations details of each meeting are as follows:

Wednesday, November 20, 2013

2:00 p.m. to 4:00 p.m.
Whittier Community Center, Room 1
7630 Washington Avenue
Whittier, CA 90602

Thursday, November 21, 2013

10:00 a.m. to 12:00 p.m.
Fire Station 21
421 Oak Street
Glendale, CA 91204

Participation included 35 people on Wednesday and 37 people on Thursday.

Upon entering the meeting, attendees were greeted and asked to sign in. Each person was provided a name badge, an agenda and comment card, a comparable projects informational sheet, and a "Frequently Asked Questions" document. A presentation was given to all attendees

followed by small group discussions. An activity was conducted to identify variables that could potentially be used within the proposed Funding Plan.

Purpose

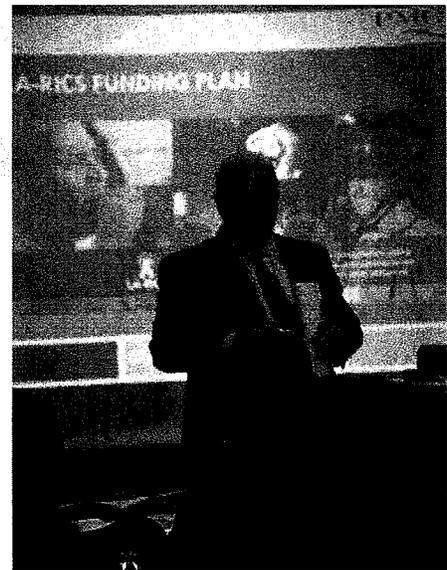
The purpose of the first round of stakeholder meetings was to:

- Provide information about the proposed Funding Plan project (project intent, survey results, demographics maps, next steps, etc.).
- Present information about fair share cost strategies across other, similar systems.
- Listen and collect input from participants on their likes and dislikes, their ideas for fair share cost allocation, and possible barriers to participating in the proposed LA-RICS.
- Create an environment where all attendees have opportunities to participate and provide input.

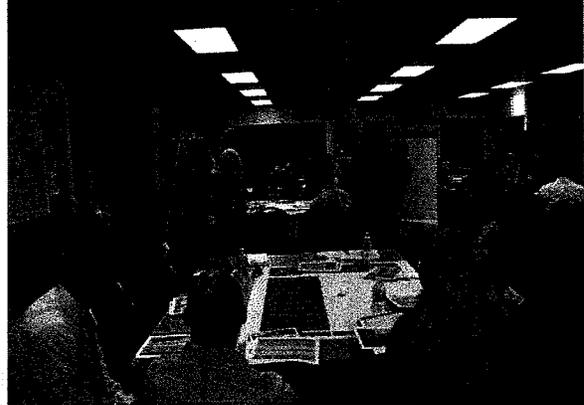
Presentation

A PowerPoint presentation was given to participants that described the intent of the project, reviewed the work and research completed to date, and presented the results of the surveys completed by member agencies. Highlights of the survey results included:

- Over half of the survey respondents' services are not provided by Los Angeles County.
- Of the jurisdictions whose services are provided by Los Angeles County, most have communication costs incorporated into their agreement.
- Most fire and police annual maintenance costs associated with their communications systems are less than \$300,000.
- Mobile and portable radios vastly outnumbered other types of units (such as control and console units) utilized for fire and police communications systems.
- For every ten sworn officers, there are three to four non-sworn personnel who use the system.
- EMS/paramedic services were provided by the fire department in 80 percent of responding jurisdictions.
- There was a relatively even spread of wireless broadband usage over jurisdictions. Usage ranged from less than 2 GB to unlimited GBs.



- Although most jurisdictions did not track, or did not know, their annual call volume or dispatch volume for their public safety services (fire, police, EMS, and other), of those that did, the majority answered that it was less than 10,000 each.
- Earthquake, wildfires, and hazardous materials release were the top three hazards that threaten most jurisdictions.
- Most public safety service departments of a jurisdiction did coordinate with those of another jurisdiction.
- When asked how satisfied a jurisdiction was with coordinated communication with outside departments, of those that responded, almost half were very satisfied.
- When asked how satisfied a jurisdiction was with interoperability with other jurisdictions, of those that responded, almost half were very satisfied.
- A weighted average showed that most jurisdictions preferred a variable-based cost allocation, followed by a tiered fixed-fee method, and fixed-base and variable metric charge. A fixed-fee cost allocation was the least preferred.



Small Group Discussions

The objective of the small group discussions was to elaborate on survey responses, to identify benefits and shortcomings of various funding methods, and to learn about barriers to membership. Within the small group discussions, three main questions were posed:

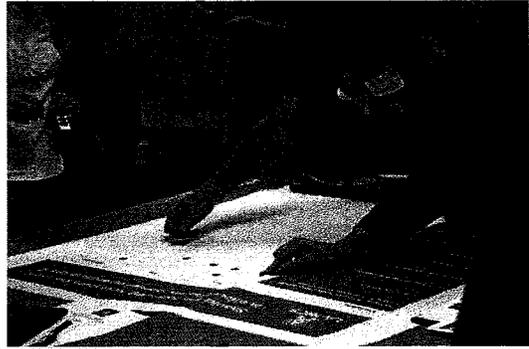
1. Is the proposed LA-RICS important for your jurisdiction? Why or why not?
2. What do you think are the regional benefits of this proposed system?
3. What would prevent you from becoming a member of the proposed system?

At the beginning of each discussion, participants were asked to introduce themselves and answer question number one. Subsequent to the introductions, a discussion ensued about questions two and three.

The overarching themes that came out of the small group discussions over the course of two days are summarized below.

Cost

- Jurisdictions need certainty in year-to-year costs and are concerned about the potential variability for LA-RICS.
- Agencies want to be sure the cost structure avoids discouraging use of the system in a way that may compromise public safety.
- Current members of ICIS are concerned about losing coverage and functionality or double-paying for maintaining two systems to meet their needs.
- Jurisdictions had concerns about who would pay for upgrades.
- Some members expressed the benefits of economies of scale (e.g., greater purchasing power).



Coverage

Some jurisdictions are happy with the coverage they have, and many require more technical information on the system capabilities to determine if they want to participate in LA-RICS.

- Concern that LA-RICS level of service may not meet current standards, and therefore would not be appealing even if costs were lower.
- Jurisdictions were unsure of “what they are getting.”
- Sub-regional interoperability may be necessary if a regional system is too large for some jurisdictions.
- Some jurisdictions have geographic constraints and densely populated areas that require a different type of coverage.
- There is concern about system failure due to the size of the LA-RICS coverage area and its administration.
- Jurisdictions want to be sure that the system will work within all buildings.

Control

Jurisdictions (especially smaller ones) are concerned about losing local control or the ability to make the decisions that are best for their community.

- LA-RICS needs to be better defined, including the consequences if some jurisdictions do not participate.
- Moving to LA-RICS is a leap of faith and there are concerns that it will not work.
- Cities are skeptical of many regional systems because they are not tailored to individual city's needs.
- Some jurisdictions have moved or are in the process of moving to ICIS because it is working well.

Compatibility

Agencies are uncertain about the compatibility of LA-RICS with their current infrastructure and radio systems/units.

- Members of ICIS question if a link could be developed between LA-RICS, ICIS, and existing subsystems.
- Some stakeholders were of the opinion that there is no advantage to one master system, and that existing systems should communicate, or be integrated, with one another.
- Members are concerned about the transition process from their current system to LA-RICS.
- Members had questions about compatibility with neighboring county systems.
- There is concern that the system has not been thoroughly tested.
- Participants suggested also exploring an expansion of ICIS.

Variable Activity

A group activity was conducted once everyone had been given a chance to answer the three aforementioned questions. The activity gave participants the opportunity to identify which variables they believed should be considered when allocating their annual operating costs. One member of each jurisdiction went through a list of variables and put a sticky dot in a "Yes," "No," or "Maybe" box indicating their preferences. Members of the same jurisdictions were allowed to collaborate to determine an appropriate response for their city.

