

2008 Public Safety Communications Strategic Plan & Report to the California State Legislature*



Public Safety Radio Strategic Planning Committee (PSRSPC)
January 2008

**As required by Government Code 8592.6*

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Governor

Arnold Schwarzenegger

PSRSPC Chair

Henry R. Renteria

Director, Governor's Office of Emergency Services



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February 4, 2008

To members of the California State Legislature:

It is my honor to transmit this report on behalf of the Public Safety Radio Strategic Planning Committee (PSRSPC) membership. Over the past year, the 15 state agencies involved with PSRSPC activities have worked diligently to move California forward on the path to interoperability.

This report fulfills statutory requirements under Government Code 8592.6. It reflects the state's progress in planning, training and exercising, and coordinating budgetary and grant proposals and highlights key challenges with communications operability, Federal Communications Commission mandates, and development of public safety communications systems and governance. To address these issues, the PSRSPC is proposing several critical strategic actions to address the state's communications challenges, most importantly the establishment of a sustainable funding source that will support not only state agencies, but also our local government partners. To underscore the report's recommendations, we have added a new section this year to address risks and consequences for California's public safety communications.

It is important to note the increased level of coordination with the PSRSPC's local, tribal, and private partner's this year through the California Statewide Interoperability Executive Committee (CalSIEC). The committees held three joint executive level meetings to address issues and make recommendations, including those outlined in this report.

In an effort to make this report more user friendly, the PSRSPC has made every effort to streamline the report while still providing the level of detail needed for effective decision making. The PSRSPC looks forward to working with the Legislature and to providing any further information needed to meet our common goal of a robust and sustained communications system in California.

Sincerely,

A handwritten signature in black ink, appearing to read "Henry R. Renteria".

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

APPROVING DEPARTMENTS

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

- Governor's Office of Emergency Services (OES) – Chairperson
- 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 (CAL FIRE)
- Department of Justice (DOJ)
- Department of Water Resources (DWR)
- Department of Public Health (CDPH)
- Emergency Medical Services Authority (EMSA)
- Department of General Services (DGS)
- Governor's Office of Homeland Security (OHS)
- California Military Department (CMD)
- Department of Finance (DOF)

The PSRSPC at a Glance

The California Public Safety Communications Act of 2002 (Government Code §§8592 – 8592.7) directs the PSRSPC to have primary responsibility in state government for the following:

- Developing and implementing a statewide integrated public safety communications system that facilitates interoperability among state public safety departments as well as other first response agencies, as the committee deems appropriate.
- Coordinating other shared uses of public safety spectrum consistent with decisions and regulations of the Federal Communications Commission (FCC).

PSRSPC Membership: The Committee consists of representatives from the following state entities: Governor’s Office of Emergency Services (OES) – Chairperson; 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 (CAL FIRE); Department of Justice (DOJ); Department of Water Resources (DWR); Department of Public Health (CDPH); Emergency Medical Services Authority (EMSA); Department of General Services (DGS); Governor’s Office of Homeland Security (OHS); California Military Department (CMD); and Department of Finance (DOF).

PSRSPC Vision: *Develop, implement, and administer an innovative, inclusive, scalable, and sustainable statewide plan that facilitates wireless communications system modernization and interoperability and ultimately provides effective, seamless, and reliable public safety services throughout California.*

PSRSPC Mission: *To provide the leadership needed that allows California to effectively leverage existing investments in communications infrastructures while moving rapidly and decisively to meet targeted goals for improved interoperability, universal statewide access, enhanced modernization, increased functionality, and adequate channel availability throughout California in support of public safety.*

The PSRSPC is to consult with the following organizations and entities: California State Peace Officers Association; California Police Chiefs Association; California State Sheriffs' Association; California Professional Firefighters; California Fire Chiefs Association; California State Association of Counties; League of California Cities; California State Firefighters Association; California Coalition of Law Enforcement Associations; California Correctional Peace Officers Association; CDF Firefighters; California Union of Safety Employees. NOTE: Outreach on PSRSPC meetings and activities are made to members of the disabled community via the OES Specialist Committee.

PSRSPC Technical Working Group (TWG): The TWG is comprised of staff assigned by PSRSPC member agencies and functions as the primary focal point for ongoing technical, research, and option-generation assignments.

PSRSPC Coordination Guidelines: The PSRSPC operates under the following guiding principles and ground rules: Partnerships allow for a stronger voice than one department or agency alone; All member agencies and departments have an equal voice at the table; Committee will seek common ground, even if some expressed needs must be postponed, for the collective advancement of the PSRSPC mission; Education is the key to understanding; when a challenging issue appears, explanation is encouraged—even if it takes some time; All issues raised by members are valid and will be given attention; respecting all departmental perspectives will be paramount. The PSRSPC strives to achieve consensus-based decision-making; however, when that is not feasible, decision-making is conducted based on a majority vote process with objections noted in the record upon request.

