

Public Safety Radio

Strategic Planning Committee:

2007 Statewide Integrated Public Safety Communications Strategic Plan

*A plan for California State public safety communications system
integration, modernization, and interoperability*

REPORT TO THE CALIFORNIA STATE LEGISLATURE
as required by Government Code § 8592.6

January 1, 2007

Governor
Arnold Schwarzenegger

PSRSPC Chair
Henry R. Renteria
Director, Governor's Office of Emergency Services

TABLE OF CONTENTS

Letter to Legislature - TBD	1
Approving Departments	1
Executive Summary – TBD	1
Chapter 1 - Where We Are Today	2
Background.....	2
Needs Analysis & Assessing System Capabilities Survey	3
Emerging Trends and Themes	4
➤ Obsolescence.....	4
➤ Funding.....	6
➤ Spectrum.....	6
➤ Gateways	6
Key Accomplishments in 2006.....	7
➤ Gateway Equipment	7
➤ System of Systems	7
➤ Exploratory Market Survey	8
➤ Statewide Coordination.....	8
Conclusions.....	9
Chapter 2 – Where We Want To Go	9
Vision for California Public Safety Communications	9
➤ Leadership, Planning, Collaboration and Sustainability	11
➤ Governance.....	12
➤ Standard Operating Procedures.....	12
➤ Technology.....	13
➤ Training and Exercises.....	14
➤ Usage.....	14
➤ California’s Challenge.....	14
Priority Initiatives	14
Funding.....	15
➤ Critical Operability Funding	15
➤ Governance Funding	16
➤ Sustained Funding Options	17
Governance.....	18
➤ Staff and Agency Multi-jurisdictional, Multidiscipline Collaboration Statewide	18
➤ California Tactical Interoperable Communications Plans (TICPs).....	18
➤ California Statewide Communications Interoperability Plan (CALSCIP)	19
System of Systems	20
➤ SAFECOM’s Optimal Technology Solutions.....	20
➤ Achieving SAFECOM’s Technology Recommendations in California	20
Spectrum.....	21
➤ Narrowbanding below 512 MHz.....	21
➤ Wireless Broadband	22
➤ 700 MHz Advocacy	22
➤ Border Issues.....	22

➤ Gateway Licensing	22
➤ Spectrum Alternatives	22
Chapter 3 – How We Get There	22
Twenty Year Timeline – An Overview	22
Two year goals	23
Five year goals	23
Ten year goals	23
Twenty-year goals	24
2007 Strategic Action Plan	24
Goal 1: Leadership: Establish an effective leadership governance structure	24
Goal 2: Funding: Pursue a phased, renewable and priority-based funding strategy for California’s public safety communications physical infrastructure and governance.	25
Goal 3: Governance: Develop lasting and coordinated governance for integrated statewide public safety voice and data communication systems.	26
Goal 4: Convergence: Focus technology research and “best practices” investigation through strong interagency coordination to enhance technology transfer and efficiency.....	26
Goal 5: Technology: Outline realistic parameters of a “System of Systems” that could accommodate & build upon California’s public safety communications network.....	27
Chapter 4 - Legislatively Required Activities	28
PSRSPC Membership and Meetings	28
Model Memorandum of Understanding (MOU).....	28
Equipment (Purchases, Waivers, and Budget Proposals)	28
➤ Purchases	29
➤ Waivers.....	29
➤ Budget Proposals	29
➤ Annual Report as State’s Strategic Plan.....	30
Chapter 5 - Conclusion	30
Attachments	31
Attachment 1 - Status of 2006 Strategic Action Plan	31
➤ Initiative 1: Focus technology research and “best practices” investigation through strong interagency coordination to avoid duplication and enhance technology transfer.....	31
➤ Initiative 2: Investigate realistic parameters of a “System of Systems” that could accommodate & build upon California’s public safety communications network.....	32
➤ Initiative 3: Pursue a phased, renewable and priority-based funding strategy for California’s public safety communications physical infrastructure and governance.	32
➤ Initiative 4: Develop lasting and coordinated governance for integrated statewide public safety voice and data communication systems that incorporates both existing and new organizational efforts.	33
Attachment 2 - Summary of Interviews with Other States and Local Governments.....	34
➤ Commonwealth of Virginia.....	34
➤ State of New York.....	35
➤ City of New York (Interview pending).....	35
Attachment 3 - Definitions & Acronyms – TBD.....	35

Note: A companion document to this report, “Compendium of References” (Appendices), can be found on the PSRSPC Website.

(<http://rimsinland.oes.ca.gov/CTD/Public/psrspcweb.nsf/home?OpenForm>)

DRAFT

Letter to Legislature - TBD

Approving Departments

The Directors or their designees of the following agencies are members of the Public Safety Radio Strategic Planning Committee and have been involved in preparation of this report and strategic plan.

- Governor's Office of Emergency Services (OES) (*Statutory chair effective January 1, 2007*)
- California Highway Patrol (CHP)
- Department of Transportation (CalTrans)
- Department of Corrections and Rehabilitation (CDCR)
- Department of Parks and Recreation (DPR)
- Department of Fish and Game (DFG)
- Department of Forestry and Fire Protection (CDF)
- Department of Justice (DOJ)
- Department of Water Resources (DWR)
- Department of Health Services (CDHS) (*Statutory member effective January 1, 2007*)
- Emergency Medical Services Authority (EMSA)
- Department of General Services (DGS)
- Governor's Office of Homeland Security (OHS)
- Military Department (*Statutory member effective January 1, 2007*)

Executive Summary – TBD

Chapter 1 - Where We Are Today

Background

California's public safety and public service agencies provide a wide range of support including law enforcement, fire protection, disaster response, transportation management, flood control, criminal detention and rehabilitation, search and rescue, and other services to over 36 million residents and 44 million visitors to the state each year. In order to effectively and responsively provide these services, the state's public safety agencies must be able to communicate effectively for routine and emergency operations. During disasters, such as California's frequent wildfires and floods and the potential for a catastrophic earthquake or a terrorist event, the interoperability of communications systems becomes especially critical since multiple agencies and organizations are involved in the emergency response.

The Public Safety Radio Strategic Planning Committee (PSRSPC), initially convened by the Department of General Services in the 90's and more recently chaired by the Governor's Office of Emergency Services, was established by statute (effective January 1, 2003) to address the need for an integrated public safety communications system that facilitates interoperability among the state's public safety departments, in consultation with other federal, state, and local entities. In its 2006 report to the Legislature, the PSRSPC outlined goals and objectives to move the state towards an interoperable communications system. Critical issues to be addressed in 2006 included an assessment of the state's existing communications equipment and systems; identification of high-priority needs for "gateway" bridging technology to increase interoperability in the near term; initiating development of California's requirements for the next generation state communications network; and addressing stop-gap and sustained funding for public safety communications infrastructure and governance.

Extensive coordination among the PSRSPC member agencies and outreach to stakeholder groups is necessary to meet these goals. The staff-level PSRSPC-TWG (Technical Working Group), established in 2005 to develop recommendations and carry out essential activities for the PSRSPC, met regularly throughout the year. The PSRSPC-TWG used work teams to develop California's vision for public safety communications and to address the state's assessment and needs analysis; system development; spectrum management; governance; gateway bridging technology; fiscal issues; collaboration between the PSRSPC and its primary affiliate - the California Statewide Interoperability Executive Committee (CALSIEC); and development of this annual report. The executive level PSRSPC met quarterly to consider recommendations developed by the PSRSPC-TWG and to provide guidance on its activities.

The Legislature has recognized that, while the initial focus of the PSRSPC's work was on state agencies, effective development and application of an interoperable communications network must reflect the day-to-day organizational structure and protocols of California's public safety agencies. Governor Schwarzenegger signed into law legislation that expands the duties of the PSRSPC and ensures that coordination with local, regional, and federal entities will occur. As a foundational step to align strategic goals, the PSRSPC's 2007 report to the Legislature was validated by

CALSIEC, whose members represent federal, state, regional, local, tribal, and non-governmental entities. These joint meetings and collaboration activities allowed for a more complete statewide viewpoint for the annual report.

Needs Analysis & Assessing System Capabilities Survey

In last year's annual report, the commitment was made to assess the equipment and procedural systems that are currently being used at the state and local levels. The PSRSPC has long noted¹ that in much of California, a lack of effective and reliable radio communications is impeding the state's public safety agencies' ability to perform their most elemental mission: the protection of life and property. In 2006, CALSIEC and the PSRSPC collaborated on a statewide Internet-based survey to address radio systems at all levels of government and to analyze their interoperability (see Compendium of References, Appendix 1). Eleven (11) of the current PSRSPC state agency members that operate radio systems were required to complete the survey and local agencies were encouraged to participate.

The survey covered radio systems; system radio frequencies; radio facilities and equipment; survivable communications systems, i.e., cache or reserves; audio gateway systems; dispatch operations; advanced capabilities, e.g. microwave or satellite systems; current needs and requirements of radio systems; future system directions and initiatives; and interoperability progress in governance, standard operating procedures, technology, training and exercises, and usage.

Respondents to the survey include thirteen (13) state agencies and currently over 230 local agencies (city, county, regional, joint powers authorities, colleges, etc.). Validation of the survey data gathered is in process to correct duplicate entries and clarify ambiguous responses.