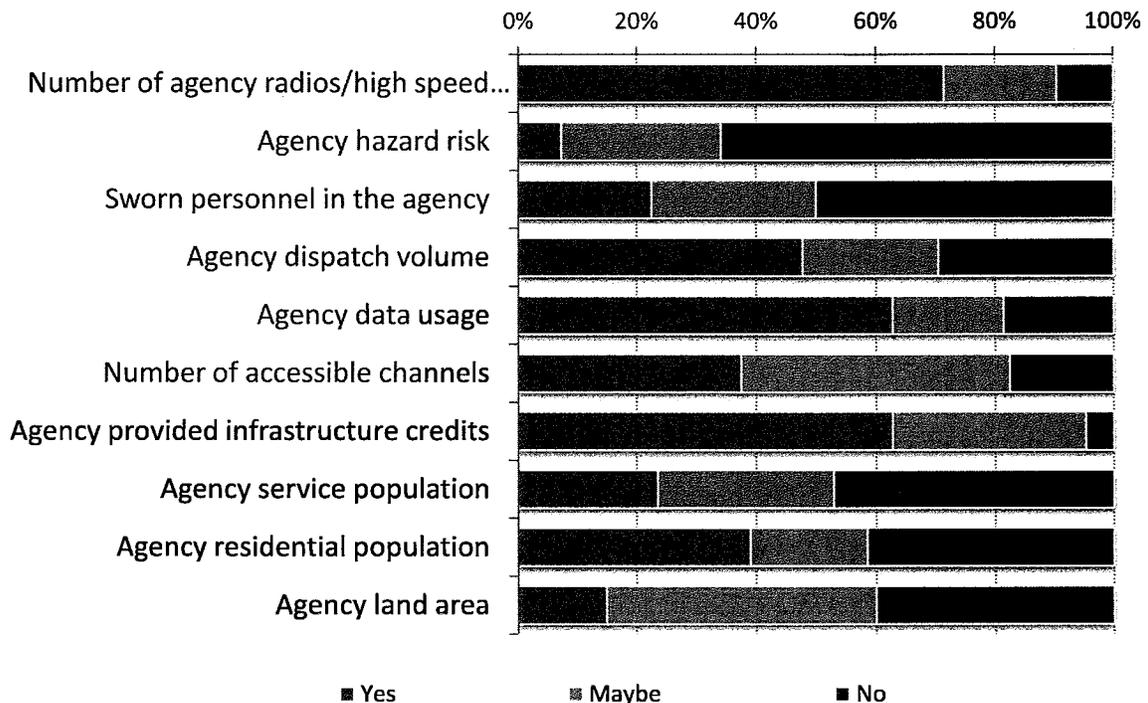
The following table indicates the number of dots placed in each corresponding box.

Table 2. Stakeholder Workshop Preferred Variables

Variable	Yes	No	Maybe
Number of agency radios/high speed data units connected to the system	30	4	8
Agency hazard risk	3	27	11
Sworn personnel in the agency	9	20	11
Agency dispatch volume	21	13	10
Agency data usage	27	8	8
Number of accessible channels	15	7	18
Agency provided infrastructure credits	27	2	14
Agency service population	8	16	10
Agency residential population	16	17	8
Agency land area	6	16	18

The following graph helps further emphasize participants' preferred variables and indicates that the top three preferred are: number of agency radios, agency data usage, and agency-provided infrastructure credits. The Authority board has since eliminated the infrastructure credit. Agency hazard risk was the least preferred variable.

Figure 1. Stakeholder Workshop Preferred Variables



LA-RICS Authority Stakeholder Meeting #2

Series #2 of the LA-RICS Authority meetings were held on the following dates and locations:

Wednesday, December 18, 2013

1:30 p.m. to 3:30 p.m.
Glendale Central Library
2nd Floor Auditorium
222 E. Harvard Street
Glendale, CA 91205

Thursday, December 19, 2013

10:00 a.m. to 12:00 p.m.
Whittier Community Center, Room 1
7630 Washington Avenue
Whittier, CA 90602

Participation included 26 people on Wednesday and 25 people on Thursday.

A presentation to all attendees was followed by small group discussions. Within the smaller groups, the preferred variables selected during the first round of stakeholder meetings were weighted by participants to demonstrate how strongly they should be considered in the proposed funding plan.

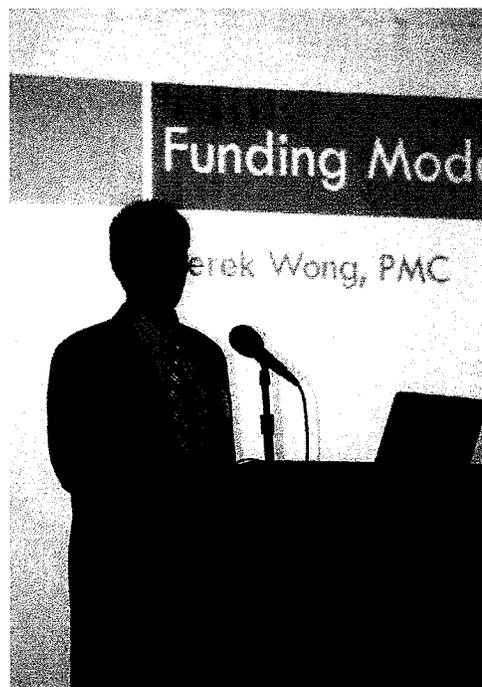
Purpose

The purpose of Stakeholder Meeting #2 was to:

- Provide information about the results from Stakeholder Meeting #1.
- Present information about the cost allocation methodology and preferred variables outlined in the draft Funding Plan.
- Listen and collect input from participants on their preferred weightings for the proposed variables to be used in the Funding Plan.

Presentation

The presentation given to participants described the intent of the meeting, summarized the results of the series of meetings conducted in November, and explained how these results have been used. Covered highlights include:



- Presentation of four key themes which resulted from the first round of stakeholder meetings: Cost, Coverage, Control, and Compatibility
- Overview of preferred variables
- Overview of draft funding model
- Weighting of variables along with an explanation of why this is important
- Explanation of how jurisdiction or agency data will be gathered

Preferred Variables

The objective of the small group discussions during the first round of stakeholder meetings was to elaborate on survey responses, identify benefits and shortcomings of various funding methods, and learn about barriers to membership. Participants also identified which variables they prefer and should be proposed for incorporation in the proposed Funding Plan.



The preferred variables that resulted for each system are:

LMR

- Total actual radios in inventory
- Monthly average radios in daily use
- Dispatched calls for service
- Jurisdiction residential population
- Infrastructure credits

LTE

- High-speed data units
- Jurisdiction maximum data available
- Jurisdiction average daily data use
- Jurisdiction residential population
- Infrastructure credits

Small Group Discussions

The objective of the small group was to weight each of the preferred variables. By weighting the variables, the participants were indicating how influential each preferred variable should be in determining cost allocation. The weights were tallied, indicating preferences for each variable's influence on the funding model. Participants were given an activity board and were asked to weight each variable for both the LMR and LTE systems. Weightings were recorded on a scale of 0 to 100, with all four variables adding up to 100.

Based on input from agencies over two days, the results from the weighting exercise are summarized below.

LMR Metrics	Total Actual Radios in Inventory	Monthly Average Radios in Daily Use	Annual Dispatch Call Volume	Member Residential Population
Average Rating	6	35	42	17
Most Common Rating	0	40	40	0
Max Value	20	75	100	60
LTE Metrics	High-Speed Data Units	Maximum Data Available	Average Daily Data Use	Member Residential Population
Average Rating	13	26	44	14
Most Common Rating	0	40	40	0
Max Value	60	75	100	60
Knowing that this option greatly benefits large jurisdictions, are you still interested in this idea?				
Yes			12	
No			13	
No Response			5	

Participants were also given the opportunity to voice concerns or ask questions, to discuss each variable and why they chose to weight a variable in a particular way relative to others. The overarching themes that came out of the small group discussions over the course of two days are summarized below.

Usage

There were strong preferences for variables that most closely mirrored actual use, though many participants recognized the availability and accuracy of this data prior to system initiation may not be attainable.

- The most accurate, equitable and fair funding plan should be based on actual system usage and dispatch call volume.
- The Funding Plan should be set up like a private cell phone plan with private companies. Set an initial baseline year and then project budget forward based on usage.
- Fire and police usage volumes differ.
- There may be a disparity between what an agency uses today and what they would like to use in the future.
- As data use changes, the funding model will have to be adapted over time.

Outstanding Policy and Technical Questions

Many policy and technical questions still require resolution before a commitment to participate can be made by agencies. Cost of system is still important, but almost seems secondary to more details of the system operations.

- How will utility costs be apportioned and paid for once each system is up and running?
- Concerns were expressed that there would be limitations to data use.
- Many agencies use computer/CAD systems which may be on the LTE but not the LMR systems. How will disparities between agencies be managed?
- What are the implementation costs?



