



County of Los Angeles CHIEF EXECUTIVE OFFICE

Kenneth Hahn Hall of Administration
500 West Temple Street, Room 713, Los Angeles, California 90012
(213) 974-1101
<http://ceo.lacounty.gov>

SACHI A. HAMAI
Interim Chief Executive Officer

March 17, 2015

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MARK RIDLEY-THOMAS
Second District
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Third District
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Fifth District

To: Mayor Michael D. Antonovich
Supervisor Hilda L. Solis
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Don Knabe

From: Sachi A. Hamai
Interim Chief Executive Officer

REPORT BACK REGARDING LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM (LA-RICS) - (ITEM NO. 40-B, AGENDA OF FEBRUARY 10, 2015)

On February 10, 2015, the Board of Supervisors unanimously adopted a motion by Supervisors Ridley-Thomas and Antonovich, and as amended by Supervisor Kuehl, requesting a report back on LA-RICS addressing the following issues:

- A. Status of construction, including employment of County residents in construction of the LA-RICS system;
- B. Number of municipal departures, and the impact of those departures, on the LA-RICS coverage footprint, interoperability, effectiveness, and completeness of the LA-RICS system;
- C. Municipalities that have expressed concerns with the Joint Powers Authority (JPA) and/or intend to withdraw from the JPA; and
- D. Consequence and impact of the municipal departures from the LA-RICS JPA on the remaining members share of cost.

The LA-RICS Interoperable System

LA-RICS is building two communications systems. The first is a Long Term Evolution (LTE) system, also called Public Safety Broadband Network (PSBN), to provide for the transmission of data, including photos and video. This system is essentially a dedicated public safety cellular network that will allow public safety agencies and first responders to communicate during day to day operations, and most importantly, during an

"To Enrich Lives Through Effective And Caring Service"

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emergency or disaster, when the commercial networks may be overloaded, or otherwise, inoperable.

The second is a Land Mobile Radio (LMR) system for transmission of voice communications. The LMR system is designed to be a hybrid system that will allow for voice communication to occur on either: the radios currently employed by the County, which operate on UHF T-band, or on radios that the County would transition to, due to the Federal mandate contained in HR 3630. HR 3630 requires the Federal Communications Commission auction off the T-Band in 2021 and requires current T-band users to transition to a different radio spectrum.

The Los Angeles County Sheriff and Fire Departments currently utilize antiquated radio equipment well beyond its useful life. Both agencies require new radio systems, and thus, participation in LA-RICS, will serve multiple benefits of gaining interoperability, replacement of the aged systems, and the receipt of extensive federal funding.

LTE Construction Status

The LTE initial design consisted of 232 LTE antenna sites located throughout Los Angeles County. The current system design consists of 177 sites. The sites predominately utilize available law enforcement and fire stations from different jurisdictions, although the vast majority is Los Angeles County and the City of Los Angeles owned facilities. The reduction of 55 sites occurred primarily to cities requesting their sites be removed from consideration, unsuccessful negotiations with cities over site access agreements, or lengthy discretionary approval processes that would extend beyond the federal grant performance period.

The LTE system is 80% federally funded by a Broadband Technology Opportunities Program (BTOP) grant which requires the system to be operable by September 30, 2015. In order to allow time for final billings and contract close-out, LA-RICS has established an internal deadline of August 15, 2015, for the completion of construction at the 177 sites, and the contract with Motorola requires completion by the August 15, 2015 deadline. The Department of Commerce has made it clear that no additional grant extensions are possible.

Construction of the LTE system is complete for 8 sites. An additional 51 sites are currently under construction. The construction of a site, from start of construction until completion, lasts approximately three weeks. The estimated construction schedule is provided in the table on Page 3.

Date	Cumulative Sites Completed	Sites Under Construction
2/28/2015	8	51
3/31/2015	35	35
4/30/2015	60	25
5/30/2015	90	20
6/30/2015	130	20
7/31/2015	165	15
8/15/2015	177	11

The Chief Executive Office will closely monitor construction progress to determine if it is on schedule or if remedial action is required to meet the grant deadlines. Any costs incrementally associated with work completed beyond the grant deadlines will not be paid by the BTOP grant, so it is imperative that grant deadlines are met.

LMR Construction Status

The LMR system is currently in the planning and environmental clearance phase. Construction is currently scheduled to commence as early as April 2015, with completion and system implementation by March 2018.

Unlike the LTE system, LMR does not have a system-wide grant completion deadline. However, the ability to complete the system on time will depend upon continued federal grant allocations. The LMR system is funded by Urban Area Security Initiative (UASI) and State Homeland Security Grant Program (SHSGP) grants. The City of Los Angeles is the grant administrator for UASI funds which are dispersed by the UASI Approval Authority. The County is represented on the Approval Authority, occupying 3 of the 12 seats. The County of Los Angeles is the grant administrator for the SHSGP funds, with projects being approved by the SHSGP Approval Authority. The County is represented by 3 of the 5 seats on the Approval Authority.