The survey data indicates the following state system information/capabilities:

- Frequency bands used by state agencies range from 30MHz to 800MHz.
- State agencies have over 19,000 mobile radios.
- State agencies have over 26,000 portable radios.
- State agencies have over 1,800 base station radios.
- State agencies have over 1,000 mobile relay radios.
- State agencies have over 800 control station radios.
- State agencies have 19 mobile gateways and 25 fixed gateways.
- State agencies have over 5,000 portable radios as cache/reserve.
- State agencies have over 2,000 cellular phones as cache/reserve.
- State agencies have over 80 portable mobile relays as cache/reserve.
- State agencies have listed, in priority order, the current top three needs and requirements of the radio systems as Funding, Modernization, and Additional Channels.

(Note to reader – Military Department is refining their information, i.e., state vs federal assets. The above information and the chart below will be updated with that information.)

¹ See State of California Partnering for the Future: Cost Benefit Analysis for California's Public Safety Radio Communications Project published 1999

The survey data indicates the following local agency information/capabilities:

- Frequency bands used by local agencies range from High Frequency to 800MHz.
- Local agencies in 17 counties report having either mobile or fixed gateways.
- Nearly 100 local agencies report being part of a tactical interoperable communications plan (TICP).
- Local agencies have listed, in priority order, the current top three needs and requirements of the radios systems as Funding, Additional Channels, and Modernization.

Emerging Trends and Themes

Several trends emerged from the statewide survey and work accomplished by the PSRSPC in 2006. These findings were used to identify priority initiatives for 2007 and beyond discussed in Chapters 2 and 3.

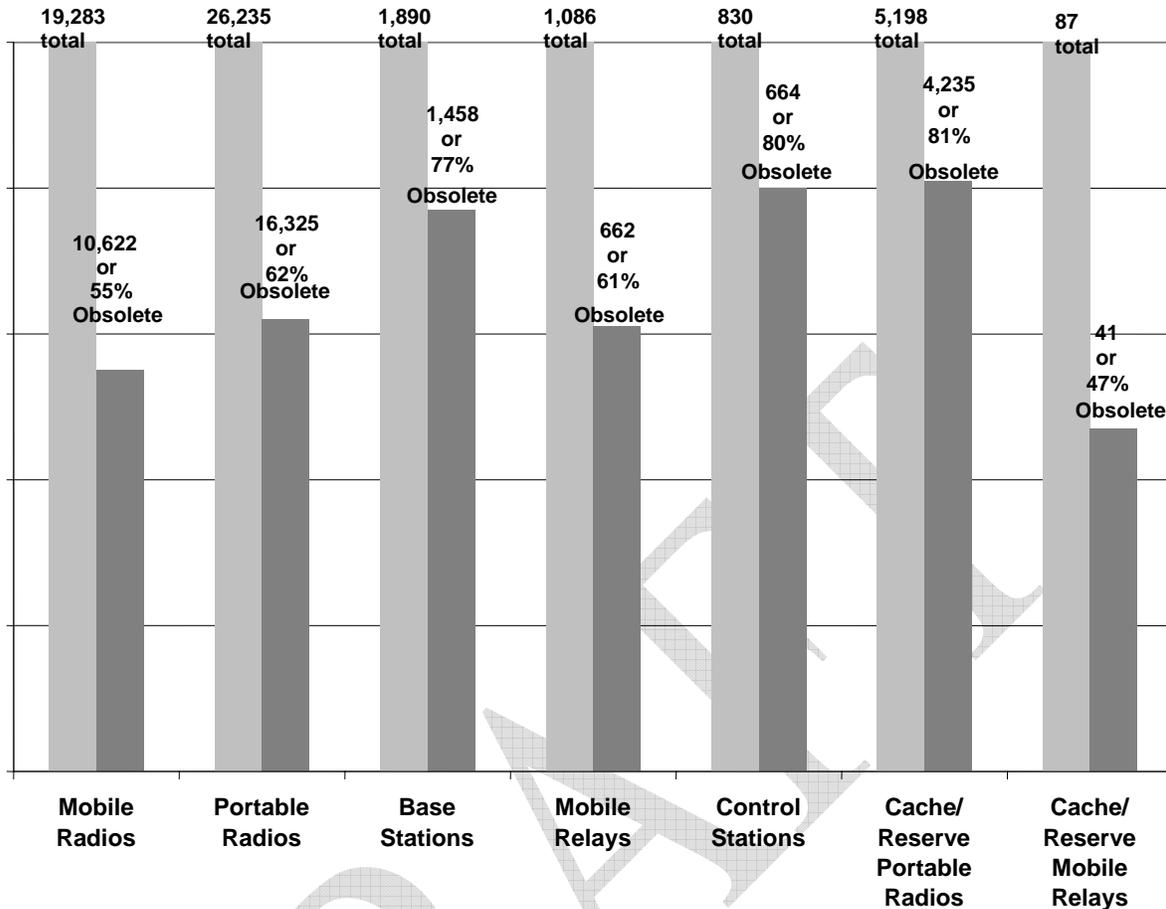
➤ **Obsolescence**

The most prominent trend is that a significant percentage of the state's radio system equipment is not sufficiently operable, functional, sustainable, flexible, or interoperable². As part of the survey, state agencies were asked what portion of their radio system equipment was not considered operable, by meeting one or more of the following conditions for obsolescence:

- The radio equipment is older than the useful life expectancy for radio system equipment as determined by the Department of General Services, Telecommunications Division
- The radio equipment is no longer supported by the radio equipment manufacturer or repair parts are no longer available
- The radio equipment does not meet current FCC technical requirements

Below is a chart of the percentage of state agency radio equipment considered obsolete:

² For the purposes of this report, operability, functionality, sustainability, and flexibility are consolidated under the term "operability."



Percentage of State Agency Radio Equipment Considered Obsolete

- Older than useful life expectancy for radio system equipment per DGS-TD
- No longer supported by equipment manufacturer or repair parts no longer available
- Does not meet current FCC technical requirements

The survey findings provide strong evidence that as a part of any state agency’s move towards interoperability, the problem of operability must first be solved.

The daily problems regarding operability can be easily seen in the paraphrased description of an ongoing problem in one of the PSRSPC agencies: *“We have in our field divisions a unique situation where our inside facility operators talk on an old Moducom Console that is hard wired to a telex audio bridge to our VHF and UHF base station radios . The VHF is used for outside the facility and the UHF is used for inside the facility. The operators are required to stay in contact with staff both inside and outside the facility for day-to-day and safety communications. Staff must drive to locations away from the facility to inspect other facilities and take readings and verify measurements. These facilities are many stories under ground and gases accumulate in the lower levels creating a hazard. Staff is required to carry radios to these locations. The radios they use are not intrinsically safe, are old, and cannot be repaired (no available parts). On Tuesday, I received an email asking for replacement of mobile radios. Recently a new fleet of vehicles was purchased and the mobile radios are to be*

removed from the old vehicles and placed in the new vehicles. It was discovered by DGS-TD Technicians that the mobile radios are failing and parts are not available. This scenario is occurring in every field division of the Department almost daily. Old equipment, where feasible, is being scavenged to repair other like equipment, only to fail again and finally be discarded due to total failure.”

Most of the PSRSPC agencies have very similar operability issues because of the equipment age, lack of repair parts and manufacturer support, or not meeting FCC technical requirements.

➤ **Funding**

The next trend is that both state and local agencies have listed funding and additional channels as the foremost and most challenging requirements standing between them and radio system modernization. Again, the PSRSPC emphasizes that radio system *operability* must be solved either before, or in conjunction with, any movement towards accommodating interoperability. Investment is needed to develop a new approach to improve state owned/operated public safety radio and wireless components, as well as the ongoing modernization of local systems, to ensure that future radio systems serving California achieve robust interoperability.

➤ **Spectrum**

The survey results also underscore the need for more radio frequencies. This is a serious problem nationwide as radio spectrum is a diminishing resource. In many popular public safety bands, the spectrum is virtually exhausted. Narrowbanding³ will help to some degree in the foreseeable future. Practically speaking, however, the only spectrum state and local agencies will have available for systems expansions or large-systems development falls within the 700 MHz (contiguous with 800 MHz) realm – spectrum which will not be available throughout most of California until February 2009. This poses significant problems because many of California’s state agencies employ spectrum in other radio frequency bands.

When armed with a viable plan and full assurances of available funding, California could attempt negotiations with the National Telecommunications and Information Agency (NTIA) which represents the federal government spectrum holdings. There are, however, only a few examples of other states meeting with success in doing so. On occasion, it is also possible to find minimal amounts of spectrum for sale, but the availability of the required amount when needed is not foreseeable.

➤ **Gateways**

During the past year, the PSRSPC has been assessing the gateway resources throughout the state in preparation for the grant funded PSRSPC gateway project (purchase of six gateway

³ January 1, 2013 is the deadline by which Public Safety Radio Pool licensees operating within the 150-174 MHz [VHF High Band] and 421-512 MHz [also known as UHF band] realms must migrate completely to 12.5 kHz “narrowband” technology.

units for mutual aid use).⁴ The assessment findings showed that many local agencies, and some state agencies, owned and operated gateways. Therefore, future effort will concentrate on the development of gateway governance to effectively and efficiently integrate these gateway resources.

Key Accomplishments in 2006

The PSRSPC in coordination with CALSIEC made significant progress in 2006. The accomplishments noted below are highlights from last year; detailed accomplishments relative to the 2006 Strategic Action Plan are contained in Attachment 1 of this report.