Variable Measurement

There was discussion, and in some cases disagreement, about how each of the proposed variables would actually be measured (e.g., what data source would be used for population, and when we say "radio use" does that mean talking or having a radio connected?).

- Would the number of radios in inventory be measured by the radios in use, or would it include the extra radios an agency might have in stock in case a radio is damaged or those stockpiled for catastrophic use only?
- How would annual dispatch call volume be measured?
- It would be difficult and a burden to have to monitor average daily use of the LTE system.
- Three variables should be the maximum used; otherwise, it will get too complicated.
- In some cities, the daily population varied dramatically due to the daily influx of a working population.
- If the first year is not based on capital costs, how will talk time be measured?

Funding Plan Split

Multiple participants suggested that the Funding Plan split up cost allocations based on capital costs and operation and maintenance costs.

- There should be two cost pools:
 - The first for capital costs for design and construction for which the initial fee would be based on set values (such as population).
 - The second for operation and maintenance which would be put in place once the system is live, which can be based on usage.

Outstanding Issues

A significant number of outstanding issues prevented participants from feeling that they could weight the variables appropriately.

- Smaller jurisdictions expressed concerns regarding response times by LA-RICS in comparison to larger jurisdictions.
- Until more certain information is provided about the infrastructure credits, many were unwilling or unsure about whether that would deter them from participating.
- Participants suggested that secondary responders be added to the weighting.
- Many agencies believe that their systems work well already.
- There were discussions about how costs would affect contract cities, especially if some should choose to participate and others do not.
- Population does not equal usage. How will this be accounted for?
- If the funding plan is based on number of radios in, then there is a disincentive to buy radios to have in inventory.

Eligible Infrastructure Credits*

The idea of infrastructure credits was identified at these meetings, however based on the feedback received there was no clear consensus on how to move forward by LA-RICS. The current funding plan would require that any credit given be offset by an increase of the overall cost. With this information, the following question was posed to the participants:

Knowing that this option greatly benefits large jurisdictions, are you still interested in this idea?

Many attendees stated that they would not be interested in pursuing infrastructure credits given this new information; however, almost the same number shared that they needed more information before they could make a decision. Some comments, questions, and concerns included:

- Depends on how big of a credit a jurisdiction will get.
- Shared credits would keep smaller agencies in
- Would this be a one-time credit or annual?

***The Authority board has since eliminated the infrastructure credit by taking action on this issue at their March 6, 2014 Board meeting.**

LA-RICS JPA Stakeholder Meeting #3

Continuing the effort to engage the Authority and stakeholders in the development of a fair and equitable funding plan, the third, and final, set of stakeholder meetings were held on the following dates:

Wednesday, January 22, 2014

2:00 a.m. to 4:00 p.m.
Fire Station 21
421 Oak Street
Glendale, CA 91204

Thursday, January 23, 2014

10:00 a.m. to 12:00 p.m.
Whittier Community Center, Room 1
7630 Washington Avenue
Whittier, CA 90602

Thursday, January 23, 2014

1:30 p.m. to 3:00 p.m.
3330 Civic Center Drive
Torrance Cultural Arts Center, Garden Room
Torrance, CA 90503

Participation included 22 people on Wednesday, 27 people on Thursday in Whittier, and 16 people on Thursday in Torrance. Attendees included police and fire chiefs, city managers or their assistants, and other city financial personnel.

Participants were provided their name badge, an agenda/comment card, and a handout describing the Proposed Funding Plan process to date upon entering the meeting room. Additionally, if an attendee was an Authority member or representative, and either had their own first responder network or contracted at least one (fire or police) service through the County of Los Angeles, they received a cut sheet created for their jurisdiction with their jurisdiction's proposed cost allocation (the full version of this document can be found on the LA-RICS website). A presentation to all attendees was followed by a questions and answer discussion with Pat Mallon, Executive Director of LA-RICS and Derek Wong, PMC Municipal Finance Manager.

Purpose

The purpose of Stakeholder Meeting #3 was to:

- Provide information about the results from Stakeholder Meeting #2 and how those results were used in the Proposed Funding Plan.
- Present the overarching themes and the results of the preferred variable weighting exercise from the last meeting.
- Review LMR and LTE cost explanation and member percentages
- Conduct a facilitated Q&A discussion with attendees providing an opportunity to ask questions of the LA-RICS staff and technical team.

Presentation

The presentation given to participants described the intent of the meeting and provided the results of the last series of meetings as well as a draft of the Proposed Funding Plan. Highlights of the presentation include:

- An overview of the overarching themes that resulted from Stakeholder meetings #1 and #2 and how that input has been used to develop a draft funding plan.
- The LMR and LTE variable weights that resulted from the second stakeholder meeting.
- The LMR and LTE cost explanation.
- An explanation of a sample fee cut sheet, the annual fee distribution and the LA-RICS value with and without grant funding.

Weighted Variables and Cost Explanation

During the second round of stakeholder meetings, participants were asked to weight each of the preferred variables resulting from the first stakeholder meeting. By weighting the variables, participants were indicating how influential each preferred variable should be in determining cost allocation. The weights were tallied, indicating preferences for each variable's influence on the funding model. The weights for each system resulting from this exercise are:

LMR

- Total actual radios in inventory: 5%
- Monthly average radios in daily use: 35%
- Dispatched calls for service: 40%
- Jurisdiction residential population: 20%

LTE

- High-speed data units: 20%
- Jurisdiction average daily data use: 60%
- Jurisdiction residential population: 20%
- *“Jurisdiction maximum data available” was removed as a variable due to challenges in data collection*

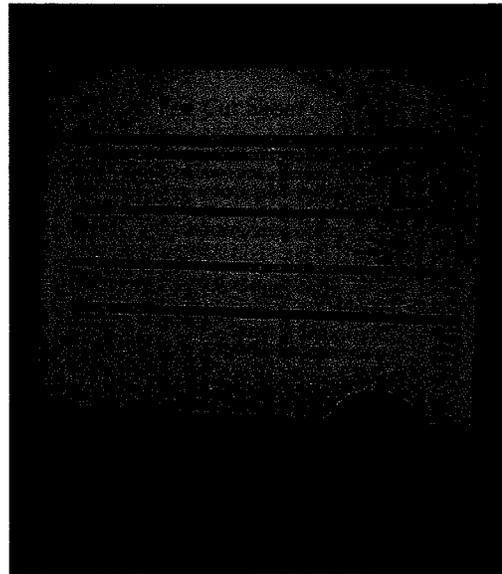
Derek Wong, PMC Municipal Finance Manager, walked attendees through the breakdown of annual costs for each system. Additionally, Mr. Wong explained, line-by-line, a sample fee cut sheet so participants with a sheet for their jurisdiction would be able to understand the costs. He also discussed the cost for the entire LA-RICS system with and without grant funding.



Q & A Discussion

Following a presentation, a facilitated question and answer session was held with Pat Mallon, Executive Director of LA-RICS and Derek Wong, giving participants the opportunity to further understand the components that went into developing the draft funding model. From the three meetings, a focused set of questions and discussions emerged. These themes are outlined below: *(Please note that responses to questions are italicized.)*

1. **Survey Definitions, Results, and Calculation Clarifications** – Stakeholders at all three meetings had questions regarding how the survey data was used in the draft funding model, for further definition of some key variables, and if a second focused survey could be re-circulated for final input from member agencies. *As a result, a second survey was circulated to all member agency contacts on Monday, January 27, 2014.*
2. **Secondary Responders and the Role of Contract Cities** – At the meetings, several participants asked questions to better understand the role or capability of the system to handle secondary responders (public works, utilities, transit, and other municipal services) and how cities that contract police/fire services to LA County were considered in the funding model. *In response, staff indicated that the system is designed to handle both public safety and secondary responders on the system. Contract cities costs for public safety use of the system would come through their contracts with Sheriff and Fire, and that if they would like to include additional radios or units on the system, direct costs would be assumed by these agencies.*