Employment of County Residents in Construction

As the table on Page 4 illustrates, there are a total of 212 full-time equivalent (FTE) employees currently employed by contractors for the LA-RICS system. Approximately 31% of these employees are Los Angeles County residents.

Contractor	Total Workers	Number of Employees Residing in Los Angeles County	Percent of Full-Time FTEs Residing in Los Angeles County
Jacobs Project Management	36	11	30.6%
Motorola (including subcontractors)	176	54	30.7%
TOTAL	212	65	30.7%

As a federal grant funded project, contractors are required to pay Davis-Bacon wages, or the prevailing wage in California – whichever is greater. The contracts with Motorola for the LTE and LMR system construction are not subject to a Project Labor Agreement.

Municipal Departures from the LA-RICS Joint Powers Authority

Twelve member agencies have opted-out of the LA-RICS Authority. A total of 74 member agencies remain. Attachment A provides a list of the cities that have opted-out and, in some cases, the reason for their departure.

Cost, and the uncertainty of those costs, is the most often cited reasons for opting-out. Participation in the competing Interagency Communications Interoperability System (ICIS) is another reason, cited by some, for agencies who have opted-out. Finally, failure to fully understand the benefits of the system is another reason discussed by agencies.

Effect of Site Reductions on LTE System Coverage

Motorola has completed preliminary modeling to determine the impact of the loss of 55 LTE sites, and the anticipated coverage that will be provided by the remaining 177 antenna sites. Preliminary results indicate that coverage will be decreased by 11%, from 2,475 square miles to 2,200 square miles – a reduction of 277 square miles in covered area.

The attached coverage map (Attachment B) approximates graphically the areas of reduced coverage. The areas depicted in yellow indicate areas that were covered with the original 232 antenna sites that will no longer be covered with only 177 antenna sites. The areas depicted in green retain coverage.

Areas with loss of coverage include a portion of Pomona, La Verne, West Covina and Long Beach, and large portions of the South Bay cities of Redondo Beach, Hermosa Beach, Manhattan Beach, and Torrance. A section along the Pacific coast, above Malibu, will also experience degraded coverage.

In the event of a disaster, these areas will not have immediate coverage on the dedicated Public Safety Broadband Network for the transmission of data. They may still continue to retain broadband coverage on commercial broadband, if they are subscribers and it is functioning, but they will compete with public users. While a mobile cell can be deployed to an area with loss of coverage in the event of a disaster, the deployment time will depend on the specific incident, the location, and the availability of support personnel. For example, an earthquake response may be hampered by impassable roads, bridges, and tunnels.

Not all cities that opted-out will suffer a complete loss of coverage on the LTE system, because some cities that opted-out still allowed site access agreements for the placement of LTE sites within their city boundaries, or coverage is still available from other nearby LTE sites.

These coverage losses could be reduced in the future if cities allow placement of LTE antennas within their jurisdiction, and if funding to construct them becomes available.

Effect of Site Reductions on LTE System Capacity

In addition to the loss of coverage, the capacity of the LTE system to handle users will be reduced. With the original 232 LTE antenna sites, the LTE system was capable of serving the broadband needs of 100,000 users. It is currently projected, that with the 177 antenna sites, approximately 75,000 users will have access to the dedicated public safety network. This will provide sufficient capacity, as the current estimate is that the system must accommodate 50,000 users.

Effect of LTE Site Reductions on LTE User Experience

The user experience will be degraded in some areas that have coverage on the network. LTE sites in areas adjacent to dropped LTE sites will now have to accommodate additional users that would otherwise be served by the dropped site. The increased number of users per site will reduce the available bandwidth per user, slowing data transmission rates. Furthermore, the dropped sites will result in some users being in fringe areas further from the nearest LTE antenna. This will slow data transmission rates as compared to what would have been available, if a nearby site was not dropped.

from the program. The consequence is, public safety agencies may not find it attractive to download or stream large data files such as video.

Land Mobile Radio – Impact of Municipal Departures

The LMR system includes the installation or conversion of 71 sites to a new hybrid system that will operate both on the current T-Band frequencies utilized by most public safety agencies and first responders, and 700 MHz frequencies that will be necessary when the FCC auctions off the T-Band frequencies. This hybrid system will allow municipalities to utilize current radios on LA-RICS, and transition to the 700 MHz system as their current equipment reaches the end of its useful life.

LA-RICS is unaware of any LMR sites that will be denied due to municipal opt-outs. At this point in time, there is no loss in coverage for the LMR system.

The ability of those agencies to benefit from an interoperable LMR system will depend on whether they are members of LA-RICS or an interoperable system that is linked with LA-RICS (such as ICIS), or receive contract services from the County of Los Angeles. The LA-RICS LMR project will include an interface for ICIS members to be patched into the LA-RICS Interoperable system.