Coordination with California Statewide Interoperability Executive Committee (CALSIIEC): The PSRSPC is required to hold a joint meeting with CALSIIEC to enhance coordination and cooperation at all organizational levels and a cohesive approach to communications interoperability

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COVER PHOTOS Credit: Robert A. Eplett, California Governor's Office of Emergency Services. Depict scenes from the 2007 California Wildfires.

EXECUTIVE SUMMARY

PSRSPC's 2008 Public Safety Communications Strategic Plan and Report to the Legislature was written amidst the dramatic backdrop the October 2007 Southern California wild fires and the historic crafting of the first ever *California's Statewide Communications Interoperability Plan* (CalSCIP), required by the federal Department of Homeland Security for grant purposes. Additionally, federal one-time grant money, a total of over \$94 million dollars for public safety communications by local, regional and State government was acquired and, for the first time, the PSRSPC is in the position to authorize grant projects. PSRSPC also dedicated time to respond to the interests expressed by the legislature to learn more about the operability and interoperability needs of the members. PSRSPC's Technical Working Group (TWG), along with representatives of the California Statewide Interoperability Executive Committee (CalSIEC), focused extensively on facilitating the development of preliminary *Operational Area Tactical Interoperable Communications Plans* (TICPs) *throughout* the State. TICP's are instrumental in developing standard operating procedures for tactical interoperability at the incident level; the goal is to achieve this capacity statewide by the end of 2008.

PSRSPC member agencies and departments were actively involved, playing crucial roles in response and recovery efforts for the fires, the development of the CalSCIP and the allocation of the federal grant money. The disasters, as well as the requirements of the CalSCIP in order to secure grants, truly underscore the one recommendation of the report: *The PSRSPC believes a funding mechanism modeled after the highly successful California 911 system to be the most effective design for a reliable, dedicated funding source. This source would provide ongoing funding for updating, replacing, designing, and coordinating the complex public safety communications systems around the state – for both local and State efforts.*

Despite the devastation of the fires, (500,000 acres of wild lands burned and over 500,000 people evacuated) we can pause and acknowledge what worked well: the public communications specialists at the local level who worked the fires found they were able to communicate quite well. The ordering process for resources also went extremely well, and they also found the successful integration of State, Local, Regional and Federal government was unprecedented. Additionally, for the first time video played a significant role in fighting fires along side traditional voice radios. The strong push for tactical interoperability, a key goal of PSRSPC, was demonstrated as a growing reality during the fires.

However, these fires also served to underscore profound risks and vulnerabilities to the public safety communications infrastructure. Unfortunately, once again some state agencies found they lacked basic *operability* of communications equipment. In the wake of the events of 2007, PSRSPC members are more determined than ever to partner with the legislature as well as regional and local government to make a sustainable funding mechanism a reality for California. Many other states across the country have done this

and California must do the same to maintain its leadership position in emergency planning, response and recovery.

The fundamental “plan” for PSRSPC members consists of the *Road Map to 2017*, which contains three basic components:

- 1) *Address critical operability, tactical interoperability, and governance needs.*
- 2) *Design and secure long term, sustainable funding mechanisms and initiate System of Systems (SoS) planning.*
- 3) *Build out California’s System of Systems (SoS) including governance agreements and protocols*

A BRIEF SUMMARY OF THE 2008 REPORT KEY FINDINGS

2007 PSRSPC’S ACCOMPLISHMENTS WERE MANY:

- **CalSCIP:** California’s Statewide Communications Interoperability Plan: PSRSPC worked with CALSIEC on the development of the this document that focuses on all communications interoperability facets, *governance, standard operating procedures, technology, training and usage*, identified by the DHS SAFECOM Interoperability Continuum.
- **TICPs:** Tactical Interoperable Communications Plans
These plans were developed *throughout* the State. TICP’s are instrumental in developing standard operating procedures for tactical interoperability at the incident level; the goal is to achieve this capacity statewide by the end of 2008.
- **Tactical Interoperability:** Gateways
Based on OHS allocated funds, the Governor’s Office of Emergency Services (OES) purchased and is currently coordinating the fabrication of six Mobile Communications Vehicles (MCV), or gateways, for use by state and local first responders during emergencies and disasters. Gateways are a way to provide interoperability at the incident level (tactical interoperability), which is a step along the continuum toward interoperability.
- **Training and Exercises**
PSRSPC proposes using part of its one time allocation in federal grant money to develop Communication Unit Leader Training (COML) statewide; however long term funding needs to be found.
- **Federal Grant Money for Interoperability in California (PSIC Grants)**
PSRSPC has authorized the state agencies’ portion of the federal Public Safety Interoperable Communications (PSIC) grant money, a total of approximately \$16 million, for critical *operability* projects and a number of *key statewide planning projects*, including a 10-year strategic planning effort for PSRSPC agencies. This grant money will also be directed at supporting basic state-wide public safety communication systems such as the mutual aid infrastructure. Emphasis in grant decision making was also placed on the PSRSPC and CALSIEC strategy to solving interoperability - a statewide “System of Systems” which will be costly as

it entails efforts unmatched in size and scope in the United States and even worldwide.