3. **Validation, Confirmation, and Opt-in/Opt-out Process** – With draft funding numbers in hand, some stakeholders wanted to get a sense of the timeline by which their agency is required to make a decision on whether or not to participate in LA-RICS. They inquired about the process that would be established once the system is up and running to ensure their costs are in line with the service they are receiving. *Staff indicated that once the funding plan is adopted, an agency will have not less than 35 days to opt-out of the JPA. If the Funding Plan is revised in a manner which will substantially increase the financial obligations of the Members, than any Member so affected will have a further right to withdraw within a period designated by the Board, which shall not be less than 45 days after the adoption of the Revised Funding Plan. Once the system is up and running, it is likely that each agency will have a validation period, with check in at 30 days, 6 months, and 1 year to ensure their city's use is representative of their costs.*
4. **Coverage, Reliability, and Technology Clarifications** – Stakeholder participants asked several design and technology questions about the reliability of the system, whether future technology was considered, and what programming needs their agency may need to cover. *Staff indicated that system-wide the coverage is about 95% and that next generation technology was considered in the future funding costs*
5. **Confidence in Available Grant Funding (and what is/isn't covered)** – Stakeholders at all three meetings inquired about the confidence of LA-RICS staff in securing the \$150 million in grant funding needed. They asked for further clarification about what costs are considered in the Operations and Maintenance category. *To date, the JPA has secured between \$75-80 million in funding, and will be eligible for additional funding once a contract is secured. The grant covers much of the upfront infrastructure costs for both the LMR and LTE system.*

Funding Plan Variables Survey

Based on the input provided during the stakeholder engagement process, there was a desire by JPA membership to conduct a second survey to gather additional data and information on the variables used in the Funding Plan Cost Allocation. In response, PMC distributed a survey in late January that requested verification of the following information by each member agency for both primary and secondary responders within their jurisdiction:

- Total actual radios in inventory (LMR)
- Average daily radios in use (LMR)
- Annual incidents dispatched (LMR)
- High-speed broadband data units (LTE)
- Average daily broadband data use [in gigabytes] (LTE)

In addition to these variables, the Authority also requested that member agencies provide an estimate of additional radio and high speed data units that could reasonably be expected to connect to LA-RICS outside of the estimates provided for primary and secondary responders.

Section 4. Cost Allocation Method

This section presents the cost allocation methodology for the LMR and LTE systems. Cost allocation, or apportionment, is the manner by which the various costs of the system are assigned to defined user characteristics and then allocated to the LA-RICS members based on each member's known user data. The apportionment methodology considers the components of the system costs to the extent that they are known or can be estimated.

The objective of this section is to 1) outline in a representational model the system funding preferences of the membership that were stated at the stakeholder meetings; 2) generate further discussion and comment on funding model parameters and development; and 3) highlight certain policy questions in financing the LMR and LTE systems that need to be addressed before a final funding model is submitted for review and approval by the Authority.

Cost Components of Systems

The costs and model development assume build-out and implementation of the interoperable communications systems as defined in the executed agreement for LMR and the request for proposal for the LTE program. Costs based on a phased build-out and implementation will result in different costs in the early years of the system. The phasing assumptions for system development will be determined by the Authority. The Funding Plan relies on grant monies for the initial construction of the LMR and LTE Systems. Member Fees are to be the revenue source for the O&M as well as all other capital costs. Voter assessments are not practical given the high cost of a ballot campaign coupled with high voter requirements to pass a special revenue measure.

Land Mobile Radio (LMR)

Components of LMR cost include the contract system maintenance costs (Phase 5) totaling approximately \$56 million for the full 15-year contract period.¹ In addition to the contracted system maintenance cost, an infrastructure component is included to account for replacement and technological upgrade and/or obsolescence. This infrastructure component, or capital replacement, is called the "Life Cycle Cost". A Life Cycle Cost estimate for replacement of LMR infrastructure is approximately \$55 million as determined by the LA-RICS engineering consultant. Payments by Members for capital replacement cost are spread evenly over a 15 year period. An amount for Authority administration costs is also estimated to be \$1.3 million annually.

Long Term Evolution (LTE)

The estimated costs for LTE shown are from the Broadband Technology Opportunity Program (BTOP) grant Budget Narrative dated November 25, 2013, as well as Authority estimates. The itemized cost components are as follows:

¹ Exhibit C.6 – Schedule of Payments LMR System Maintenance – LA-RICS LMR Agreement with Motorola. The payments vary from year to year, beginning at \$4 million in year 1 and reducing to \$3.6 million by year 15.

1. System operations and maintenance: \$28.6 million (first 5 years)
2. Total matching funds (cash) for LTE construction grant (hard match): \$19.5 million
3. Total matching funds-in-kind for LTE grant (soft match): \$19.5 million

In-kind matching funds may be counted as program administrative support, a contribution of infrastructure, or a combination of both.

In addition, the model accounts for LTE life cycle costs that would be paid for by the Members. The amount is approximately \$50 million as determined by the LA-RICS broadband consultant. Payments by Members for capital replacement cost are spread evenly over a 15 year period. An amount for Authority administration costs is also estimated to be \$1.3 million annually.

The funding plan comprises fees that are calculated by LA-RICS member for both the LMR and LTE systems. Within each system, the various costs making up the total fee estimate are provided. Within LMR, the fee estimate reflects three costs (operation and maintenance (O&M), capital replacement, and administrative). Within LTE, the fee estimate reflects five costs (annualized grant hard match, annualized grant in-kind match, O&M, capital replacement, and administrative). The following annual cost estimates for LMR and LTE are assumed for calculating annual member fees. These costs represent the baseline scenario for the LA-RICS system.

System	Cost Component	Annual Cost	Total
LMR	O&M	\$3,726,600	\$9,824,800
	Capital Replacement	\$4,806,800	
	Administrative	\$1,291,400	
LTE	Hard Match	\$1,875,000	\$14,964,900
	In-Kind Match	\$1,871,900	
	O&M	\$6,473,900	
	Capital Replacement	\$3,452,700	
	Administrative	\$1,291,400	

Upon request of the Authority, additional scenarios for LTE were generated to provide cost options. A total of 12 LTE scenarios were developed inclusive of the baseline:

1. Baseline scenario
2. Excluding In-Kind Match
3. Excluding In-Kind Match and Capital Replacement
4. Excluding In-Kind Match and Core Maintenance (PSBN Hardware & Software EPC and NMS)
5. Excluding In-Kind Match and eNodeB Maintenance (PSBN Hardware & Software RAN)

6. Excluding In-Kind Match and Leased Circuit Maintenance
7. Excluding In-Kind Match and adding Site Lease Payment Cost (The Authority has since eliminated this Scenario)
8. Excluding In-Kind Match and Adding Maintenance for Home Subscriber Server (HSS)
9. Excluding In-Kind Match and Adding Maintenance for Redundant Evolved Packet Core
10. Excluding In-Kind Match and Adding Maintenance for Location Services
11. Excluding In-Kind Match and Adding Maintenance for a second Redundant Evolved Packet Core
12. Excluding In Kind and Capital Replacement, and Adding Maintenance for Home Subscriber Server (HSS) and Redundant Evolved Packet Core

FIRST NET OPTIONS

In February 2012, Congress enacted *The Middle Class Tax Relief and Job Creation Act of 2012*, containing landmark provisions to create a much-needed nationwide interoperable broadband network that will help police, firefighters, emergency medical service professionals and other public safety officials stay safe and do their jobs. The law's governing framework for the deployment and operation of this network, which is to be based on a single, national network architecture, is the new "First Responder Network Authority" (FirstNet), an independent authority within National Telecommunications and Information Administration (NTIA), located within the Department of Commerce. FirstNet will hold the spectrum license for the network, and is charged with taking "all actions necessary" to build, deploy, and operate the network, in consultation with Federal, State, tribal and local public safety entities, and other key stakeholders.

The Act provides \$7 billion in funding towards deployment of this network, as well as \$135 million for a new State and Local Implementation Grant Program administered by NTIA to support State, regional, tribal and local jurisdictions' efforts to plan and work with FirstNet to ensure the network meets their wireless public safety communications needs.

LA-RICS staff has been holding discussions with FirstNet to help offset costs of LA-RICS. LTE scenarios #3, #4, and #5 above are costs that FirstNet might be able to absorb leading to cost savings to LA-RICS members. These costs include capital infrastructure replacement, Core Maintenance (PSBN Hardware & Software EPC and NMS), and eNodeB Maintenance (PSBN Hardware & Software RAN).