Opt-Out Cities	Interoperable	Not Interoperable
Alhambra*	Fire Only	
Burbank**	✓	
Calabasas*	✓	
El Segundo		✓
Gardena*	Fire Only	
Glendale**	✓	
Hermosa Beach		✓
Long Beach		✓
Manhattan Beach		✓
Palo Verdes Estates		✓
Pomona**	✓	
Torrance		✓

*Contract City
 ** ICIS Member

Other Non-Member Cities	Interoperable	Not Interoperable
Cudahy*	✓	
Diamond Bar*	✓	
Lomita*	✓	
Malibu*	✓	
Rolling Hills*	✓	
West Hollywood*	✓	

*Contract City

Cost Impact Due to Municipal Departures

The current funding plan for LA-RICS allocates operational, maintenance, and capital replenishment costs to each agency in proportion to their population and land area weighted equally. The fewer agencies that are members of LA-RICS, the higher the cost will be for the remaining agencies.

Attachment A depicts the percentage of cost allocated to each agency that has opted-out as of March 3, 2015. Cumulatively, they account for 8.5% of the cost, which will now have to be spread among the remaining participants in LA-RICS.

It is important to note that LA-RICS originally established a deadline for members to opt-out by November 24, 2014. That deadline was extended until November 23, 2015. Thus, the potential for additional members to opt-out exists. With each additional agency leaving the LA-RICS JPA, the costs rise for the remaining members, and create a further incentive for remaining agencies to opt-out.

As noted earlier, costs and the uncertainty of those costs, were cited as prominent reasons for the withdrawal by the agencies that have done so. While no other agencies have formally notified LA-RICS that they intend to opt-out, informal surveys indicate that without mitigating action to solidify the costs, more agencies are very likely to opt-out. As a remaining member, Los Angeles County will also incur additional annual costs as more members opt-out.

The LA-RICS Board has identified the importance of this issue and established an ad hoc committee to recommend actions to recruit and retain cities. The ad hoc committee is exploring alternative solutions, including modifying the funding formula to a fixed monthly subscription fee per communication device, as is currently done in Orange County's Countywide Coordinated Communications System. Such a subscription system may provide the necessary predictability for municipal budgeting and promote

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LA-RICS membership. This could allow for increased sharing of costs, thereby reducing the cost to each member agency.

SAH:JJ:GH:er

Attachments

c: Executive Officer, Board of Supervisors
 County Counsel
 Sheriff
 Fire Chief
 Executive Director, LA-RICS

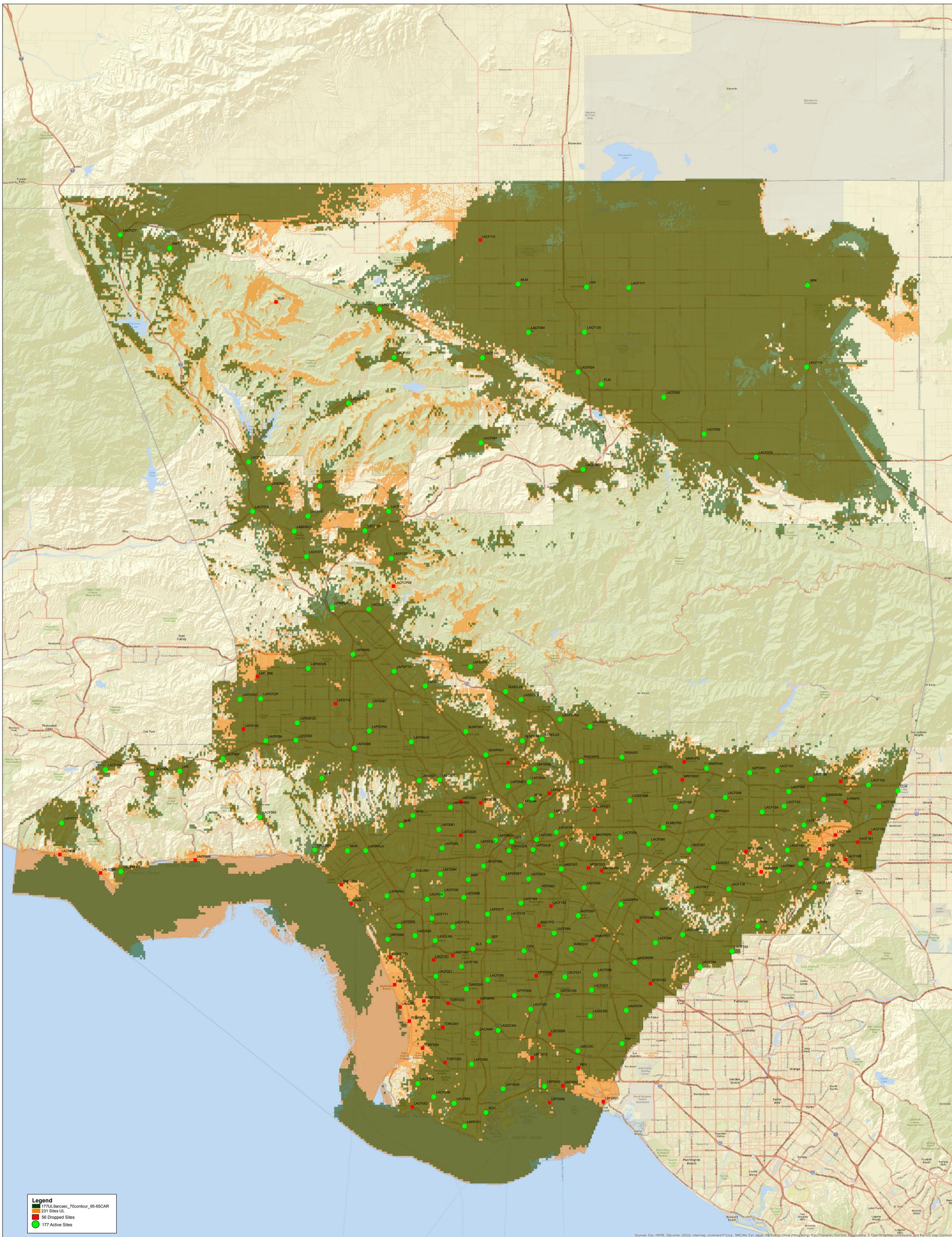
Member Agencies who have Opted-Out of LA-RICS