- **New Coordinated Budget Process for Interoperability for PSRSPC**
In 2007, the Governor's Emergency Operations Executive Council (GEOEC) adopted a new coordinated approach for evaluating State agency Budget Change Proposals related to all facets of emergency services and homeland security. The expertise of the PSRSPC organization was used relative to communications and interoperability related proposals.

KEY CHALLENGES TO PUBLIC SAFETY INTEROPERABILITY WERE HIGHLIGHTED:

PSIC money will be used as a “down payment” to fund critical needs. Current year PSIC money, however, will only assist in overcoming these challenges; it is not a solution.

- **Equipment Obsolescence Continues to Threaten State Agencies**
A 2006 survey of state and local government agencies revealed an extremely high percentage of outdated radios and other critical communications equipment. Obsolescence ranged from 47-81% in seven categories for key State agency radio equipment.
- **Developing a Sustainable Funding Source for California**
It has long been recognized that developing a *sustainable* funding source for ongoing support and development of California's public safety communications interoperability infrastructure is desperately needed.
- **Governance for California's Public Safety Communications is a Tall Order**
Like funding, public safety communications governance is one of the greatest challenges to achieving interoperability in California. Not only are numerous bodies involved in managing California's public safety communications but great diversity exists in radio spectrum and equipment use both within and outside of state government. Coordination and collaboration between all groups, while essential, is also extremely time-consuming with key stakeholders located throughout the state.
- **Consequences of “Narrowband” & “700 MHz” FCC Deadlines and Spectrum Shortages**
Like other diminishing resources in California, radio frequencies, or spectrum, in the public safety portion of the radio spectrum are at an ever increasing premium for first responders. The inflexible deadlines imposed by these FCC mandates coupled with the obsolescent equipment problems of state agencies, highlight the critical need to establish long term sustainable funding to build and ensure a reliable public safety communications interoperability infrastructure for California.
- **Complexity of State & Local/Regional Government “System of Systems”**
The challenges associated with developing a permanent “System of Systems” (SoS) for California that will accommodate future technological changes remain. It will require a comprehensive 10-year effort backed by a sustainable funding source.

RISKS TO CALIFORNIA'S PUBLIC SAFETY COMMUNICATIONS WERE IDENTIFIED:

- The State of California owns, operates, and maintains complex and critical public safety communications infrastructure systems that are prone to risks. Based on three perspectives, this section briefly looks at some of the risks and consequences to PSRSPC state agencies, to underscore the recommendations for a long term funding mechanism: FCC Mandates for Narrowbanding & 700MHz ; October 2007 Southern California Wildland Fires; 1906 San Francisco Earthquake Scenario.

RECOMMENDATION HIGHLIGHTS KEY NEEDS:

- The PSRSPC believes a funding mechanism modeled after the highly successful California 911 system to be the most effective design for a reliable, dedicated funding source. This source would provide ongoing funding for updating, replacing, designing, and coordinating the complex public safety communications systems around the state – for both local and state efforts. Throughout the last three years — and especially during the development of the CalSCIP in 2007 — critically important partnerships with local government and regional systems have been reinforced time and again. Although the development of state government programs and systems is the primary focus of this report, funding needs for California's statewide interoperability for critical public safety transcends state agencies alone. The benefits of such a shared funding strategy are significant and will provide a linkage between local and state efforts that can ensure an effective “System of Systems” build-out for the long term.

2008 STRATEGIC ACTION PLAN GOALS HAVE BEEN FRAMED:

- PSRSPC has authorized the state agencies' portion of the federal Public Safety Interoperable Communications (PSIC) grant money, a total of approximately \$16 million, for critical *operability* projects and a number of key statewide planning projects, including a 10-year strategic planning effort for PSRSPC agencies. This grant money will also be directed at supporting basic state-wide public safety communication systems such as the mutual aid infrastructure, 10 year strategic planning, and narrowband planning.
- The PSRSPC Roadmap to 2017 is composed of three elements: 1) Address critical operability, tactical interoperability, and governance needs. 2) Design and secure long term funding mechanism(s) and initiate System of Systems (SoS) planning. 3) Build out California's System of Systems (SoS) including governance agreements and protocols.
- PSRSPC has defined four goals areas for the coming year:
 - Funding: Pursue a phased, renewable, and priority-based funding strategy for California's public safety communications physical infrastructure and governance.

- Operability: Identify and attain methods to alleviate operability shortfalls within state agency communications systems which migrate toward interoperability.
- Governance: Develop a long-term, coordinated governance structure for integrated statewide public safety voice and data communications systems.
- Education: Commence on-going annual opportunities to exchange current information to build knowledge on the multi-faceted topic of public safety communications.

CalSCIP has developed a number of initiatives and milestones, and some directly involve the PSRSPC. A table with the CalSCIP milestones is included in the report.