➤ **Gateway Equipment**

In the 2006 strategic plan, the need to identify high-priority, immediate needs for “gateway” bridging technology was recognized in order to increase interoperability “footprints.” Basically, mobile gateway equipment allows communications operators to connect several different radios together so first responders can talk to one another when appropriate. The PSRSPC-TWG and CALSIEC jointly evaluated existing interoperability capabilities, and planned for the purchase and deployment of mobile gateway units. (The intent is to extend the program for “mobile communications translators” outlined in Government Code §8588.7 (et. seq.), to at-risk areas throughout the state.) Federal Homeland Security Grant Program funding, allocated by Office of Homeland Security (OHS) for expenditure from October 17, 2006 to March 31, 2008, will enable the procurement and assembly of six gateway units. Based on the interoperability survey results and the numerous gateway communication devices available throughout the state (i.e., CHP, Military Department, locally owned gateways), it was determined the best use of these limited resources is through the mission tasking process on an “as needed basis”. These units will be made available to the requesting agencies from California’s six mutual aid regions during an emergency event.

The gateway project includes the development of product specifications, purchase, and deployment. Construction and testing of and training on the gateway units should be completed by March 31, 2008. The gateway units will be included in future operational exercises, when applicable.

➤ **System of Systems**

The 2006 strategic plan recognized the need to identify realistic parameters of a “System of Systems” (SoS) that could accommodate and build upon California’s existing public safety communications networks. The main goal of this initiative is to develop a “network of systems” that (1) ties existing local and state agency systems together with bridging technology and universal procedures, and (2) ensures that future equipment acquisitions meet the criteria identified for effective interoperability and modernization (such as SAFECOM, P25, etc.). The

⁴ The basic function of an audio gateway is to interconnect disparate communications devices (typically two-way radios) and allow audio to be patched between any and all of those devices as needed.

ultimate benefit of a “System of Systems” approach will be the development of communications interoperability/modernization criteria and achievable standardization of the communications structure for the state. A key policy and program challenge revolves around ensuring that these various systems fall within the accepted parameters of what is ultimately defined as “interoperable” – whether referring to equipment or procedural implementations. A defined range of these parameters for California were developed during the Exploratory Market Survey project (outlined in the next section).

➤ **Exploratory Market Survey**

As an initial step in developing the SoS, the PSRSPC conducted an exploratory market survey of large-scale public safety wireless voice and data communications systems integrators in May 2006. The goal of the survey was to help in formulating the SoS functional requirements. The large-scale integrators interviewed were asked to synopsise how their systems solutions could accommodate:

- forty-one predefined “System Capabilities” criteria (and, generally, other communications trends alluded to in the SAFECOM Program Statement of Requirements [SoR] Version 1.1 [see <http://www.safecomprogram.gov/SAFECOM/> for SAFECOM overview and SoR])
- communications trends alluded to in the 2006 Report to the Legislature Action Plan and Compendium of References *with emphasis on* how their systems solutions can allow the state to leverage their existing analog state agency communications systems to the greatest degree feasible while evolving gracefully but expediently towards a standards-based, optimized operable and interoperable System of Systems

Survey results indicated various approaches for integrating existing infrastructures while allowing for a migration path to modernization, and that there are several large-scale integrators that can accommodate the magnitude of effort before us.

The overarching “System Capabilities” above will be accompanied by specific functional and operational requirements evolving out of survey results and subsequent one-on-one discussions with stakeholders. Under “Requirements Definition” (see Compendium of References, Appendix 2), the compendium includes the forty-one system capabilities and will be augmented by an evolving version of the Functional and Operational Considerations Checklist that will be employed to verify all stakeholder requirements will be accommodated by the developing System of Systems solution (see Compendium of References, Appendix 3).

➤ **Statewide Coordination**

The 2006 annual report identified the need to develop lasting and coordinated governance that incorporates both existing and new organizational efforts. Key to that effort in California is coordination of the complimentary work of the PSRSPC and CALSIEC. The two committees have worked jointly on several projects including the statewide needs analysis and system capability assessment, gateway project, governance standards and interoperability plans, spectrum management, and System of Systems. This year’s annual report was validated

through a facilitated review process. CALSIEC members and the public were invited to participate in a videoconference held at three meeting sites (Sacramento, Los Alamitos, and Oakland). The results of that review were presented to the PSRSPC for consideration in this document and/or placed in a work planning structure to be addressed in 2007.

Conclusions

Based on data from the statewide system survey and work accomplished by the PSRSPC in coordination with CALSIEC, a phased approach must be taken to address the following:

- Solutions to immediate operability issues as a critical step towards interoperability
- Validation of the radio system survey information which is critical to the development of comprehensive functional and operational requirements – the foundation of the System of Systems interoperability concept.
- Governance among all facets of the communication field in California
- Inclusion of federal agencies operating radio systems in California as follow-up to the system survey
- Required funding and support to continue the radio system survey, assessment, and validation of information in order for the data to be useful for operable and interoperable radio systems development
- Grant-funded mobile gateway specifications, procurement and deployment
- Funding sources for the development of a new approach to improve state owned/operated public safety radio and wireless components
- Continued spectrum analysis related to narrowbanding, wireless broadband, 700MHz, border issues, and gateway licensing
- Spectrum requirements and availability for the public safety field in California.

Chapter 2 – Where We Want To Go

Vision for California Public Safety Communications

Twenty-first century public safety communications systems are obliged to reflect a different paradigm, and a highly coordinated effort among the State's public safety agencies. This represents a marked departure from yesterday's approach to public safety communications. Public safety agencies must now accommodate new organizational structures and modified operational procedures to support their mission. Synergistic systems, structures, and procedures offer greater opportunities for cost efficiencies on achieving practical and seamless interoperability across jurisdictions and disciplines (e.g., law, fire, emergency medical services and other government services).

California must not only participate, but *lead* in national efforts to standardize how public safety first responders communicate. This includes standard channel naming nomenclature and clear text

dispatch that will assist nationwide requests for assistance. In addition, common definitions are important; such as, the term interoperability which is defined as "the ability for public safety first responders to communicate with whom they need to, when they need to, when authorized."

California's vision for the future for public safety communications must provide its citizens with the assurance of efficient, coordinated response in the event of a disaster. As the eighth largest economy in the world, with precious resources, national parks, industry, ports and highways, California cannot afford to be complacent in its steps to provide true interoperability among all public safety first responders when planning for potential natural or man-made disasters. Developing a statewide interoperable public safety communications system became a critical component of California's defense against terrorism after the September 11th attacks. The communications problems, which were evident during the event and a contributing factor to the tragic loss of life, have shown us how essential communication is between public safety responders in these situations. This deficiency was brought to the forefront again during the 2005 hurricane season when Hurricane Katrina hit the Gulf Coast region. It is only a matter of time before California suffers a catastrophic emergency. In fact, some of the State's 2005 statistical information indicates that California has suffered more than fifty percent (50%) of the nation's federally declared disasters over the past ten years. California cannot afford to wait for a disaster to occur before it pursues a method for a statewide, interoperable communications system for public safety personnel.

Radio communications is one of the most essential tools in the daily efforts of public safety providers. California's public safety agencies' radio communications systems are crippled by a lack of interoperability, channel congestion, aging equipment, inadequate funding and limited functionality. Without effective and reliable radio communications, the citizens of California, and those sworn to protect them, are increasingly placed at risk. Faced with this situation, the Public Safety Radio Strategic Planning Committee (PSRSPC) is working collaboratively with the California Statewide Interoperability Executive Committee (CALSIEC) and constituent organizations to develop a cohesive, cost-effective strategy for improved public safety communications. Together this caucus is focusing on the development of the most effective technological and organizational approaches to meet public safety agencies' combined communications needs. The two-pronged priority efforts are: achieving equipment modernization and developing management systems for coordinated use—both efforts require a new level of dedicated funding and focus that reflects the importance to California's overall public safety.

The State of California's public safety radio communications systems must accommodate all state agencies with an integrated platform and operating system that enables seamless communications. To the greatest extent practical, this system will anticipate and allow for the integration of emerging technologies. California has adopted the federal Department of Homeland Security's SAFECOM models for public safety communities. This includes their Statement of Requirements (SoR) and the Interoperability Continuum, as the state's foundation of accomplishing these goals.