THE FUNDING PLAN DOES NOT APPLY TO SUBSCRIBER UNITS

Under the Funding Plan, members would still be responsible for their LMR or LTE subscriber units. For the LMR System, Members would be responsible for the costs of buying, maintaining, operating and replacing the following:

- Portable radios
- Mobile radios
- Base stations
- Dispatch consoles

For the LMR System, Members would be responsible for the costs of buying, maintaining, operating and replacing the following:

- High-speed data units

LA-RICS may be able to help Members secure grant funding for radio or broadband subscriber units. LA-RICS may also be able to help Members pool their unit purchases so as to command lower pricing. But notwithstanding these forms of assistance, LA-RICS does not assume cost responsibility for subscriber units.

THE FUNDING PLAN DOES APPLY TO STANDARD LMR AND LTE BACKBONES

As stated earlier, the purpose of the Funding Plan is to fund the backbone LMR and LTE Systems necessary to meet a service standard under normal conditions. Major elements of the LMR backbone include:

- Radio towers
- Microwave links
- Fiber optic links
- Radio antennas
- Control buildings and radio communications equipment
- Ancillary equipment

Major elements of the LTE backbone include:

- Monopoles towers
- Microwave links
- Fiber optic links
- Broadband antennas
- Control buildings and broadband communications equipment
- Ancillary equipment

Cost Apportionment

The LMR and LTE program costs can be divided into an infrastructure (initial capital or capital replacement) component and an operations and maintenance (O&M) component. The financing model seeks to apportion costs to the members relative to each member's usage on LA-RICS

relative to these two major cost components. As stakeholder survey results revealed that members do not prefer a fixed fee that is not tied to a member's specific impact to the communications system, it is necessary to incorporate one or more measurable characteristics as a tool to determine each member's revenue contribution. Once these characteristics or variables are identified, they will form the basis for calculating member payments corresponding to the member's share of capital and O&M expenses.

Cost Variables

The costs for constructing, operating, and maintaining the LMR and LTE systems are established (or will be established) in the agreements with the systems' provider. This Funding Plan therefore assumes that all costs are fixed—at least through the contract periods of the agreements. While the total system costs to be apportioned will not vary, it is possible to distribute the costs among members through the use of several determining variables which will be discussed below. It should be noted that the variables discussed in the Funding Plan may or may not have been key factors used by the provider in determining the established total systems costs. The LMR and LTE systems are very complex and, in order to assemble their cost proposal, the provider would have had to consider many more factors than the variables presented below.

The infrastructure and operations costs of the systems are dependent on a wide range of factors such as geography, topography, land use patterns, population distribution, existing infrastructure and agency interface, and the specific public safety and emergency communications needs of the members. The provider's cost proposal also accounts for substantial uncertainty in both constructing the systems and implementing service. Given the complexity of the cost proposals, the Funding Plan measures each member's share of the communications systems cost based on their respective usage and apportions the costs accordingly. Furthermore, by assigning variables associated with system capacity and usage, the Funding Plan preserves the relationship between these cost components and the members' individual impact on these costs. Listed and described in the table below are examples of variables that capture to a degree the two major cost components of the systems. These variables will be further discussed at upcoming stakeholder meetings. The purpose of presenting these variables is to show how they potentially would be used to determine a member's share of infrastructure capital replacement and O&M costs. Other variables that the stakeholders and Authority members introduce can be factored into the funding formula based on Authority discussion and potential refinements to the initial model.

There are a few important questions to consider when selecting variables:

- Does the variable actually provide a good metric of the characteristic of interest? For example, if usage of the system is thought to be a good indicator of the impact on operations and ultimately the cost of operations, does the variable reflect actual usage of the system?
- Is data available to support the use of a variable? If the data is not available for every member, then the variable is less useful in a working cost model.

- Does use of the variable “crowd out” or diminish the weight in the formula of a more representative variable?
- As the underlying data for the variables could change over time (e.g., number of radios), which could affect their cost share, is the participating agency willing to report the updated information?

Table 3 lists some potential variables and their applicability to capital and O&M costs; more may be identified as the formula specification process continues.

Table 3. Potential Variables for LMR and LTE Cost Sharing Formulas

System/ Variable	Description	Measure of Cost	Variable applied to Capital Cost	Variable applied to O&M Cost
LMR				
Total actual radios in inventory	A jurisdiction’s inventory of radios for first and second responders	Measures the capacity of a jurisdiction’s use of the LA-RICS system; the higher the inventory, the increased capacity required of the	X	
Monthly average radios in daily use	A jurisdiction’s typical radio use for first and second responders	Measures the typical usage by a jurisdiction of the LA-RICS system; the higher the average radio use, the greater the impact to the system.		X
Dispatched calls for service	A jurisdiction’s origin of use of the LA-RICS system by first and second responders	Measures to a degree each jurisdiction’s local environment; the higher the dispatch calls for service, the greater the impact to the system.		X
Jurisdiction residential population	A jurisdiction’s current resident population	Measures the size of population as a predictor of system use; in general, the greater the population, the greater the impact to the system.	X	X
LTE				
High speed data units	A jurisdiction’s inventory of high speed data units that require broadband access (mobile devices, tablets, PDAs, etc.) for first and second responders	Measures the capacity of a jurisdiction’s use of the LA-RICS system; the higher the inventory, the increased capacity required of the system.	X	X

System/ Variable	Description	Measure of Cost	Variable applied to Capital Cost	Variable applied to O&M Cost
Jurisdiction maximum data available	A jurisdiction's maximum allotted broadband usage using current broadband estimates for first and second responders	Measures the capacity of a jurisdiction's use of the LA-RICS system; the higher the maximum data available, the increased capacity required of the system.	X	
Jurisdiction average daily data use	A jurisdiction's typical daily broadband use for first and second responders	Measures the typical usage by a jurisdiction of the LA-RICS system; the higher the average broadband use, the greater the impact to the system.		X
Jurisdiction residential population	A jurisdiction's current resident population	Measures the size of population as a predictor of system use; in general, the greater the population, the greater the impact to the system.	X	X

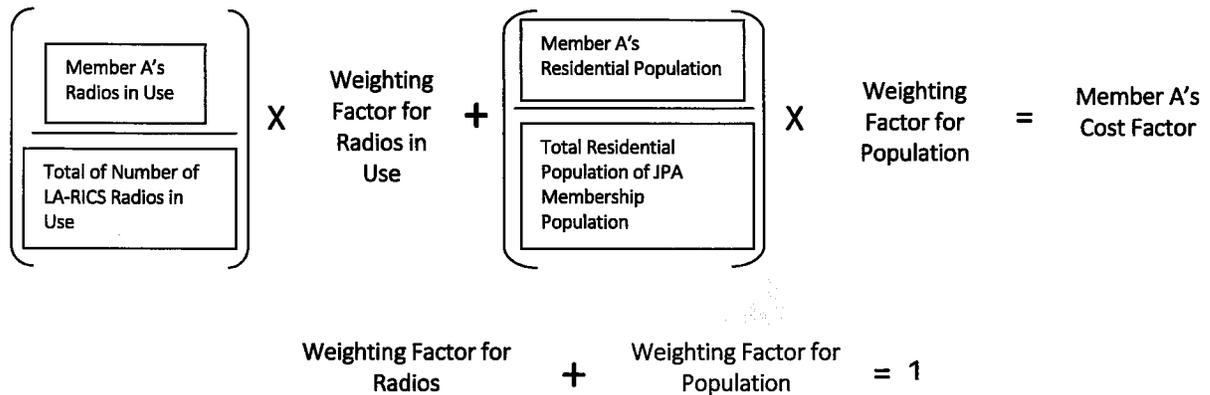
Use of Variables

Initially the cost formulas for LMR and LTE will be based primarily on the information provided by the members and can be refined and updated over time as more information becomes available. Each member would report the quantity or volume for each variable used in the formulas. As LA-RICS becomes operable, the system itself may be able to capture the required information in lieu of reporting by the members.

LMR Formula

A system-wide total for each variable is derived by summing all members' quantities for that variable. A member's variable factor will be determined by dividing its quantity by the system total. A weight factor determined by the members during the stakeholder meetings is then applied to the variable. The weight factor is used to measure the significance of the particular variable relative to other variables in predicting the cost share for each member. **Figure 2** illustrates how the share of LMR operations cost for a given member would be calculated using the average number of radios in use and the member's population. The variables are identified for illustration purposes only.

Figure 2. Formula for LMR O&M Cost Allocation



Note: Variables for illustration purposes only.