HIGHLIGHTS OF 2007 ACCOMPLISHMENTS

2.1 CALIFORNIA STATEWIDE COMMUNICATIONS INTEROPERABILITY PLAN (CalSCIP)

In 2007, the PSRSPC worked with the California Statewide Interoperability Executive Committee (CalSIEC) in developing *California's Statewide Communications Interoperability Plan* (CalSCIP). To qualify for any Homeland Security Grant Program (HSGP) funds, the U.S. Department of Homeland Security (DHS) requires all states to develop and submit a statewide communications interoperability plan by December 3, 2007.

Following DHS criteria for statewide multidisciplinary and multi-jurisdictional collaboration, the PSRSPC and CalSIEC held three joint meetings in 2007 to develop the CalSCIP. The CalSCIP focuses on all communications interoperability facets, *governance, standard operating procedures, technology, training and usage*, identified by the DHS SAFECOM Interoperability Continuum (Figure 2.1). Necessary for successful statewide communications interoperability advancement, the biennial CalSCIP includes a current-state snapshot of interoperable communications statewide and identifies an actionable strategy for statewide interoperability advancement along each lane of the Interoperability Continuum. A key initiative of the CalSCIP calls for an agreement between PSRSPC and CalSIEC on how to govern the implementation of the plan. From the 2007 CalSCIP, Figure 2.0 illustrates how current statewide communications interoperability governance occurs to support local, regional and statewide interoperability planning.

Additional federal grants are also contingent on the CalSCIP. This includes the federal Department of Commerce's Public Safety Interoperable Communications (PSIC) Grant. A description of current activities regarding PSIC funding in California and the role of the PSRSPC are found below in Section 2.5. The CalSCIP mission and vision complement those of PSRSPC.

CalSCIP Vision: By 2017, ensure all local, regional, tribal, state and federal public safety first-responders and designated public service organizations operating within California will be able to communicate in real time, across disciplines and jurisdictions, to respond more effectively during day-to-day operations and major incidents.

CalSCIP Mission: *Provide a statewide strategic planning framework for an innovative, inclusive, scalable, sustainable, and well-managed interoperability infrastructure that promotes national standards, and is effective in addressing the unique urban and rural requirements of the public safety first responders and designated public service organizations serving the citizens of California.*

PSRSPC Vision: *Develop, implement, and administer an innovative, inclusive, scalable, and sustainable statewide plan that facilitates wireless communications system modernization and interoperability and ultimately provides effective, seamless, and reliable public safety services throughout California.*

PSRSPC Mission: *To provide the leadership needed that allows California to effectively leverage existing investments in communications infrastructures while moving rapidly and decisively to meet targeted goals for improved interoperability, universal statewide access, enhanced modernization, increased functionality, and adequate channel availability throughout California in support of public safety.*