➤ ***Leadership, Planning, Collaboration and Sustainability***

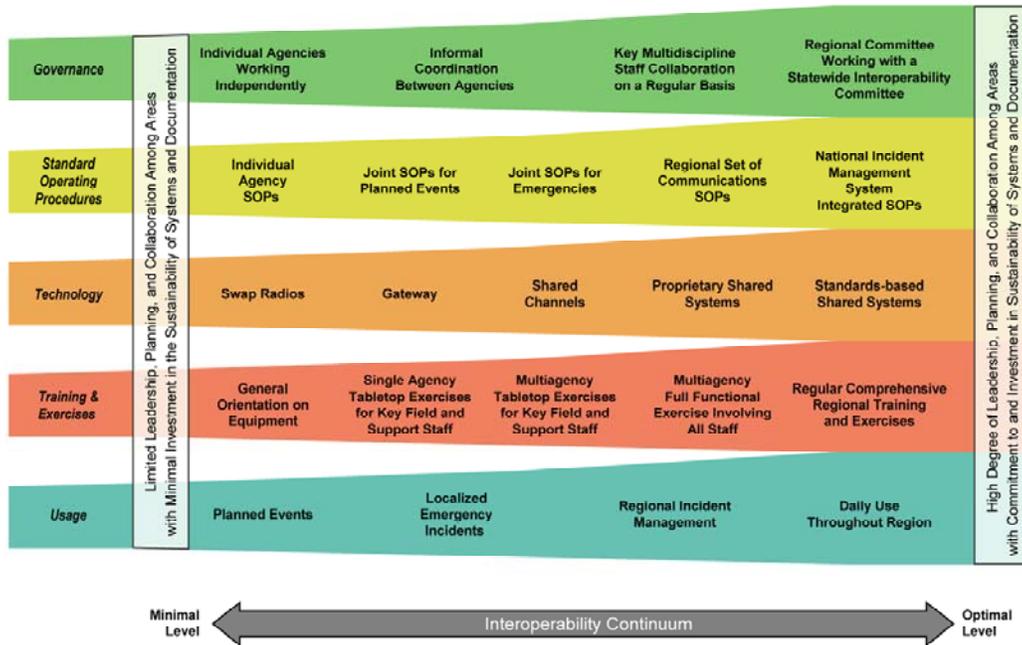
The importance of leadership cannot be over emphasized. The State of California has a responsibility to provide leadership and act as a center of excellence toward radio communications interoperability and governance advances in California. As such, the state is responsible for assisting agencies or regions facing difficulties relating to political issues, relationships within or across jurisdictions and disciplines, education and outreach. State leadership can help work through these challenging conflicts as well as set the stage for commitment to the interoperability effort. A willingness to commit the time and resources necessary to ensure interoperability success is vital.

Key issues are to gain a true leadership commitment from all disciplines; foster collaboration across all levels of government; partner with policy makers and find a reliable advocate; promote funding solutions; plan and budget for sustainable methods to provide needed upgrades; and ensure coordination across all Interoperability Continuum elements.

The PSRSPC's Annual Report to the Legislature serves as the state's strategic plan to establish a statewide, integrated, interoperable public safety communications network. The plan includes goals that identify resource needs which include data formats, sustained funding source(s) and how to prioritize expenditures; methods to develop common protocols that build upon industry and governmental standards and implementation strategies and timelines to achieve the goals and objectives set forth in the report. The report will provide progress updates on acknowledged strategies, goals and objectives, collaborations with other agencies to develop, operate and monitor statewide efforts, and recommendations on resource coordination and common protocol advancements to integrate local as well as statewide interoperable communications. There will also be a complete listing of radio communications equipment purchases by state departments for which a waiver was granted by PSRSPC.

In accordance with the Interoperability Continuum, developing strong partnerships with one or more local agencies with large integrated systems should be an option that allows state members to subscribe to these successful systems. This should be strongly encouraged as it is cost effective and promotes the System of Systems concept. It could also permit any realized cost savings to be allocated to other areas where operability may be a bigger concern.

SAFECOM's Interoperability Continuum (shown below) defines five critical elements of interoperability success which include governance, standard operating procedures, technology, training and exercises, and usage. These elements must be addressed in tandem to develop robust interoperability solutions. In order to have a true picture of interoperability, progress along all elements must be considered together, as they are interdependent.



➤ Governance

Governance refers to establishing a shared vision and an effective organizational structure to support any project or initiative through common policies, processes, and procedures. A common governance structure improves communications, coordination and cooperation across regions and disciplines that are essential in achieving an acceptable level of communications interoperability. A governing body should consist of local, tribal, state, and federal entities as well as representatives from all public safety disciplines within the state. The state needs to identify key players to participate in both regional and statewide governing body committees. Other aspects include developing a clear charter or shared mission statement, adopting an action plan, coordinating statewide key initiatives and goals, and educating potential political advocates.

➤ Standard Operating Procedures

Standard operating procedures (SOP) are formal written guidelines or instructions for incident response. SOPs typically have both operational and technical components and enable first responders to act in a coordinated fashion across disciplines in the event of an emergency. This introduces the requirement to assemble an SOP committee; develop and implement local and regional responses; and then test, evaluate and manage the procedures.

California has a long history of standardized response, including development of an Incident Command System (ICS) in the 1970's by fire services in southern California and California's all hazards/all disciplines Standardized Emergency Management System (SEMS) in the 1990's. Much of the success of these systems is a result of standard operating procedures. SOPs will be key to the success of interoperable communications.

➤ **Technology**

Technology refers to equipment, infrastructure, networks, and applications which public safety disciplines use to exchange critical information as they respond to emergency incidents. Some of the other technology elements to consider when improving communications and interoperability include conducting an inventory to identify user requirements, evaluate the findings and identify vulnerable targets, coordinate new partnerships to maximize existing infrastructure and resources, provide a statewide wireless data system, and continue planning efforts to support, maintain and optimize solutions for operability, replacement of current systems and enhancement as new technologies emerge.

The envisioned system will facilitate communications regardless of technologies, infrastructures or frequency bands encountered. It will allow first responders to transparently communicate. This will include the ability to coordinate without system access (off network to units within range) as well as with other jurisdictions in the same geographical area. This statewide system will allow guest user access (after validating user identification and authorization) to pertinent first responder talk groups and networks.

Some of the other capabilities include emergency voice communications; emergency signaling; emergency notifications; secure, encrypted voice and data communications; on-scene data query, access, exchange, and transfer, field image capture and distribution; remote system administration; and resilient/redundant functional requirements that provide reliable system performance.

Initially, the most critical priority for public safety agencies is to ensure the operability of their existing systems. Operability cannot be overlooked as many existing communications systems have reached or gone well beyond their life expectancy. A significant number of equipment components are in need of upgrades and replacement within current systems. This can only be accomplished over an extended period of time with coordinated planning and funding.

Short and long term solutions must be identified. One of California's short-term solutions is to deploy both fixed and mobile audio gateways strategically throughout the state. These gateways will supply an interim short term answer to regions without interoperable communications systems during a disaster event and will allow for a more coordinated response to agencies on different radio frequencies that cannot readily communicate by any other means. A gateway, also known as a black box, connects disparate telecommunications devices together so first responders are able to talk to one another at the scene of an incident. It does not achieve the ultimate SAFECOM goal of standards-based shared systems statewide, but it is one California can use until seamless interoperability can be achieved statewide.

➤ **Training and Exercises**

Training and exercises refers to the instructional support designed to develop and retain the knowledge, skills, and performance of public safety personnel. Proper training and regular exercises are critical to the implementation and maintenance of a successful interoperable system. General orientation of equipment, tabletop exercises for key field and support staff, and on-going, comprehensive regional training and exercises should be regularly scheduled. Effective training programs and exercises that practice communications interoperability are essential in ensuring the technology works and that responders use it effectively during emergency operations. The old adage of “practice makes perfect” is fundamental in these planning efforts.

Local, regional and statewide after action reports are needed to document progress. A means to ensure that a straightforward, real-world analysis occurs will only verify the forward momentum and reliable advancement of the state efforts. Anything less could hamper future training as only an honest assessment can identify potential high risk concerns and address actual needs for those most at risk. It is time to share local, regional and statewide shortcomings among public safety participants as this will improve the knowledge base of personnel statewide.

➤ **Usage**

Success of system usage is contingent upon how well other Interoperability Continuum elements are integrated and developed. It is used to evaluate the current state of communications interoperability and to gauge its improvement over time. The ultimate goal of usage is to have the interoperability aspect of the California System of Systems accessed on a daily basis where first responders are kept abreast of current protocols, equipment operations and techniques. Users can then remain familiar with the system’s interoperability capabilities facilitating its use when necessary. Communications systems’ familiarity is imperative for a cohesive, timely, efficient response to any request for assistance.

➤ **California’s Challenge**

Much remains to be accomplished in the arena of statewide public safety radio communications. We have only begun the journey towards clear leadership, cohesive planning, better coordination, standards-based technology, regional training and routine usage. In California, the public safety community is keenly aware of existing communications shortfalls and strongly supports statewide efforts to advance interoperability. It is time to comprehensively identify a means for our public safety communities to successfully respond in unison, as needed, to serve the citizens of California.

Priority Initiatives

The priority initiatives identified below are critical to the progress of the state’s move towards interoperability. The PSRSPC also recognizes that ongoing support of those agencies that are

spearheading the process is necessary for successful modernization and maintenance of California's communications infrastructure.

Funding

Funding is essential for California to maintain communications operability and to improve interoperability throughout the state. Additionally, significant challenges continue to exist which require an enormous amount of time and effort by OES and the PSRSPC and CALSIEC members to ensure progress.

While the PSRSPC will pursue federal funding when eligible, the magnitude of the communications replacement, modernization, maintenance, staff and training costs requires a continuous, dedicated funding source year after year. The committee intends to support departments' existing funding proposals in order to allow them to address their critical operating needs, while ensuring the project proposals are coordinated through the PSRSPC for consistency with the committee's objectives.

As defined by its 2006 strategic initiatives, the PSRSPC is addressing a phased, renewable and priority-based funding strategy for California's public safety communications physical infrastructure and governance. Three areas have been identified as critical: (1) two-year critical operability funding needs for the PSRSPC state agencies that operate radio systems; (2) governance funding for PSRSPC and CALSIEC state agencies coordinated planning efforts; and (3) a renewable funding methodology for long-term viability.

➤ **Critical Operability Funding**

Investment is needed to develop a new approach to improve state owned/operated public safety radio and wireless components, as well as the ongoing modernization of local systems, to ensure that future radio systems serving California achieve robust interoperability. As a first step towards interoperability, the PSRSPC has identified state agency equipment and personnel (installation and training costs only) funding needs to meet critical operability requirements over the next two years.