Member Agencies		% of Cost Allocation
City of Alhambra, Date of Withdrawal: 09/22/14		
Explanation of Withdrawal of Membership	On January 14, 2015 Lauren Myles, Alhambra City Clerk, sent the Authority Minutes Excerpt for the September 22, 2014 regular meeting of the Alhambra City Council noting two Systems being built rely heavily on grant funds and those funds are at risk of being lost due to inability to perform within the timeline required by the grants. Another issue of concern is the JPA's funding plan being based on 100% participation of members, despite the JPA Board adopting a motion to allow for a 180-day no-cost opt-out period. As members withdraw from the JPA, the costs borne by the remaining members will rise. Alhambra anticipates majority of independent cities will withdraw and thus the belief is this would result in a significant cost increase to the City of Alhambra.	0.535%
City of Burbank Date of Withdrawal: 08/20/2014		
Explanation of Withdrawal of Membership	No reason cited in letter of withdrawal.	0.798%
City of Calabasas Date of Withdrawal: 06/11/14		
Explanation of Withdrawal of Membership	City Manager Anthony Coroaes provided a letter indicating the City's withdrawal from LA-RICS; however, no official documentation was provided to the City Council. A phone call was placed to the City Manager regarding when the City Council took formal action and the reasons for withdrawing from LA-RICS.	0.053%
City of El Segundo Date of Withdrawal: 08/19/2014		
Explanation of Withdrawal of Membership	No reason cited in letter of withdrawal.	0.171%

Member Agencies		% of Cost Allocation
City of Gardena Date of Withdrawal: 07/15/14		
Explanation of Withdrawal of Membership	<p>Police Chief Ed Medrano of Gardena in his Staff Report to City Council stated that while supportive of LA-RICS, City staff has determined that it is not in the best financial, technical and operational interest of the City at this juncture to remain a member of LA-RICS without having a clearer understanding of the costs, service level and overall viability of the system over a fifteen to thirty-year horizon.</p>	0.223%
City of Glendale Date of Withdrawal: 07/24/14		
Explanation of Withdrawal of Membership	<p>City Manager Scott Ochoa in his Staff Report to City Council provided an analysis of LA-RICS and Glendale needs and determined that an attractive feature of the LA-RICS system is that it increases the coverage area of local agencies to a Los Angeles Countywide radio system. However, Glendale radio users currently have such capabilities through its partnership with other agencies in the Interagency Communications Interoperability System (ICIS), which has operated as a JPA since 2003. Of note, it was recently verified that there is a technology integration path between the ICIS and LA-RICS network, contained within the LA-RICS vendor contract which allows full interoperability between both radio networks. Of significant importance, is the LA-RICS LTE grant requirement that services be offered to non-member agencies of the JPA on a subscription basis. As host city of the ICIS radio system, Glendale is compelled by the ICIS JPA to provide its members 24 months advance notice of its intent to separate from the JPA. Of late, ICIS has been approached by many independent cities expressing interest in joining the JPA, with the City of Santa Monica submitting a formal letter of intent to join. Based on the foregoing, at this time staff does not believe it is in the best financial, technical and operational interest of the City of Glendale to remain a member of LA-RICS, thus it is recommending withdrawal from the LA-RICS JPA.</p>	1.431%