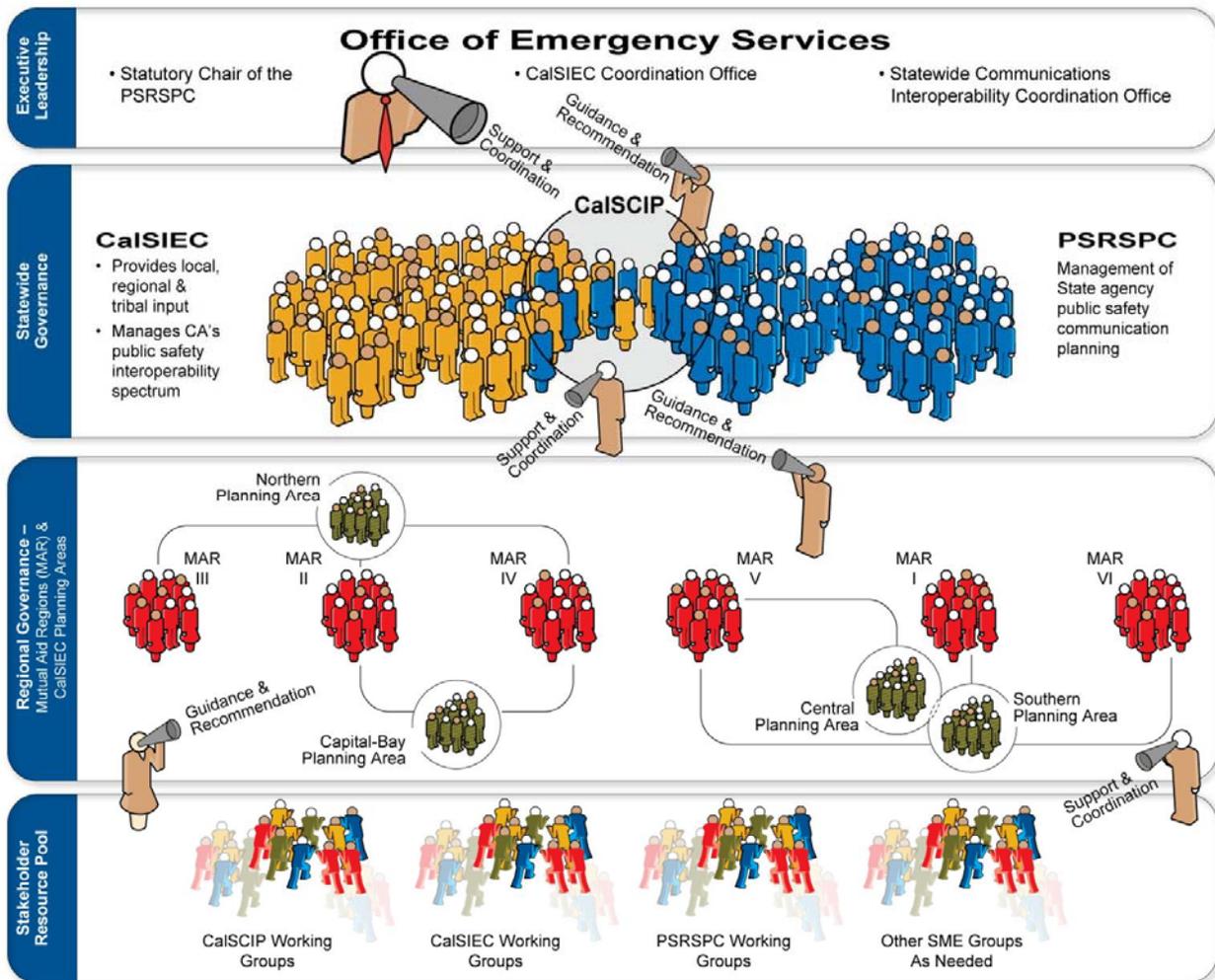


Figure 2.0: Local, Regional, and State Entities in California’s Public Safety Communications Interoperability Planning (Source CalSIEC)

2.2 TACTICAL INTEROPERABLE COMMUNICATIONS PLANS (TICPs)

In 2007, PSRSPC’s Technical Working Group (TWG), along with representatives of the California Statewide Interoperability Executive Committee (CalSIEC), focused extensively on facilitating the development of preliminary *Operational Area Tactical Interoperable Communications Plans (TICPs) throughout* the State. TICP’s are instrumental in developing standard operating procedures for tactical interoperability at the incident level; the goal is to achieve this capacity statewide by the end of 2008. A 2008 goal for the PSRSPC calls for the development of a Memorandum of Understanding (MOU) template to ensure that consistent standard operating procedures (SOPs) exist across jurisdictions for all six gateways as discussed in section 2.3. In the event that a gateway is deployed to an emergency site, the MOU will function as the guiding standard for any and all entities that use the gateway.

Meetings on TICPs were conducted in all four CalSIEC Planning Areas. As a goal set by the PSRSPC 2006 Annual Report to the Legislature, TICP development was a highly successful effort. TICPs were submitted from the Operational Areas representing approximately 85% of the state's population, and 60% of its land area. Each preliminary TICP documents the interoperable communications resources available within an Operational Area, as well as who controls or manages each resource. More comprehensive final draft TICPs are due December 2008 and will include plans for conducting tactical communications during an incident and federal National Incident Management System (NIMS) Communications Unit Leader (COML) training requirements and guidelines. At the Urban Area Security Initiative (UASI) level in California, TICP's have already been completed and exercised, as dictated by the UASI program. UASI's are a program of the federal Department of Homeland Security covering the 50 largest urban areas in the United States.

2.3 TACTICAL INTEROPERABILITY: GATEWAYS

In 2007, PSRSPC's goal of procuring transportable gateways, or Mobile Communications Vehicles (MCV) was accomplished. Deployment of those gateways will occur in 2008. The Governor's Office of Emergency Services (OES) has purchased and is currently coordinating the construction of six gateways for use by State and local first responders during emergencies and disasters. The new gateways will enable the interconnection of radios with incongruent technologies and radios operating on different frequency bands; enabling communications across jurisdictions and disciplines during emergencies. The gateways were funded through OHS grants and will be deployed in each of California's six Mutual Aid Regions. They will be operated by local law enforcement jurisdictions under the guidance of OES, which directs the movement of gateways during emergencies when needed.

Gateways are a way to provide interoperability at the incident level (tactical interoperability), which is a step along the continuum toward interoperability (see Figure 2.1).

2.4 TRAINING AND EXERCISES

Disaster medical response agencies and organizations have the opportunity to participate annually in multi-agency exercises or multi-agency field exercises and events. The exercises and events including those listed below help highlight the increasing importance of interoperable communications between state agencies. PSRSPC proposes using part of its allocation in federal grant money (see Section 2.5 and 3.6) to develop Communication Unit Leader Training (COML) statewide.