Criteria considered when determining equipment costs were:

- Critical infrastructure required replacement
- Recommended lifespan of equipment
- Lack of vendor support/inability to repair
- Obsolescence
- Statutory requirement

Using these criteria, the state agencies provided information on their specific equipment replacement or upgrade requirements and installation and training costs. The two-year cost for the PSRSPC agencies operating radio systems is approximately \$60 million. (Note to reader – This is a partial total – state agency info being finalized)

➤ **Governance Funding**

The 2006 strategic plan recognized the importance of securing stop-gap funding for critical governance, consistent coordination and planning support of the PSRSPC and CALSIEC, including funding options for interoperability strategic planning and management of staff and executive projects outlined. Significant challenges still exist which require an enormous amount of time and effort by OES, PSRSPC, and CALSIEC. The benefits of this work effort include:

- Annual Report development
- CALSIEC planning area meetings
- Executive meeting coordination
- Legislative bill analyses
- Statewide equipment & interoperability assessment, development & analysis
- Gateway specifications
- PSRSPC meeting coordination
- Review of Technical Project Plans
- System of Systems standards development, evaluation and strategies
- Tactical Interoperable Communication Plans coordination (TICPs)
- Strategic/Work Plan & Reports
- Work teams
- Web publications, announcements & essential links

The PSRSPC determined that the following activities are carried out by the state agency member agencies as part of their “governance” work effort:

- Analytical work (e.g., defining purchasing specifications, survey analysis)
- Conferences
- Consultant fees
- Legal fees
- Legislatively required activities
- Liaison
- Meetings
- Outreach
- Procurement, e.g., phones (e.g., radios, communication components)
- Products developed (e.g., project plans, reports, system designs)
- Training
- Travel
- Website

The annual cost for the next ___ fiscal years totals _____. This dollar figure supports the equivalent of 14 personnel years for PSRSPC agencies. (Note to reader – This is a partial figure. State agency info being finalized.)

➤ **Sustained Funding Options**

The 2006 strategic plan identified the need to pursue a phased, renewable and priority-based funding strategy for California’s public safety communications physical infrastructure and governance. Ultimately, the costs will likely require a combination of federal and state funds. It is the intent of the committee to support existing funding proposals in order to allow departments to address critical needs, while at the same time coordinating such initiatives through the PSRSPC to ensure consistency and collaboration. In addition, the PSRSPC took into consideration funding models that could potentially support public safety communications interoperability at the local and regional levels. To that end the PSRSPC considered a variety of funding options, as well as the funding methodologies of other states. The PSRSPC Fiscal Work Group interviewed other key state and local interoperability coordinators on challenges faced to fund their interoperability projects (see Attachment 2, “Summary of Interviews with Other State and Local Governments”).

Type	Pro	Con	Notes
Public Safety Communications Surcharge	<ul style="list-style-type: none"> ➤ Renewable** ➤ 911 Type fund (Utilities Model) ➤ Recent decrease in surcharges, i.e., federal tax rescinded ➤ Clear financial need 	<ul style="list-style-type: none"> ➤ Perceived as a “tax” ➤ Regulatory issues, e.g., some phone services may not be included 	<ul style="list-style-type: none"> ➤ Potential funding for the 58 Operational Areas (e.g., base + population) ➤ Utilities Model can be used for State and Local ➤ 911 fund has call volume as funding base
General Fund 1. Recurring fixed line item for entire state 2. Subscriber fees	<ul style="list-style-type: none"> ➤ Ongoing funding source 	<ul style="list-style-type: none"> ➤ Limited General Fund money ➤ Monies get redirected in Agencies budgets ➤ Inconsistent funding source 	<ul style="list-style-type: none"> ➤ Would have to assess locals subscriber fees ➤ “Line item” may be best
Federal Funds	<ul style="list-style-type: none"> ➤ Quick upfront money ➤ Good as “short-term” funding source, e.g., for one-time project expenses 	<ul style="list-style-type: none"> ➤ No or little spending allowed for maintenance, personnel, installation, etc. 	<ul style="list-style-type: none"> ➤ Could be source of funds, but not primary source ➤ Not preferred as long-term strategy
Bond Funds	<ul style="list-style-type: none"> ➤ Quick upfront money 	<ul style="list-style-type: none"> ➤ Bond measures hard to pass ➤ Typically one-time money 	

****New York: E 911 tax, Minnesota: 911 fee**
Arkansas, Florida, Illinois, Indiana: Increased fee on yearly license renewal
Arizona: Sales tax increase
New Jersey, Rhode Island, Utah, Virginia: Bonds
Alaska, New Hampshire: Federal funding
Iowa, Ohio, Pennsylvania: General fund appropriations

Governance

➤ ***Staff and Agency Multi-jurisdictional, Multidiscipline Collaboration Statewide***

As defined by SAFECOM, governance refers to establishing a shared vision and an effective organizational structure to support any project or initiative through common policies, processes, and procedures. The 2006 Strategic Plan recognized the criticality of “governance” in its initiative to “develop lasting and coordinated governance for integrated statewide public safety voice and data communication systems that incorporates both existing and new organizational efforts.” State and regional level memoranda of understanding/interoperable communications plans are being assimilated, evaluated, and defined within the larger scope of California’s evolving Statewide Communications Interoperability Plan.

➤ ***California Tactical Interoperable Communications Plans (TICPs)***

Tactical interoperable communications is defined as the rapid provision of on-scene, incident based mission critical voice communications among all first-responder agencies (e.g., EMS, fire and law enforcement), as appropriate for the incident, and in support of an incident command system as defined in the National Incident Management System (NIMS). Bulleted below are many aspects of tactical interoperable communications that should be incorporated into the development of a Tactical Interoperable Communications Plan:

- Tactical interoperable communications may be provided through the use of common equipment (common channels, cached radios or shared systems) or a gateway between dissimilar systems and/or radio frequency bands;
- Tactical interoperable communications may use fixed and/or mobile/portable solution(s).
- Tactical interoperable communications must be rapidly deployable at any time (24/7)
- Tactical interoperable communications should be fully operational within an hour of an incident occurring.
- Tactical interoperable communications requires oversight by trained Communications Unit Leaders, as defined within the NIMS, to support equipment deployment.
- Tactical interoperable communications plans should always be in support of long-term interoperability by building upon or accelerating long-term strategies and efforts.

PSPSPC is working collaboratively with California Statewide Interoperability Executive Committee (CALSIEC) regional representatives⁵ in documenting and refining existing tactical interoperable practices to fit California's adopted template, and in providing guidance to the extent necessary throughout the TICP development process.

➤ **California Statewide Communications Interoperability Plan (CALSCIP)**

The lack of interoperable wireless communications is an issue plaguing public safety agencies in communities across the state. In many cases, agencies cannot perform their mission critical duties. Many are unable to share critical voice or data information via radio with other jurisdictions in day-to-day operations and emergency response to incidents. Communications interoperability is defined as the ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice and/or data with one another on demand, in real time, when needed and as authorized.

By the end of 2007 as a condition of the Homeland Security Grant Program (HSGP), each state is required to develop a Statewide Communications Interoperability Plan (SCIP) - a strategic plan for improving statewide interoperable communications focusing on issues including:

- Improving the ability of public safety officers to save lives and property,
- Facilitating rapid and efficient interaction among all public safety organizations, and
- Providing immediate and coordinated assistance in day-to-day missions, task force operations, and mass-casualty incidents.

The PSRSPC recognizes that any successful effort to improve public safety interoperability must be driven by the local public safety community. A one size fits all solution to the interoperability issue mandated from the federal or state level down will not solve the problem. To accommodate local requirements and ensure congruity throughout California, the PSRSPC is working in collaboration with the California Statewide Interoperability Executive Committee⁶ (CALSIEC) to develop this strategic plan for California. California's strategic planning process will be driven from the local level up and focus on building support for the plan at every level of government.

The PSRSPC, in collaboration with CALSIEC, intends to emulate the SAFECOM model Statewide Communications Interoperability Plan methodology which identifies the phases for developing a statewide strategic plan, critical tasks under each phase, realistic timeframes during which associated tasks can be completed, and lessons learned during the California strategic planning process. California's SCIP will accommodate Gateway governance as well as the urban and regional area TICPs and other local communications plans.

⁵ Regional representatives comprise representatives from all public safety stakeholders within a localized area having a need to intercommunicate during atypical incidents.

⁶ CALSIEC is tasked with managing the state and federally designated interoperability (mutual aid) spectrum on behalf of all of California's public safety first responders.

System of Systems

➤ ***SAFECOM's Optimal Technology Solutions***

A standards based shared systems approach is the most cost-effective means of obtaining enhanced system functionality and the most effective way of pursuing and utilizing new spectrum allocations. “Regional shared systems are the optimal solution to interoperability. While proprietary systems limit the user’s choice of product with regard to manufacturer and competitive procurement, standards-based shared systems promote competitive procurement and a wide selection of products to meet specific user needs. With proper planning of the talk group architecture, interoperability is provided as a byproduct of system design, creating an optimal technology solution.”⁷

➤ ***Achieving SAFECOM's Technology Recommendations in California***

It has been determined, however, that California is neither operationally nor fiscally able to accommodate the significant investment of time and annual outlay necessary to evolve directly to a standards-based common infrastructure as evidenced in recent years by critical staffing and cash-flow shortages.