Member Agencies		% of Cost Allocation
City of Hermosa Beach Date of Withdrawal: 10/27/2014		
Explanation of Withdrawal of Membership	Verbal notice given via telephone conversation. Pending written notice of withdrawal.	0.12%
City of Long Beach Date of Withdrawal: 01/08/2015		
Explanation of Withdrawal of Membership	City Manager, Patrick West notified LA-RICS of withdrawal, citing no reason, however stating Long Beach will continue to be supportive of the LA-RICS project, and will, where feasible, support the construction of infrastructure necessary for the implementation of the LA-RICS project within the City of Long Beach.	3.125%
City of Manhattan Beach Date of Withdrawal: 09/30/2014		
Explanation of Withdrawal of Membership	No reason cited in letter of withdrawal.	0.237%
City of Palos Verdes Estates Date of Withdrawal: 05/27/14		
Explanation of Withdrawal of Membership	Resolution No. R14-21 states that LA-RICS has not determined the specific and actual cost that the City of Palos Verdes Estates will be required to pay for the LMR and LTE as part of the City's continued membership in the LA-RICS JPA and the City has determined that it would not be in the best interests of the City to participate in a program where neither the short-term or long-term cost to be incurred by the City have been fully defined.	0.084%
City of Pomona Date of Withdrawal: 06/17/14		
Explanation of Withdrawal of Membership	The Chief of Police in his Staff Report to City Council stated that he does not believe that cost and other issues related to remaining in LA-RICS for use by the Pomona Police Department is beneficial to the City and that the participation in LA-RICS is beneficial to the City of Pomona.	0.643%

Member Agencies		% of Cost Allocation
City of Torrance Date of Withdrawal: 06/19/14		
Explanation of Withdrawal of Membership	<p>City Manager LeRoy Jackson in his Staff Report to City Council stated that there are a lot of unknowns to the LA-RICS system. The first two unknowns are: what are we buying and how much will it cost? The LTE Broadband system will require immediate contributions in order to meet the 10% grant matching fund requirement for the unknown system. He also stated that it is important to note that LA-RICS would only provide the "backbone" system for both the LMR and LTE systems. Equipment to operate on the system would still be the responsibility of individual member agencies and would require cities to purchase equipment that is compatible with the LA-RICS system. Torrance has estimated this to be a substantial investment. The City Manager believes that the South Bay region currently has a functioning interoperable safety communication system. There is a possibility of enhancing the current system by interfacing with Interagency Communication Interoperability System (ICIS). ICIS has a Joint Powers Agreement with sixteen cities including Burbank, Pasadena, Glendale, Pomona, Culver City, Beverly Hills, and many San Gabriel Valley cities. His report also included information that if Torrance withdraws from LA-RICS, we would still need to seek membership or subscription to the LMR system; however, since the funding plan has been modified to eliminate the replacement fund, there would appear to be no penalty. Therefore, it is the conclusion of the City Manager that the City of Torrance should submit a letter of withdrawal to LA-RICS.</p>	1.055%
Total Percentage Allocated to Opt Out Members	8.48%	



Legend

- 177ULgarcsec_70contour_95-05CAR
- 231 Sites UL
- 56 Dropped Sites
- 177 Active Sites

177 Sites, Overlay on 231 Sites, Inbound Coverage



LA-RICS

County of Los Angeles
Board of Supervisors
March 24, 2015



PHOTO BY GREG DOYLE



PHOTO BY GREG DOYLE



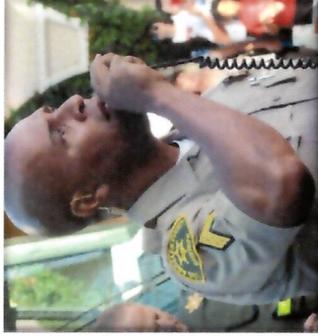
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Purpose: To engage in regional and cooperative planning and coordination of government services to establish a wide-area interoperability public safety communications network.

”

LA-RICS Overview

- Interoperable, mission-critical communications and data network for first responders



- Major finding 9/11 commission report

- Support first responders in protecting 10 million residents across 4,000+ square miles



- LTE – Data Communication
 - Provides secure 4G data network for high-speed video & data access
- LMR – Voice Communication
 - Establishes a viable plan for T-Band migration

LTE Construction Status

LTE

- Current design consists of 177 sites
 - 51 Sites in construction
 - 8 Sites Completed construction

Date	Cumulative Sites Completed	Sites Under Construction
2/28/2015	8	51
3/31/2015	35	35
4/30/2015	60	25
5/30/2015	90	20
6/30/2015	130	20
7/31/2015	165	15
8/15/2015	177	11