The weighting factors in the above illustration will be determined based on stakeholder input. The weighting factors must sum to one which will also be the total of all members' cost factors added together. The cost factor derived from the above illustration would then be multiplied by either the annual total LMR O&M cost or the total LMR Life Cycle Cost to arrive at the member's cost share for O&M or capital. The members' share of the cost for O&M and capital would be calculated separately but using the same apportionment method illustrated above and possibly with different variables and different weighting factors that will be determined based on stakeholder input. Figure 3 provides an illustration of the apportionment using hypothetical figures.

Figure 3. Illustration of Cost Allocation Formula

Assumptions: Member A has 200 radios in use. There are 1,500 total radios in use in LA-RICS. Member A has 90,000 population. Total population is 500,000 in LA-RICS. Weighting factor is 60% for radios in use variable, and 40% for population variable to illustrate the relative importance of each variable on the the cost share. Weighting factors will be determined during stakeholder workshop.

$$[(200/1,500) \times 60\%] + [(90,000/500,000) \times 40\%] = \text{Member A's Cost Factor}$$

$$(0.079) + (0.072) = 0.151$$

If Annual Total Cost is \$1M, then Member A's Cost Share is = \$1M x 0.151 = \$151,000

Note: Variables for illustration purposes only.

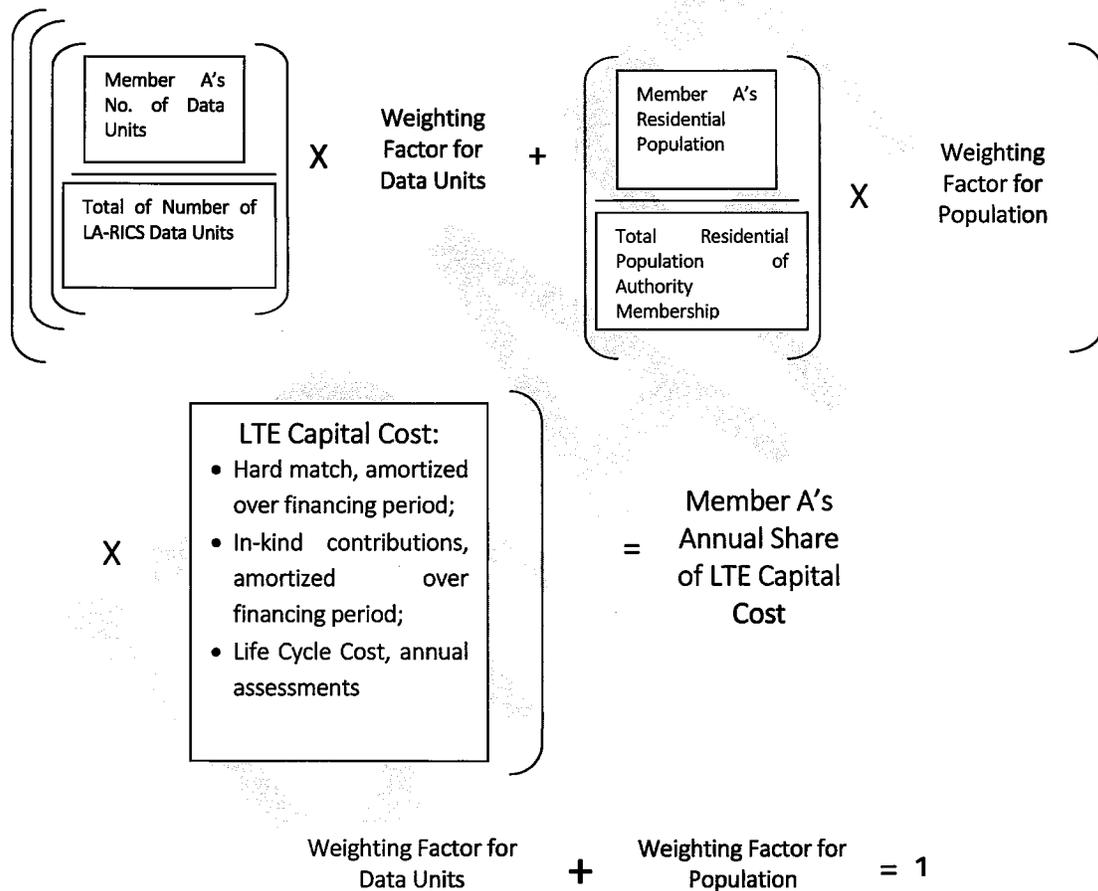
LTE Formulas

The formulas for LTE cost sharing have the same general structure as LMR described above, but with different variables and cost components. The LTE BTOP grant requires a hard cash match of approximately 10 percent and a soft match of 10 percent that may be provided by in-kind contributions. For the purpose of illustration the hard and soft match plus the LTE Life Cycle Cost

are combined to equal the LTE capital cost to be apportioned. In the actual Funding Plan these costs may be broken out separately. Each cost can also be separated for their respective apportionments through replication of the formula. The in-kind contributions include non-infrastructure items such as administrative support and program management, but the total in-kind contribution is considered for the purposes of LTE capital cost apportionment.

In **Figure 4**, two capital-related variables are indicated for LTE: high speed data units and residential population. The illustration below indicates how the infrastructure components of the LTE program would figure into the members' share of capital cost.

Figure 4. Formula for LTE Capital Replacement Cost Allocation



Note: Variables for illustration purposes only.

LTE capital costs and member shares are annualized amounts, assuming that members spread their total capital cost shares such as for lifecycle replacement over time.

The LTE O&M cost formula would follow the same format as the LMR's O&M formula, as shown in **Figure 5**, below. For illustration, the variables used are daily data usage and total available data.

Figure 5. Formula for LTE O&M Cost Allocation

$$\left(\frac{\text{Member A's Daily Data Usage}}{\text{Total of Daily Usage of Authority Membership}} \right) \times \text{Weighting Factor for Radios} + \left(\frac{\text{Member A's Total Available Data}}{\text{Total Available Data of Authority Membership}} \right) \times \text{Weighting Factor for Population} = \text{Member A's Cost Factor}$$

$$\text{Weighting Factor for Radios} + \text{Weighting Factor for Population} = 1$$

Note: Variables for illustration purposes only.

Draft annual fee estimates by member agency were developed for the LA-RICS LMR and LTE systems using the cost allocation process described above. Fee estimates are shown for LA-RICS members with their own independent police and/or fire services. Estimated fees for full contract cities are not calculated, as fees for full contract cities will be determined by each member’s contract terms with Los Angeles County. However, where full contract members report secondary responder information, fee estimates are provided for that portion. Also, if a full contract member did not submit a survey for secondary responder information, a fee was not calculated. Full contract cities are as follows:

- City of Agoura Hills
- City of Artesia
- City of Bellflower
- City of Bradbury
- City of Calabasas
- City of Carson
- City of Cerritos
- City of Commerce
- City of Duarte
- City of Hawaiian Gardens
- City of Hidden Hills
- City of Industry
- City of La Cañada Flintridge
- City of La Mirada
- City of La Puente
- City of Lakewood
- City of Lancaster
- City of Lawndale
- City of Lynwood
- City of Maywood
- City of Norwalk
- City of Palmdale
- City of Paramount
- City of Pico Rivera
- City of Rancho Palos Verdes
- City of Rolling Hills Estates
- City of Rosemead
- City of San Dimas
- City of Santa Clarita
- City of South El Monte
- City of Temple City
- City of Walnut
- City of Westlake Village

A survey was distributed to the member agencies in early February 2014 to collect updated data for the cost model. The need for updated data was in response to suggestions by member agencies attending the third round of funding plan workshops. Forty-eight (48) member agencies responded to the survey. Of the thirty-eight (38) member agencies that did not provide a response, twenty-one (21) members contract with the County for police, fire, and EMS. The remaining non-respondents are members who either contract only for fire with the County, or are independent cities.

Assignment of Cost Share Data

The Funding Plan requires data input on the variables from members to specify the cost-sharing amounts. The reliance on data from members provides a component of local influence in that a jurisdiction's provided data will directly impact its cost share. Data not provided by members, non-members, or withdrawn members are assigned an allocation of their variables for purposes of calculating a "standby" share cost, and to minimize burden on the participating members. Cost shares are re-calculated for all members whenever there is buy in from new or returning members.

In order to provide fee estimates for all members that either do not contract services with the County, or contract for only one service with the county, data for non-responders to the survey under this group was extrapolated using actual data from the submitted surveys. The extrapolation consisted of deriving a multiplier coefficient for each of the data variables. The coefficient is the ratio of the total sum of the data variable (radios, for example) divided by the total population of all survey respondents. This coefficient is then multiplied by the population of each survey non-responder to estimate its respective data variable.