What California can do is move towards a standards based shared systems incrementally by:

- maintaining and upgrading its current independent systems (through the use of standards-based, interoperable, forward-migratable technologies to the extent practicable) to maintain and improve operability
- linking the independent agency systems via networking technologies to form a “System of Systems” to improve interoperability, and
- transitioning to common systems via sharing agreements over time

Relative to the first bullet, in the late 1990’s the PSRSPC noted in its cost-benefit analysis that although merely continuing development of independent systems by the state departments can address many needs, it will cost significantly more than the implementation of shared infrastructure(s). In addition, this independent approach does not enhance critically needed interoperability nor does it promote operational efficiencies. The departments will also have difficulty acquiring additional spectrum from the FCC which is requiring more shared systems to alleviate channel congestion.

However, posturing for the future by incrementally replacing existing equipment with standards-based modern equipment when necessary, as Government Code now requires, will facilitate a transition to agency participation on shared systems as state agencies elect to exercise the option.

Through these efforts and working in collaboration with CALSIEC, the PSRSPC is targeting 2027 as the date by which ***ALL*** local, regional, state, and federal public safety agency first-responders

⁷ Excerpt from the SAFECOM Program Interoperability Continuum – A tool for improving emergency response communications and interoperability

operating within California will be able to communicate using compatible systems, in real time, across disciplines and jurisdictions, to respond more effectively during day-to-day operations and major emergency situations. For state agencies, major milestones in achieving this goal comprise the time projections for the first two bullets above; that is, maintaining and upgrading its current independent systems and linking the independent agency systems via networking technologies. These can be accomplished concurrently and should both be completed within ten years, or by 2017.

Also driving milestone dates, the State of California holds a license for 96 each 12.5 kHz channel pairs in the 700 MHz realm. Two currently⁸ applicable benchmark conditions under which the state may retain the license exist. The state is required to certify on or before the first benchmark date (currently January 2012), that it is providing or prepared to provide “substantial service” to *one-third* of California’s population or territory, and that on or before the second benchmark date (currently January 2017), that it is providing or prepared to provide “substantial service” to *two-thirds* of California’s population or territory.

Spectrum

The PSRSPC-TWG has established a Spectrum Work Team as required in the 2006 strategic plan. The focus of the Spectrum Work Team is to: (1) assess current and future spectrum requirements of the PSRSPC state agencies and determine available spectrum resources; (2) work with DGS to pursue additional spectrum resources if needed; (3) provide the PSRSPC with public safety spectrum-related legislative information and trends; and (4) advocate the use of spectrally efficient technologies for the benefit of the state public safety agencies.

The Spectrum Work Team explored national issues as they pertain to California, reporting on contemporary issues under analysis by public safety delegate organizations. There are major tasks included below that must be accomplished under FCC regulations.

➤ **Narrowbanding below 512 MHz**

Narrowbanding is intended to promote spectrum efficient technologies on certain FCC Part 90 frequencies. Imminent related requirements include:

- “...single-mode and multi-mode transmitters designed to operate in the 150-174 MHz and 421-512 MHz bands that operate with a maximum channel bandwidth greater than 12.5 kHz shall not be manufactured in, or imported into, the United States after January 1, 2011...”
- January 1, 2013 is the deadline by which Public Safety Radio Pool licensees operating in the 150-174 MHz and 421-512 MHz bands must migrate completely to 12.5 kHz narrowband technology.

⁸ The ruling (circa 2001) was based upon the condition-based assumption incumbent TV broadcasters would vacate the spectrum by 2007. A “date certain” of February 2009 was established more recently, which may make a case for a two-year extension on the current benchmark date requirement if it is deemed necessary.

➤ **Wireless Broadband**

- focusing on the development of broadband public safety communications capabilities
- reviewing technology, security, applications, prioritization, and spectrum management concerns

➤ **700 MHz Advocacy**

The 700 MHz allocation is a large, new public safety spectrum block effectively blocked for use in California until February 2009. Its advocacy entails:

- Promoting equitable and efficient uses of 700 MHz spectrum for state public safety agencies
- Facilitating the outreach to the public safety stakeholders and government decision makers on 700 MHz issues

➤ **Border Issues**

- Focusing on Mexican border area public safety communications issues

➤ **Gateway Licensing**

- Studied the relevant rules and regulations regarding the operation and licensing of radio channels in both fixed and mobile gateway solutions and developed a course of action to address this situation. (See Compendium of References, Appendix 4 for discussion of FCC issues)

➤ **Spectrum Alternatives**

- Seeking potential alternative sources for spectrum (e.g., NTIA, commercial availability, et cetera). Actually pursuing these alternatives requires a viable plan and/or full assurances of available funding.

Chapter 3 – How We Get There

Twenty Year Timeline – An Overview

In order to accommodate the foregoing, the PSRSPC is obliged to adopt the following aggressive communications system-related implementation goals. The associated milestone dates selected have little flexibility as they are mostly driven by FCC rulings. The goals are broken into near-term and long-term efforts. The goals are depicted in the graphic below:

[[GRAPHIC HERE TO BE INSERTED HERE]]

Near-term milestones are 2 years and 5 years out, or 2009 and 2012 respectively.

Two year goals

- The 700 MHz block of 24 MHz of spectrum conditionally allocated to public safety in 1998 will finally be freed-up throughout California when the incumbent TV broadcasters vacate it in February 2009. Forward planning for the implementation of the state's portion of this key resource is imperative if we are to meet the aggressive implementation conditions imposed on its use (see specifics in five year goals).
- Funding is essential for California to maintain state public safety communications operability and to improve interoperability throughout the state. PSRSPC agencies have identified state critical operability communications systems-related funding requirements which need to be addressed immediately. Within the next two-year interval (hopefully sooner rather than later), PSRSPC state agencies operating public safety radio systems require stopgap funding to mitigate these critical communications system needs.

Five year goals

- January 1, 2013 is the deadline by which Public Safety Radio Pool licensees operating in the 150-174 MHz and 421-512 MHz bands must migrate completely to 12.5 kHz narrowband technology. This affects all PSRSPC agencies operating public safety communications systems in the targeted bands. These agencies *must* migrate to narrowband communications system equipment by the end of 2012. The PSRSPC is targeting the beginning of 2012 (five years hence) for completion of this critical migration allowing for unforeseen developments to be accommodated in the sixth year if necessary.
- The state is required to certify on or before the first benchmark date (currently January 2012), that it is providing or prepared to provide "substantial service" to *one-third* of California's population or territory. The forward planning identified as a two-year goal above will need to be acted on before 2012 to meet the FCC requirement; that is, significant 700 MHz deployments need to take place within the next five years.

Long-term goals are 10 years and 20 years out, or 2017 and 2027 respectively.

Ten year goals

- For state agencies, maintain and upgrade current independent systems and link the independent agency systems via networking technologies⁹.
- As indicated above, the state is required to certify on or before the second benchmark date (currently January 2017), that it is providing or prepared to provide "substantial service" to *two-thirds* of California's population or territory. The forward planning identified as a two-year goal above will need to be acted on before 2017 to meet the FCC requirement; that is, the bulk of the 700 MHz deployments need to be completed within the next ten years.

⁹ Regarding networking the independent agency systems, in an exploratory market survey the PSRSPC conducted this year, several large-scale integrators provided capabilities briefings assuring the state that they have the technology solutions and/or wherewithal to accommodate networking solutions that will allow the state a variety of capabilities – among them interoperability.

Twenty-year goals

- Continue to bolster the confidence and participation of local, state, federal, and tribal public safety practitioners statewide by demonstrating consistent world-class leadership throughout California.
- Continue working in collaboration with CALSIEC and develop an institutionalized system for coordination, issue resolution, and ongoing planning addressing all of California's communication needs.
- When interfacing with California public safety practitioners, advocate the target date of 2027 as the date by which ALL local, regional, state, and federal public safety agency first-responders operating within California will be able to communicate using compatible systems, in real time, across disciplines and jurisdictions, to respond more effectively during day-to-day operations and major emergency situations.

2007 Strategic Action Plan

The 2007 Strategic Action Plan is based on achievements in 2006, status of activities in progress, and knowledge gained as a result of the needs analysis and assessment and work with key stakeholders. **The stated timeframes and outcomes are projections to accomplish these goals and are contingent on adequate funding and staff specifically and solely dedicated to these initiatives.**

Goal 1: Leadership: Establish an effective leadership governance structure

Objectives:

- 1.1:** Formally recognize, e.g., by Executive Order, the California Statewide Interoperability Executive Committee's role in the administration of interoperability channels and the establishment of technical and operational policies for interoperability channels. The PSRSPC will collaborate with CALSIEC in defining these roles in 2007.
- 1.2** Continue to bolster the confidence and participation of local, state, federal, and tribal public safety practitioners statewide by demonstrating consistent world-class leadership to the public safety community throughout California.

Projected Outcomes:

PSRSPC's stated twenty-year goal is to lead in the effort of ensuring that by 2027, ALL local, regional, state, and federal public safety agency first-responders operating within California will be able to communicate using compatible systems, in real time, across disciplines and jurisdictions, to

respond more effectively during day-to-day operations and major emergency situations. This is only possible by exercising sustained, bold leadership while constantly collaborating with CALSIEC representatives on behalf of California's public safety community.

Goal 2: Funding: Pursue a phased, renewable and priority-based funding strategy for California's public safety communications physical infrastructure and governance.