LTE Coverage Impact

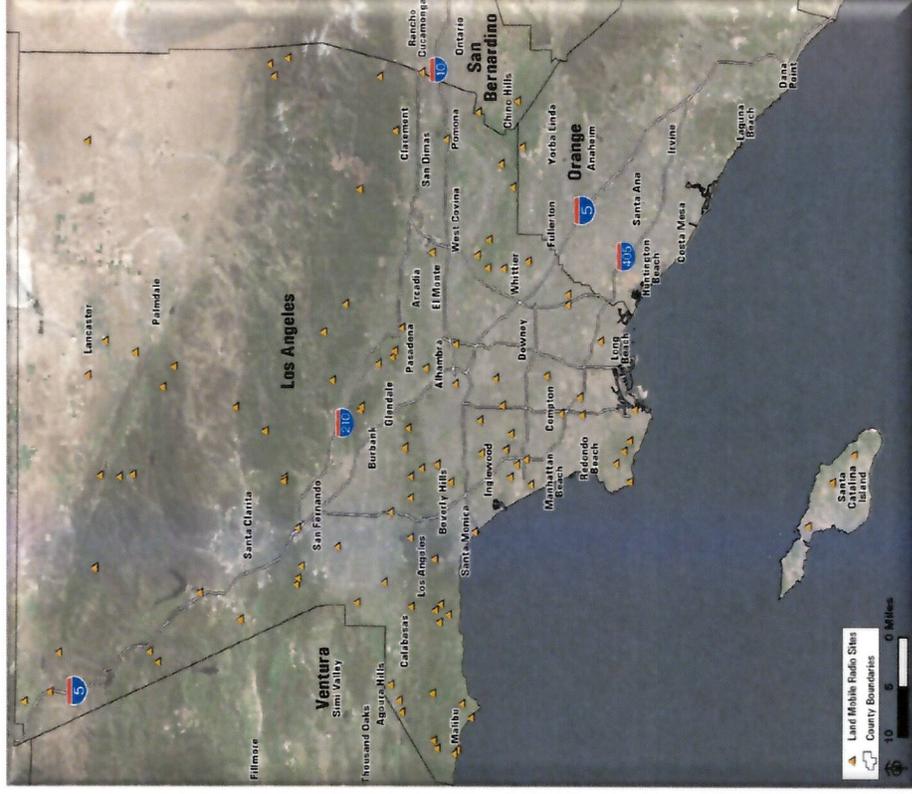


- To Date, 55 sites have been removed from design (~24%)
- Impact result = loss of coverage and capacity