Those members with extrapolated estimates who did not submit a survey are identified in the funding plan. Other members that submitted a survey did not include all requested data. For example, a member reported one piece of data (e.g., average radios), but did not report another requested piece (e.g., total radios). Similarly, a member reported the number of high speed data units, but did not report the average daily data usage. To bridge these data gaps, the coefficient method described above is used to complete the data input.

Mutual Aid Agreement Affiliates

Agencies that have formal mutual aid agreements with Authority members may receive limited authorization to utilize the RICS network as a result of the mutual aid agreement. Access to the RICS system will be limited to those communications essential to and within the scope of such mutual aid operations.

Buy-in Cost for Late Adopters

The Funding Plan is predicated on the assumption of full participation of every member of the Authority. That is, the member shares will be calculated assuming every potential member is paying its indicated annual share. However, this scenario is not likely to occur in the initial years

as some members will exercise their right to withdraw as allowed under the Authority agreement. An agency may make a financial decision to delay participation until such time as their communication system equipment completes its normal replacement cycle and thus the agency's capital investment is fully amortized.

For every member that chooses not to participate, its annual share of the cost must be assumed by the Authority should total system costs be higher than the revenues collected from early participating members. In this instance, bridge financing may be required to make up the difference. Alternatively, early participating members would have to absorb the costs of non-participants resulting in a higher cost for the early members.

Each year a member does not join LA-RICS, its allocated but unpaid cost share of the LTE hard match and both LMR and LTE capital replacement will accumulate. The allocated share of a member's hard match will be based on a measure such as population or the cost allocation formula while capital replacement is based on the cost allocation formula. Further, the opportunity for an agency to buy in later into the program will include paying its accumulated unpaid LTE hard match share, plus one-time buy-in charges based upon a progressive rate schedule tied to the length of time a member does not join. Assuming the Authority or a member agency incurs carrying cost of loans or funds for advanced funding to pay the LMR and LTE agreements, the buy-in charges would contribute toward repaying these carrying costs and other advanced payments made by early adopters in absorbing costs of non-participants. Description, formula and examples of the buy-in method are contained in the Appendix and using sample members and their costs for LMR and LTE Scenario 12.

Some Members may have special radio or broadband coverage challenges (e.g., hilly terrain or clusters of tall buildings) that the standard backbone systems would be unable to meet. Those Members may require additional sites or facilities for an acceptable level of service. If so, those members, and not LA-RICS, would be responsible for the costs of building and maintaining these facilities. (Note that this does not preclude LA-RICS from being the agency that does the actual work of constructing or maintaining these facilities.)

Incentives for Early Adopters

The Funding Plan described here does not provide a direct financial incentive per se to "early adopters" (current members who do not withdraw after approval of the final Funding Plan) other than the potential for avoiding higher cost payments for late adopters as described above. As other existing communications systems become dated, a program of incentives may be considered as a means to influence a jurisdiction's decision to be an early adopter, or to rejoin the Authority at an earlier period after withdrawing. These may include receiving some relief from the LTE hard and/or soft matches (e.g. reduced cost share), and receiving compatible radios for LA-RICS from the Authority. Possible incentives/penalties include:

- For the LTE program, some portion of the hard and/or soft match recovery costs may be forgiven for early adopters. Alternatively, this incentive could apply to early adopters of both LMR and LTE.

- Early adopters can take advantage of favorable interest rates for amortized principal (LTE hard and soft match).

Phasing of Construction

The original concept assumed LTE construction costs and the hard match payments based on construction were not phased. That is, the entire hard match is treated as payable principal amount at the beginning, but with annual payments then spread-out over a 15-year financing period. A modification of that model assumes that the hard match payments will be due upon the actual progress payments made to the PSBN contractor when construction milestones are reached. At this time the particular milestones have not been identified, or whether only certain areas will benefit from the system prior to others. The phasing and location of construction will determine the possible scenarios for member payment and cash flow. As described in the JPA agreement, the funding plan will illustrate the general timing and phasing for project implementation, which will allow JPA members to understand the approximate time frames for when the system will come on line and they will be required to contribute to the system.

Cash Flow

The LA-RICS funding plan provides a projection of cash flow of project expenses based on construction milestones and system operability, and the impact on members' fees. The cash flow required for the LMR system backbone is developed for the time period of FY 2017/18 through FY 2031/32, a 15 year period. The cash flow is presented assuming participation by all JPA members from system implementation. Potential major funding sources for the LMR backbone include Los Angeles County, City of Los Angeles, Long Beach, and all other Independent Cities.

The cash flow required for the LTE system backbone is developed separately for the time period of FY 2015/16 through FY 2031/32, a 17 year period to match the end years with LMR. The cash flow is presented assuming participation by all JPA members from system implementation. Potential major funding sources for the LTE backbone include Los Angeles County, City of Los Angeles, Long Beach, and all other Independent Cities.

Cash flow is conducted for one LRM scenario and five LTE system implementation scenarios including:

Scenario 1, Baseline

Scenario 2, Excluding LTE In-Kind Match

Scenario 3, Excluding LTE In-Kind Match and Capital Replacement

Scenario 8, Excluding In-Kind Match and Adding Maintenance for Home Subscriber Server (HSS)

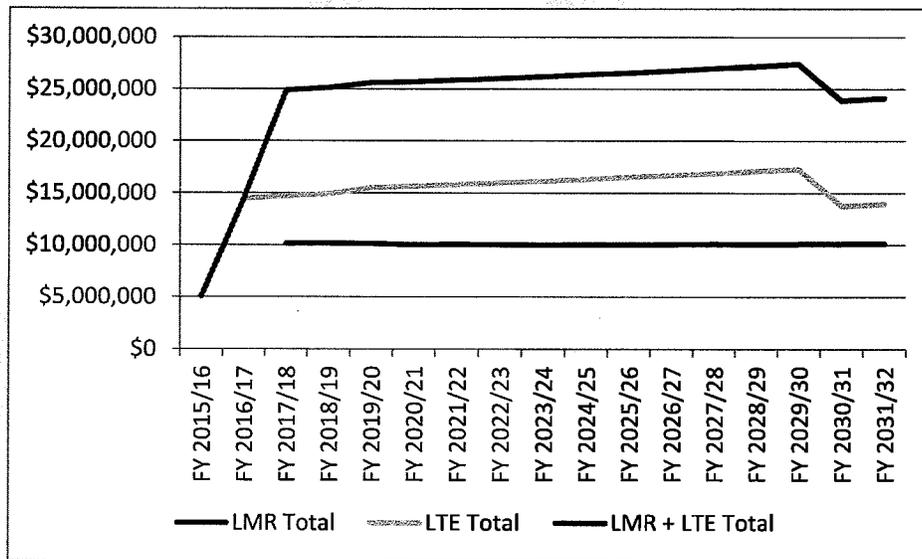
Scenario 12, Excluding In Kind and Capital Replacement, and Adding Maintenance for Home Subscriber Server (HSS) and Redundant Evolved Packet Core

The Appendix contains the detailed Cash Flow for each scenario in which LMR and LTE system costs are shown on an annual basis. Following these costs, the member fees on an annual basis

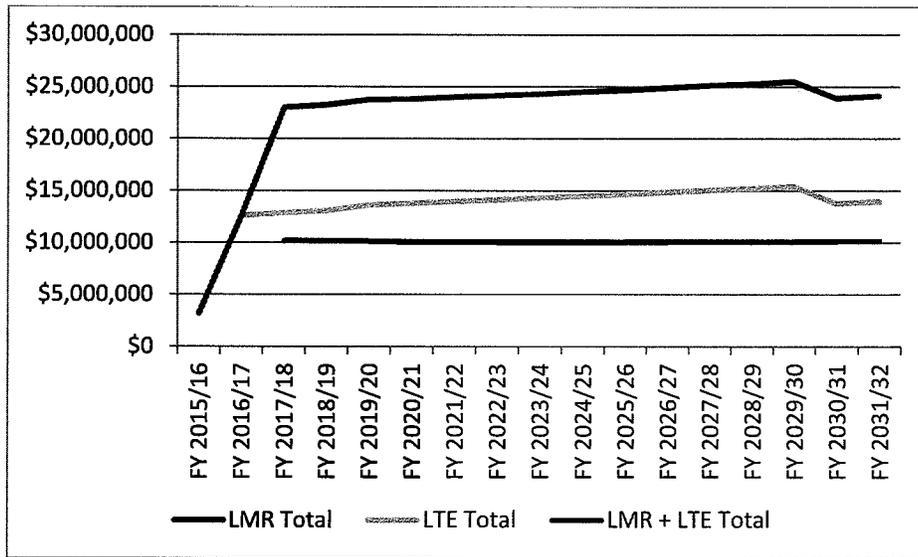
are then provided. The total system costs are consistent with the funding plan model costs used for the cost allocation method. There is a slight deviation in the fee amounts for each member agency when comparing the cash flow against the annual cost figures shown separately in the funding plan model for a few reasons, one being that the cash flow shows the annual O&M cost estimates from the respective LMR and LTE PSBN contracts that vary up and down while the funding plan model reflects an average annual O&M of the total that is straightline, and another being the funding plan model uses rounded data. The annual O&M in the cash flow shows the variation over time depicting the phasing of the systems as described in the contracts.