Objectives:

- 2.1 Obtain funding for immediate two-year critical operable equipment for the state agency's obsolete communication systems.
- 2.2: Develop a fiscal plan for obtaining legislative approval of on-going funding for critical communications governance, consistent coordination and collaboration, education, training and planning support of PSRSPC and CALSIEC activities.
- 2.3: Develop a long-term funding program to continue California's communication systems' operability and interoperability.
- 2.4: Continue to pursue grant funding for limited-term interoperability equipment purchases or system upgrades throughout the state.
- 2.5: Participate in developing a streamlined procurement process.

Projected Outcome(s):

Necessarily aggressive two, five, ten, and twenty year goals for the modernization of California's public safety communications systems statewide were delineated earlier in this chapter. These goals can only be accomplished if infused with an adequate and consistent flow of funds. The central theme of "Goal #2: Funding..." is to establish a funding environment conducive to moving forward.

A robust funding plan which enables a rapid, efficient purchase of equipment through annual revenue sources comprised of:

- a reliable component (e.g., renewable funds)
- a fluctuating component (e.g., general funds), and
- an unpredictable, supplementary component (i.e., grants, bonds, etc.)

Goal 3: Governance: Develop lasting and coordinated governance for integrated statewide public safety voice and data communication systems.

Objectives:

- 3.1:** In coordination with CALSIEC, develop the California Statewide Communications Interoperability Plan (CALSCIP). Collaborate with CALSIEC in the development of functional and operational procedures that support a statewide standardized interoperable framework.
- 3.2:** In coordination with CALSIEC, facilitate the development of Tactical Interoperable Communications Plans (TICPs) among local jurisdictions across the state. Evaluate newly created Urban Area Security Initiative (UASI) TICPs to assist in this development.
- 3.3:** Create interoperability MOU templates based upon practices statewide.
- 3.4:** Develop a training strategy and implement a long-term, continuous training program for stakeholders regarding the PSRSPC and CALSIEC and its processes.

Projected Outcome(s):

A focus on new initiatives to maximize equipment use, improve interoperability, and address how California's responders prepare and practice for major emergencies. Stakeholder participation plays a crucial role in the planning, implementation, and revision of the statewide plan. In the effort to achieve interoperability we collaborate with practitioners from multiple agencies and disciplines throughout California.

Goal 4: Convergence: Focus technology research and "best practices" investigation through strong interagency coordination to enhance technology transfer and efficiency.

Objectives:

- 4.1:** Continue to assess the equipment and procedural systems being used currently at both the state and local level.
- 4.2:** Develop the "California System of Systems" (SoS) functional requirements to serve as criteria for both Requests for Information as appropriate, and subsequent Requests for Proposals.

- 4.3: Continue to document and publish communication technology “best practices.”

Projected Outcome(s):

Mission area analysis efforts will determine the user’s requirements, constraints, and initial strategy, followed by an approval for program initiation and authority to budget for a new program. Exhaustive research and functional analyses will result in correctly defining each agency’s baseline of functions and functional performance requirements, which must be met to adequately accomplish the operation, support, test, and construction requirements of the ultimate SoS Project. Continuing cognizance of best practices and industry standards will help to ensure that any products the PSRSPC endorses/advances are achievable, effectively used, and in California’s best interests.

Goal 5: Technology: Outline realistic parameters of a “System of Systems” that could accommodate & build upon California’s public safety communications network.

Objectives:

- 5.1: Establish the procedure and ensure accessibility through strategic distribution of California’s State Agencies Communications Support Caches (CICSC), with an invitation for local participation, for use by public safety emergency personnel responding to disasters, in accordance with OES’ mission tasking procedures.
- 5.2: Continue defining system’s integration standards conducive to adoption by state and local agencies.
- 5.3: Continue the purchase and deployment process for transportable gateway units.
- 5.4: Ensure that future acquisitions of equipment support standardized modernization and interoperable parameters.

Projected Outcome(s):

Any public safety guardian should be able to respond to any incident anywhere in the California, using their own equipment, on any network, and on dedicated public safety spectrum. In addition, they will be able to communicate with each other as authorized via voice, data, and video on demand and in real time.

Chapter 4 - Legislatively Required Activities

The “Public Safety Communication Act of 2002” (Government Code Sections 8592-8592.7) identifies the responsibilities of the PSRSPC. The act was significantly amended in 2006 by SB 1132, and AB 1848, 2041, and 2116 (see Compendium of References, Appendix 5 for full statutory text). The sections below describe PSRSPC activities related to existing and newly enacted statutory requirements.

PSRSPC Membership and Meetings

AB 2041/2116, effective January 1, 2007, names the Office of Emergency Services as PSRSPC chair; adds the Military Department, Department of Health Services, and Department of Finance as members; and requires a minimum of two meetings annually, one of which will be a joint meeting with CALSIEC, to enhance coordination and cooperation.

While not required under statute in 2006, many activities took place that met the intent of AB 2041/2116. The Military Department and the California Department of Health Services have participated in PSRSPC and PSRSPC-TWG meetings and activities. The PSRSPC met quarterly in 2006, and the PSRSPC Technical Working Group met every three weeks, in order to achieve the 2006 annual report’s goals and objectives.

Coordination between the PSRSPC and CALSIEC also occurred throughout the year. Representatives from several state agencies are members of both committees. Both committees included agenda items to discuss common issues and to update each other on current activities.

Model Memorandum of Understanding (MOU)

Government Code Section 8592.3 (c) tasks the PSRSPC to develop a model memorandum of understanding that sets forth general terms for interoperability or other shared uses among jurisdictions. The PSRSPC and CALSIEC have been holding meetings with local jurisdictions to facilitate the development of regional Tactical Interoperable Communications Plans (TICPs) that develop and/or document operational procedures and MOU’s for regional interoperability. In accordance with a federal mandate, the regional TICPs will be used to aid in the formulation of the California’s Statewide Communications Interoperability Plan (CALSCIP). The CALSCIP will provide an operations plan to maximize interoperability throughout the state. An MOU template will be developed based upon agreement practices statewide. This template will be able to be tailored to accommodate any contingencies.

Equipment (Purchases, Waivers, and Budget Proposals)

➤ **Purchases**

Government Code Section 8592.4 tasks the PSRSPC to (1) determine which state public safety departments need new or upgraded communication equipment, (2) establish a program for equipment purchase, and (3) recommend the purchase of equipment that will enable state agencies to commence conforming to industry and governmental standards for interoperability.

Government Code 8592, et seq, requires state government entities who sit on the PSRSPC to purchase “TIA-102/APCO-25” compliant equipment to help realize the eventual goal of interoperability. However, many aspects of those standards remain in the development and approval stages. One series of procurements, near the end of fiscal year 2005/06, fell victim to this evolving standards process. Equipment purchase specifications prepared by the Department of General Services called out for the latest approved version of equipment approved by the “APCO-25” process; however no manufacturer was able to deliver products within the timeline of the procurement. To ease situations such as this, the PSRSPC adopted a policy to allow the Department of General Services to first ascertain the market’s ability to in fact deliver products within the timeline of the purchase before incorporating those details into the purchase specifications (see Compendium of References, Appendix 6).

➤ **Waivers**

Government Code Section 8592.5 (a) requires that state department public safety radio communication purchases comply with common system standards for digital public safety radio communications and with operational and functional requirements identified by the SAFECOM Program (U.S. Department of Homeland Security). Waivers granted to state agencies by the PSRSPC, relative to this statute, must be listed in the annual report to the Legislature.

There were no requests for waivers submitted to the PSRSPC in 2006.

➤ **Budget Proposals**

SB 1132 (effective on July 7, 2006) added Section 8592.7 to the Government Code. This section addresses state agency budget proposals for new or modified radio systems and requires those proposals be accompanied by a technical project plan. The technical project plan must include project scope, alternatives considered, solution justification, implementation plan, proposed timeline, and estimated costs by fiscal year. The PSRSPC is required to review the technical project plans for consistency with the state’s strategic plan. DGS-TD is required to review the plans for technical consistency with the state’s strategic plan.

The PSRSPC-TWG has developed an initial review protocol and is in the process of developing comprehensive procedures relative to these requirements. The procedures

address the process for the PSRSPC to review state agencies' submitted project plans, as it relates to DGS' review and approval process.

➤ ***Annual Report as State's Strategic Plan***

The 2006 and 2007 PSRSPC Annual Reports to the Legislature have served as the strategic plan for statewide integrated public safety communications. Effective January 1, 2007, AB 1848 codifies the PSRSPC's annual report as the state's strategic plan and requires that the report contain, at a minimum, implementation strategies and timelines to achieve the identified goals and objectives.

The PSRSPC will work to refine and enhance the annual report process and content to fully meet the amended statutory language.

Chapter 5 - Conclusion

TBD

Attachments

Attachment 1 - Status of 2006 Strategic Action Plan

The PSRSPC made significant strides in addressing the initiatives identified in the 2006 Strategic Action Plan. Below is an overview of the committee's accomplishments.

➤ ***Initiative 1: Focus technology research and "best practices" investigation through strong interagency coordination to avoid duplication and enhance technology transfer.***

Goal 1.1: Assess the equipment and procedural systems being used currently at both the state and local level.

- PSRSPC, in collaboration with CALSIEC, conducted a statewide Internet-based survey to address radio systems and to analyze their interoperability. The survey resulted in recommendations relative to immediate operability; validation of specific information to support development of the System of Systems; and the criticality of funding and support to carry out future assessments and information validation required for operability and interoperability activities.