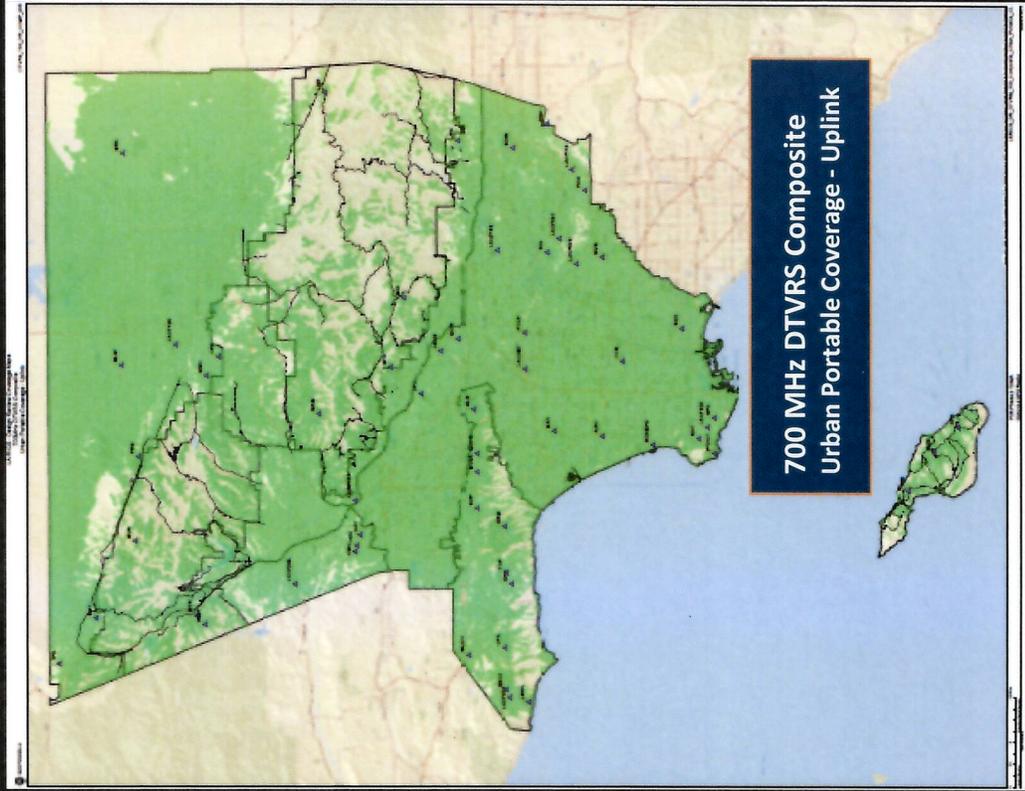
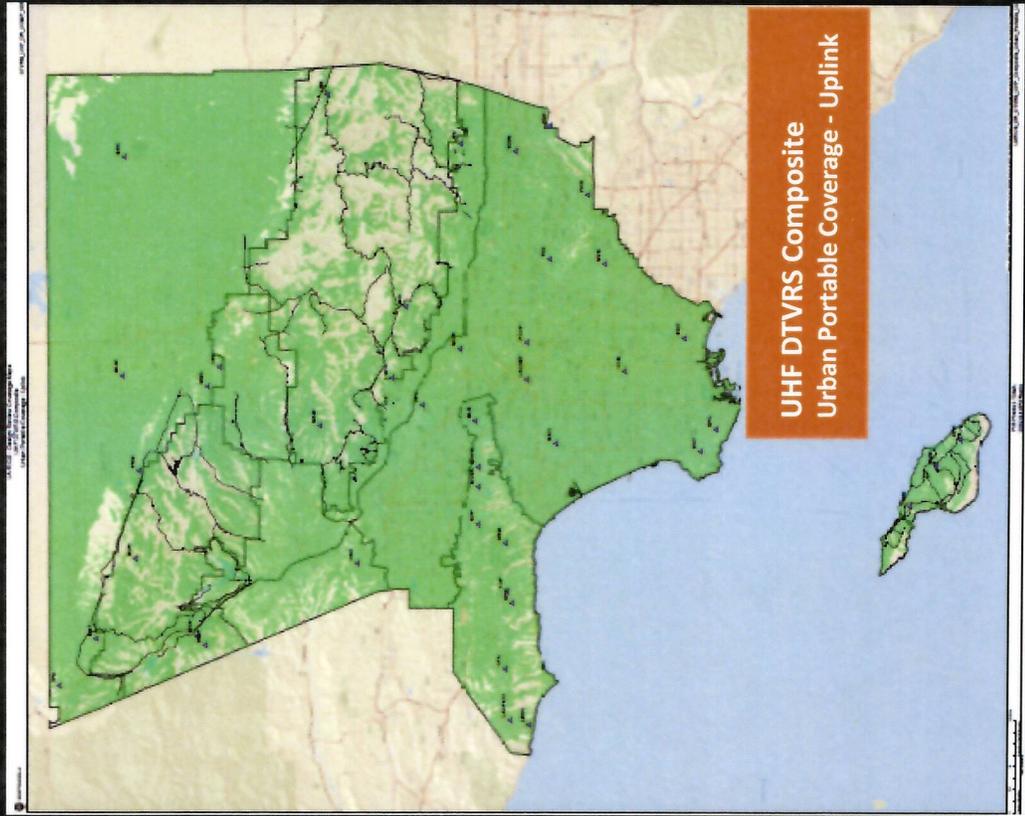
LMR Construction Status

LMR

- 120 sites considered
- Up to 90 included in proposed system design
- Early Construction scheduled to start
 - June 2015 on 32 Sites
 - Including 23 County Sites



LMR Coverage Maps



Municipal Decisions

Member Agencies	Date of Withdrawal	% of Cost Allocation
City of Alhambra	September 22, 2014	0.54%
*City of Burbank	August 20, 2014	0.80%
City of Calabasas	June 11, 2014	0.05%
City of El Segundo	August 19, 2014	0.17%
*City of Gardena	July 15, 2014	0.22%
City of Glendale	July 24, 2014	1.43%
City of Hermosa Beach	October 27, 2014	0.12%
*City of Long Beach	January 8, 2015	3.13%
City of Manhattan Beach	September 30, 2014	0.24%
City of Monrovia	March 9, 2014	Pending
City of Palos Verdes Estates	May 27, 2014	0.08%
City of Pomona	June 17, 2014	0.64%
City of Torrance	June 19, 2014	1.06%
*Approved LTE Site		
Total Percentage Allocated to Opt Out Members		8.48%





**RF Emissions Presentation to
Los Angeles County
Board of Supervisors**

March 24, 2015

Dr. Jerrold Bushberg, PhD, DABMP, FAAPM



FCC Radio Frequency (RF) Public Exposure Limit

- Current RF maximum permissible exposure limit is set at 505 uW/cm^2
- MPE limit assumes continuous exposure 24/7/365
- Established to be protective of the general population including children and infirmed
- Exposure limit incorporates a safety factor 50 x's below the RF exposure level that is believed to be potentially hazardous

How Does LA-RICS LTE Installations Compare with FCC Limits?