Exercises

- Golden Phoenix (July 2007)
- Rough & Ready (August 2007)
- Golden Guardian (November 2007)

Events

- Demonstration of California Military Department’s IC4Us, CHP’s Mobile Command Center and Department of Water Resources’ Mobile Communications Command trailers
- Department of Technology Services (DTS) Mobile Communications Technology Day
- Los Angeles Tactical Communications meeting
- Mather Air Show

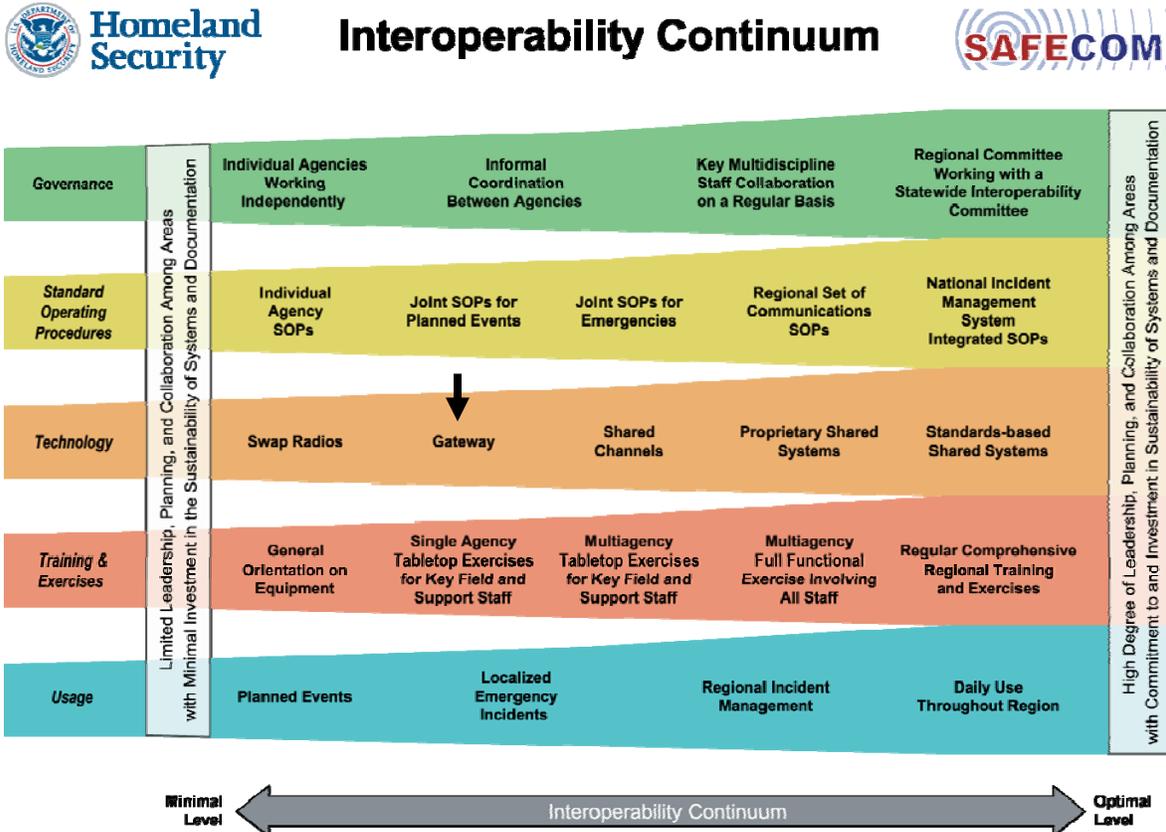


Figure 2.1: Gateways Are At the Lower End of the Technology Continuum

2.5 FEDERAL GRANT MONEY FOR INTEROPERABILITY IN CALIFORNIA (PSIC Grants)

California was awarded a one-time \$94,034,510 grant, from the federal Department of Commerce’s Public Safety Interoperable Communications (PSIC) Grant Program for spending state-wide by September 30, 2010. Federal guidelines require that 80%, or \$75,227,608, be allocated to eligible local government entities. Table 2.0 below illustrates how the money is to be distributed throughout the state. See Section 6 for more description of how the PSRSPC proposes to use the PSIC funds for state-agency initiatives. Although the money will be used for critical needs throughout California, it does not alleviate the need for a long term sustainable funding source for California’s public safety communications interoperability infrastructure.

| TABLE 2.0: PSIC Grant Allocation in California | |
|--|------------------------|
| Northern | \$2,444,897.26 |
| Central | \$5,431,433.30 |
| Capital-Bay | \$22,793,965.22 |
| Southern | \$44,557,312.22 |
| State (PSRSPC) | \$18,806,902.00* |
| Total | \$94,034,510.00 |

**Note: Actual money available to state projects recommended by the PSRSPC is approximately \$16 million. Also see section 3.6 on PSIC funding for training.*

In determining how to allocate grant money to improve California life-safety and interoperability, the Governor’s Office of Homeland Security (OHS), the State Administering Agency (SAA) for federal grants, used federal guidelines as a starting place (e.g. advanced technology, all hazards mitigation). OHS asked both State and local agencies to address tactical interoperability needs; state agencies were asked to address their critical operability needs as a first step towards interoperability. Emphasis was also placed on the PSRSPC and CalSIEC strategy to solving interoperability - a statewide “System of Systems” approach. Under these criteria, PSIC allocations will be used to fund the bolstering of regional systems that adopt certain technology standards. If funded, these disparate regional systems will eventually be linked via networks, allowing statewide interoperable communications. A “System of Systems” will be costly as it entails efforts unmatched in size and scope in the United States and even worldwide.