Graphics below show the general trends in project expenditures for LMR and LTE for each scenario. As the assumption in the cash flow is that revenue equals cost, a single line each for LMR, LTE, and combined systems represents the trends. LTE costs begin in FY 2015/16 (1st year of period) while LMR costs do not begin until FY 2017/18 (3rd year of period). The trend either up or down for most of the period is due primarily to the O&M contract cost estimates. Towards the end of the cash flow period, the hard match payments for LTE conclude which reduces the LTE cost.

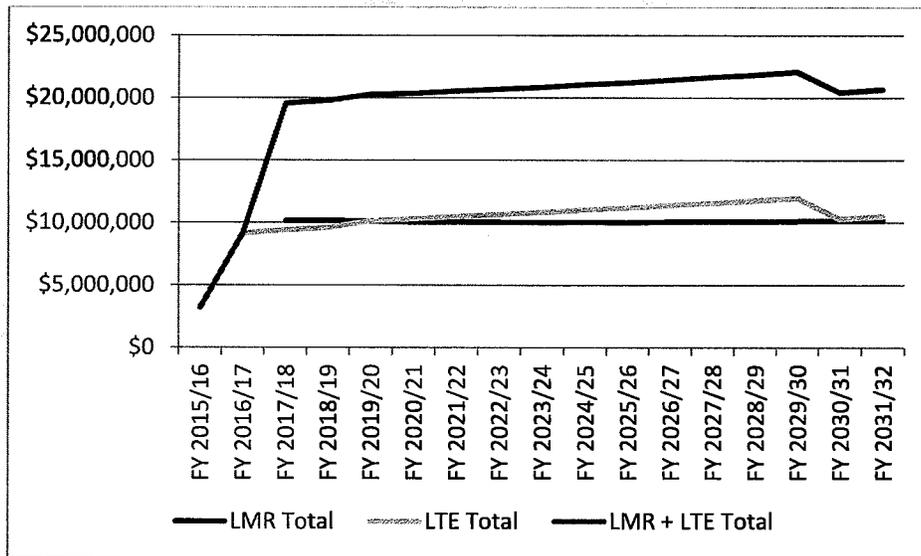
Scenario 1, Baseline



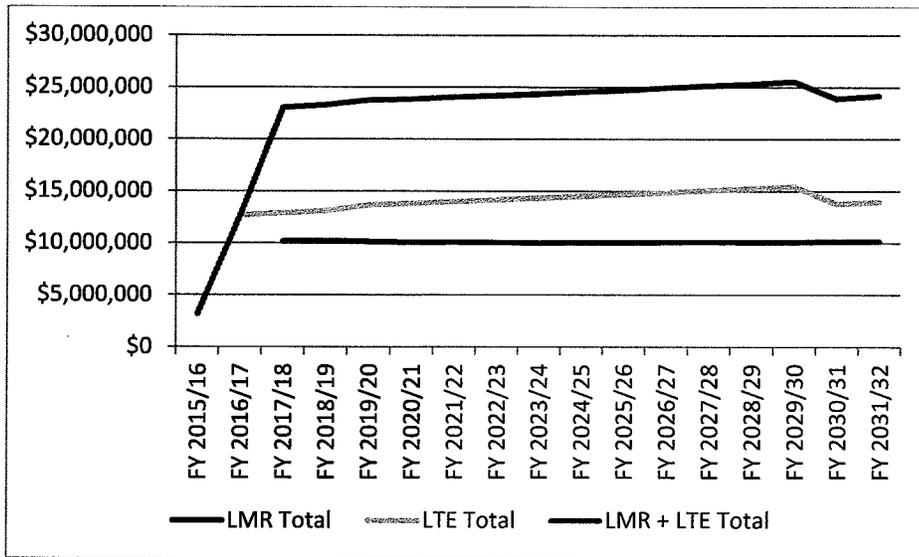
Scenario 2, Excluding LTE In-Kind Match



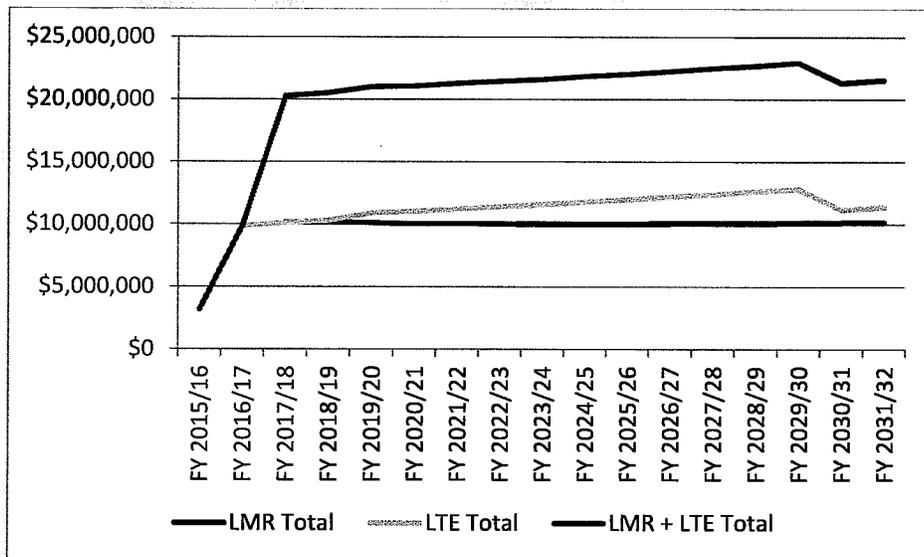
Scenario 3, Excluding LTE In-Kind Match and Capital Replacement



Scenario 8, Excluding LTE In-Kind Match and Adding Maintenance for Home Subscriber Server (HSS)



Scenario 12, Excluding LTE In-Kind Match and Capital Replacement and Adding Maintenance for Home Subscriber Server (HSS) and Redundant Evolved Packet Core



Section 5. Data Monitoring and True Up Period

The cost model, at least during the initial term, places an emphasis on data contributed by the members as inputs to deriving each of their cost shares. The variables for the model can be updated on a regular basis with recent data that measures each agency's current communications usage and capacity. With multiple variables being considered and the wide array of participating jurisdictions, a check and verification process should be in place for the data that is collected and reported to LA-RICS.

For this regular reporting process, a means to validate the data submitted to LA-RICS could be conducted by an independent third party. The validation could include tracing the process by which the data is collected and reported by the jurisdiction, reviewing internal and external reports generated by the jurisdiction, conducting field visits, and developing historic trends in the reported data. The validation should occur in regular intervals such as annually or biannually and implemented through various techniques including random validations and/or geographic-focused verification.

The data monitoring process would be applied to information generated by the member jurisdictions as well as by the LA-RICS communications provider should the provider have capability to track the variable data. A report of the findings would be developed for the LA-RICS Board by the independent third party reviewer. An ongoing program of data verification is required as an assurance to all participants and the Authority that the cost shares are apportioned using representative data for each participating agency.

A True Up period is the period within which the data that will be the basis for the cost allocation is verified and revised. The Members will agree on a revised set of data that measure usage and their participation in LA-RICS. The revised data will provide more assurance and certainty of their cost allocation and fees. The variables described in this plan are recognized by Members as proxies to actual usage of the still-to-be-built communications systems. Once LA-RICS is functional and the system is capable of capturing actual usage (e.g. talk time) that can be tied back to each Member, the funding plan variables will be revised to reflect this captured data. A True Up can be conducted as necessary and in intervals agreed upon by the Authority.