Goal 1.2: Develop a "California Statement of Requirements" (SoR) for the next generation state communications network, to serve as criteria for a Request for Proposal.

- The PSRSPC developed a preliminary high-level California SoR for the System of Systems which includes 41 broadly defined system capabilities criteria harmonious with the SAFECOM Program ideology.

Goal 1.3: Convene a "Demonstration Day" for equipment vendors to demonstrate their products to the State agency representatives.

- The PSRSPC conducted an exploratory market survey and held a demonstration day for large scale public safety wireless voice and data communications systems integrators in May 2006. Seven integrators demonstrated how their system solutions could accommodate California's high-level Statement of Requirements, take into consideration communications trends from the PSRSPC's 2006 report to the Legislature, and allow the state to leverage their existing systems while moving towards interoperability. Several approaches were identified that meet California's SoR.

Goal 1.4: Document and publish "best practices" identified during the investigative phases of this initiative.

- The System of Systems Capabilities Criteria is posted on the PSRSPC website, along with informational links providing guidance and best practices.

➤ ***Initiative 2: Investigate realistic parameters of a “System of Systems” that could accommodate & build upon California’s public safety communications network***

Goal 2.1: Initiate the development of a comprehensive California Interagency Communications Support Cache (CICSC) for use by public safety emergency personnel responding to disasters.

- The PSRSPC survey (see Goal 1.1) gathered information that will support the development of a CICSC.

Goal 2.2: Achieve maximum interoperability across existing statewide systems.

- The PSRSPC survey (see Goal 1.1) gathered initial information about the status of the state’s “gateway” bridging systems.
- OES and DGS have been defining the design elements of mobile gateway units.
- Based on the number of gateway communication devices available throughout the state and limited FY 06 federal Homeland Security Grant Program funds, six mobile gateways will be procured and hosted within the regions for deployment through the mission tasking process on an “as needed basis”.

Goal 2.3: Pursue future acquisitions of equipment that support standardized modernization and interoperable parameters, and a streamlined procurement process that recognizes standards-compliant contracts at multiple levels of government.

- The PSRSPC-TWG has developed draft operational procedures consistent with the requirements of Government Code Sections 8592.4, 8592.5 (a), and 8592.7. The procedures address the process for the PSRSPC to review state agencies submitted project plans, as it relates to DGS’ review and approval process.

Goal 2.4: Design and implement operational procedures that support a statewide standardized, interoperable framework.

- As an initial step in developing the SoS, the PSRSPC conducted an exploratory market survey of large scale public safety wireless voice and data communications systems integrators in May 2006. The goal of the survey was to help in formulating the SoS functional requirements. Based on information received, development of a preliminary draft of the System of Systems PSRSPC Project Plan – Phase I was initiated.
- A high-level procurement strategy was developed.

➤ ***Initiative 3: Pursue a phased, renewable and priority-based funding strategy for California’s public safety communications physical infrastructure and governance.***

Goal 3.1: Secure stop-gap funding for critical governance, consistent coordination and planning support of PSRSPC and CALSIEC.

- The PSRSPC-TWG developed funding needs to address state agency support to carry out the statutory duties for PSRSPC and to ensure continued coordination with CALSIEC.

Goal 3.2: Secure stop-gap, immediate funding to support critical needs of existing state agency systems, in order to maintain current communications systems requirements.

- The needs analysis and assessment conducted in 2006 identified critical state agency system needs. Based on this assessment and additional information provided by the PSRSPC agencies that operate radio systems, the PSRSPC-TWG identified funding needs to address current communications systems requirements.

Goal 3.3: Maximize direct funding and “in-kind” support of federal government in pursuit of state and local system modernization and interoperability.

- A request by OES for Homeland Security Grant Program funds was approved for \$5,000,000 to address interoperable communications.
- Local governments and state agencies were routinely advised of the availability and requirements of federal grant programs. Information was shared at meetings, through letters and e-mails, and through the PSRSPC and CALSIEC websites.

➤ ***Initiative 4: Develop lasting and coordinated governance for integrated statewide public safety voice and data communication systems that incorporates both existing and new organizational efforts.***

Goal 4.1: Coordinate the complimentary work of the PSRSPC and CALSIEC

- Coordination between the PSRSPC and CALSIEC occurred throughout the year. Several state agencies are members of both committees. Both committees included agenda items to discuss common issues and to update each other on current activities.
- Created draft CALSIEC Governance document (June 15, 2006).
- PSRSPC and CALSIEC will work collaboratively to ensure a joint meeting is held in 2007 as required effective January 1, 2007 pursuant to Government Code 8592.2 (c).

Goal 4.2: Develop strong support and involvement from all PSRSPC stakeholders.

- Routine meetings of the PSRSPC and PSRSPC-TWG were held.
- PSRSPC member agencies led and participated in work teams established by the PSRSPC-TWG to address 2006 strategic goals. Work team activities and products were conducted and shared with stakeholders. Work team established were:
 - Assessing System Capabilities/Needs Analysis
 - System of Systems (previously two work groups - Statement of Requirements; Vendor Demonstration)
 - Governance/Memorandum of Understanding

- Spectrum
- Gateway
- Fiscal
- CALSIEC-PSRSPC Coordination

Goal 4.3: Convene and support a Working Group to coordinate the use of state agency spectrum holdings.

- The PSRSPC-TWG Spectrum Work Team, established in 2006, explored national issues as they relate to California, including narrowbanding below 512MHz, wireless broadband, 700MHz advocacy, and border issues.
- Spectrum topics have been included in CALSIEC Executive and Planning Area meetings.

Goal 4.4: Design a long-term, continuous education strategy for new state agency appointees regarding the PSRSPC and its processes.

- The PSRSPC-TWG developed a draft educational package for PSRSPC members and executives titled “California Interoperability: Introductory Information.”

Attachment 2 - Summary of Interviews with Other States and Local Governments

➤ **Commonwealth of Virginia**

Virginia has established the Commonwealth Interoperability Coordinator (CIC) in the Commonwealth Interoperability Coordinator’s Office (CICO) which reports to the Governor’s Office of Commonwealth Preparedness.

The Virginia (VA) project started with SAFECOM in 2004. There were six regional focus groups that conducted strategic planning sessions. There are now 14 entities representing local and state public safety associations and government on the State Interoperability Executive Committee (SIEC). In addition, the VA SIEC is involved with the review and recommendation of grant proposals. Since 2004 VA has spent \$11.243 million of which \$9.164 million goes to local government for voice and data interoperability.

VA recommends that a full time position dedicated as the Interoperability Coordinator is needed to effectively lead an interoperability project. VA’s CIC position and one staff member are built into the Governor’s budget. The CICO also has an intern and four consultants working fulltime on the project. The consultants’ work focuses on implementation of initiatives identified by first responders. To date their work has been paid for by grant funds and earmarks; however, the funding is needed on an annual basis.

In SAFECOM’s report, *Lessons Learned from the Commonwealth of Virginia: One Year Later*, the following lesson, relating to the leadership governance structure, was recorded:

Lesson 4: Centralizing Coordination of the Effort

Establishing and naming a body to coordinate an effort of this magnitude is essential. Practitioner committees offer guidance and expertise; however, due to already full schedules, they may not offer the coordination needed to ensure plan implementation. A designated, full-time coordinator or coordinating body is an investment that can significantly enhance project success. Recommendations – Establish centralized, non-practitioner coordination: Emphasize the need for a paid coordinator or coordinating body to centrally organize interoperability efforts.

Results: Virginia established the Commonwealth Interoperability Coordinator’s Office (CICO) to coordinate planning and implementation. This created a forum to continue state-wide collaboration and identified a person designated to plan implementation”.

➤ **State of New York**

The New York Statewide Wireless Network (SWN) is a mission-critical project for public safety which is moving the state from obsolete and failing architecture to a state-of-the-art digital trunked land mobile radio system. The Office for Technology (OFT) is managing the procurement and overseeing the design, construction and operation of SWN through a dedicated staff in the SWN project office. Additional guidance for network development and operation is provided by the SWN Advisory Council which is chaired by the Chief Information Officer (CIO) of the state.

The Statewide Wireless Network will serve all state agencies and enhance local initiatives by fostering partnerships with local emergency first responders and service providers on a voluntary basis. The initial installation will accommodate up to 65,000 users and 25,000 separate “talk groups” at any give time statewide, and it will support up to 250,000 individual pieces of user equipment. There are three basic levels of local government participation (partnerships) on the Statewide Wireless Network with different costs to users listed below. Both local agencies and the state mutually benefit through sharing infrastructure and frequencies, thereby reducing costs for all.

- Level 1 - Sharing of infrastructure to reduce cost and environmental impact – No cost
- Level 2 - Interoperability with SWN through a network gateway to an existing local government radio system - Minimal associated costs for gateway installation
- Level 3 - Full SWN participation - Required to purchase subscriber radios to operate on SWN.

Funding for the SWN comes entirely from the State Wireless Communications Service Surcharge. The 20-year price for the SWN Contract is a not-to-exceed price of \$2 billion. This total encompasses network development costs (e.g., design and construction of infrastructure, network equipment, financing, etc.) and all costs for network operations and maintenance over the 20 year term of the contract, including training.

➤ **City of New York (Interview pending)**

Attachment 3 - Definitions & Acronyms – TBD