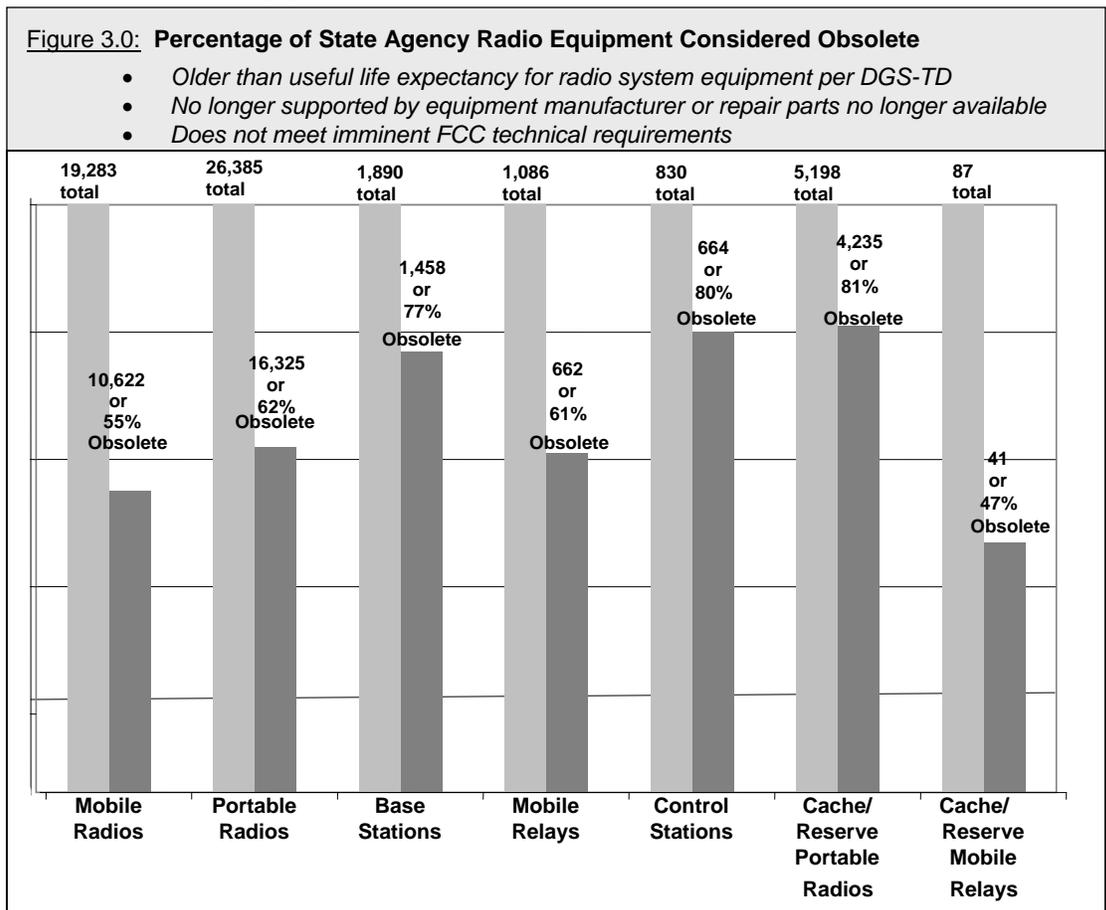
2.6 NEW COORDINATED BUDGET PROCESS FOR INTEROPERABILITY FOR PSRSPC

In 2007, the Governor's Emergency Operations Executive Council (GEOEC) adopted a new coordinated approach for evaluating State agency Budget Change Proposals (BCPs) related to all facets of emergency services and homeland security. The expertise of the PSRSPC organization was used relative to communications and interoperability related proposals. This coordinated BCP methodology is designed to ensure that multi-agency communications system enhancements will be viewed as 'one system' on behalf of the State. Several PSRSPC agencies submitted BCPs related to critical operability and interoperability as part of the administration’s overall consolidated GEOEC BCP package.

KEY CHALLENGES TO PUBLIC SAFETY INTEROPERABILITY

3.1 EQUIPMENT OBSOLESCENCE CONTINUES TO THREATEN STATE AGENCIES

The PSRSPC and CalSIEC (California Statewide Interoperability Executive Committee) 2006 survey of state and local government agencies revealed an extremely high percentage of outdated radios and other critical communications equipment. Obsolescence ranged from 47-81% in seven categories for key *State* agency radio equipment (Figure 3.0). Replacement of obsolete communications equipment for PSRSPC State agencies would enable maintenance of critical operability and improve interoperable communications, otherwise not achievable due to changing FCC spectrum requirements and the unavailability of replacement parts for aging equipment. Federal Public Safety Interoperable Communications (PSIC) grant money (Section 2.5) will begin address this problem, but it will only “scratch the surface” when it comes to the overall needs. As the 2006 survey had a low response rate in terms of completion by local governments, OHS will now require this information by the end of 2008 by every jurisdiction receiving grants.