- RF emissions from LA-RICS LTE installations are typically only 0.1% to 1.5% of the MPE limit, and in all instances, are less than 5% of the MPE
- Inside fire stations, these RF emissions levels are further reduced a minimum of 6 to 30 times (typically RF emissions now only 0.02% to 0.25% of the MPE limit)

LA-RICS LTE Installations Result in Less RF Exposure Than All of the Devices Below



The Reality of Adopting Local 1014's Recommended Public Exposure Limit (less than 0.001 uW/cm²)

➤ Use of RF and Wireless would either end or be dramatically reduced:

- ❖ Stop all AM/FM Radio & Local Digital TV 
- ❖ Remove all Smart Electrical Water & Electrical Meters 
- ❖ Remove Microwave Ovens from homes and public locations 
- ❖ Remove capability of Fire/Police/& Paramedics to communicate with each other and with the hospital 
- ❖ Discontinue air travel (could not use traffic control radar or communicate with planes) 
- ❖ Remove WiFi from all public locations 
- ❖ No cell phones 



How FCC Limits Were Determined

- **Current FCC standards were the result of ~ 18 month review and public comment period**
- **Thousands of pages of comments from all sectors: (Public, Gov't, Academia, US Standard Setting Organizations, Industry)**
- **FCC relies on guidance from federal health/safety agencies: FDA, EPA, NIOSH, OSHA to recommend which existing standards to use or modify**



Federal Communications Commission
Office of Engineering & Technology

Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

OET Bulletin 65
Edition 97-01
August 1997

Where Do RF Exposure Standards Come From? Consensus Standards Developed by Panels of Experts

- FCC (USA) RF Exposure (August 1997)
Regulations based on **IEEE** & **NCRP**
- Institute of Electrical and Electronics Engineers (IEEE) ANSI Standard C95.1 (2011)
- National Council on Radiation Protection and Measurements (NCRP) Report 85 (1986)
- OSHA, DOD and ACGIH Standards are derivative of the US standards above.
- International Commission on Non-Ionizing Radiation Protection (ICNIRP)
Review of Current Literature & Statement of Affirmation for Current RF Safety Standard 2009





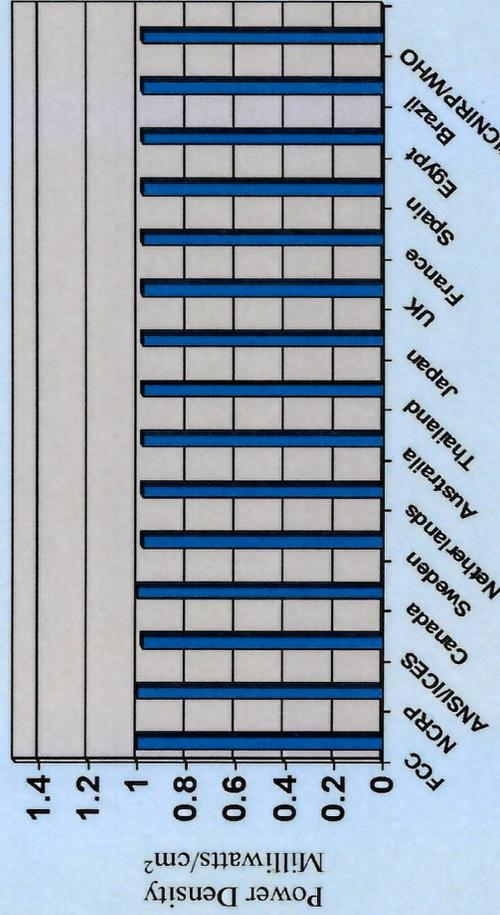
Why Have U.S. Standards Stayed the Same Since 1997?



- The vast majority of updated standards in other countries as well as national reviews of the science supporting current standards have recommended maximum public exposure levels that are still very similar to current U.S. safety standards
 - ❖ International Commission on Non-Ionizing Radiation Protection (ICNIRP) 2011
 - ❖ Health Canada 2012
 - ❖ U.K. National Radiological Protection Board: Advisory Group on Non-Ionizing Radiation (2014)
 - ❖ Health Council of the Netherlands (2013)
 - ❖ International Committee on Electromagnetic Safety C95.1 (2013)

Comparison of FCC & LA-RICS RF Exposure to Other RF Safety Standards

National and International Public RF Exposure Standards (PCS @ 1,950 MHz)



*International Commission on Non-Ionizing Radiation Protection (ICNIRP) Public Safety Exposure Standard. ICNIRP standard recommended by the World Health Organization (WHO). Members of the ICNIRP Scientific Committee were from:

- Australia
- Italy
- Finland
- Sweden
- France
- Japan
- Germany
- United Kingdom
- Hungary
- United States

Figure 1



Fact sheet N°304

Electromagnetic Fields and Public Health: Base Stations and Wireless Technologies

Summary Statement & Conclusion

- **“From all evidence accumulated so far, no adverse short- or long-term health effects have been shown to occur from the RF signals produced by base stations.”**
- **“Considering the very low exposure levels and research results collected to date, there is no convincing scientific evidence that the weak RF signals from base stations and wireless networks cause adverse health effects.”**