3.2 DEVELOPING A SUSTAINABLE FUNDING SOURCE FOR CALIFORNIA

It has long been recognized that developing a *sustainable* funding source for ongoing support and development of California's public safety communications interoperability infrastructure is desperately needed. The PSRSPC 2006 and 2007 Annual Reports have articulated this need. Making this a reality, however, will require strong statewide leadership. The current funding opportunity coming into California for communications through federal homeland security grants – \$94 million for use over the next few years – is federally earmarked predominantly for local and regional systems rather than state agencies.

The Recommendations Section 5.0 focuses exclusively on a strategic statewide initiative to develop a sustainable funding source, modeled after the successful 911 system but dedicated to interoperability inclusive of state and local government needs.

3.3 GOVERNANCE FOR CALIFORNIA'S PUBLIC SAFETY COMMUNICATIONS IS A TALL ORDER

Like funding, public safety communications governance is one of the greatest challenges to achieving interoperability in California. Not only are numerous bodies involved in managing California's public safety communications (Figure 2.0), but great diversity exists in spectrum and equipment use both within and outside of state government. Coordination and collaboration between all groups, while essential, is also extremely time-consuming with key stakeholders located throughout the state. Governance seeks to bridge gaps to interoperability and given the size of California it is understandable why it poses such a tremendous challenge. A major initiative of CalSCIP calls for PSRSPC to work with CalSIEC on developing an agreement to define an official governance body responsible for its ongoing implementation.

Another major 2007 governance effort involved PSRSPC-TWG members assisting with the development of TICPs around the state. The TICPs that were submitted produced extensive governance-related information in preparing for the CalSCIP. Efforts will continue in 2008, in conjunction with CalSIEC representatives, to document and refine existing tactical interoperable practices in order to fit California's adopted TICP template and provide guidance throughout the TICP development process.



The state of California must replace a significant portion of voice radio systems by 2013 to comply with FCC regulations of narrowbanding and other standards

3.4 CONSEQUENCES OF “NARROWBAND” & “700 MHZ” FCC DEADLINES AND SPECTRUM SHORTAGE

Like other diminishing resources in California, radio frequencies, or spectrum, in the public safety portions are at an ever increasing premium for first responders. Recognizing these shortfalls, the Federal Communications Commission (FCC) instituted rulings to promote more efficient use of spectrum and to facilitate the introduction of advanced technologies. The use of “narrowbanding” will help to some degree in the foreseeable future but practically speaking, the only spectrum that state and local agencies will have available for systems expansions or large systems development falls within the 700MHz (contiguous with 800MHz) realm – spectrum which will not begin to be available throughout most of California until February 2009, provided it is released by television broadcasters. This poses significant problems because many of California’s State agencies utilize spectrum in other radio frequency bands (Figure 3.1). Additionally, operational needs remain to be determined and the State faces difficult decisions regarding which State and local government agencies will receive the limited licenses for the new spectrum in the 700MHz frequency band. The deadlines are strict and looming. The inflexible deadlines imposed by these FCC mandates, coupled with the obsolescent equipment problems of State agencies, highlight the critical need to establish long term sustainable funding to build and ensure a reliable public safety communications interoperability infrastructure for California.

Given the consequences confronting California regarding narrowbanding and 700MHz spectrum use, the 2008 Strategic Action Plan goals are directed toward these issues to the extent possible, within the funding limitations that are now known. Appendix 1 contains additional information on FCC deadlines on 700 MHz and narrowbanding.

The PSRSPC intends to allocate some of its Federal Public Safety Interoperable Communications (PSIC) grant money (Section 2.5) towards the development of narrowbanding planning for state agencies. These funds will provide each state agency with a plan to efficiently reach these FCC requirements.

Figure 3.1: Radio Frequency Bands (Spectrum) Used by California State Agencies
(For further in-depth information on frequency bands (spectrum) & definitions of terms see Appendix.)

| High Freq | VHF Low band | VHF Mid band | VHF High band | 220 MHz band | 406 MHz band | UHF band | UHF-TV band | 700 MHz band | NPSPAC Rebanded | 800 MHz Rebanded | 4.9 GHz Band |
|-----------|--------------|--------------|---------------|--------------|--------------|-------------|-------------|----------------------------|----------------------------|----------------------------|---------------|
| 2-25 MHz | 30-50 MHz | 72-76 MHz | 136-174 MHz | 220-222 MHz | 406-420 MHz | 450-470 MHz | 470-512 MHz | 769-775 MHz 799-805 MHz | 806-809 MHz 851-854 MHz | 809-816 MHz 854-861 MHz | 4940-4990 MHz |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

| | |
|---|---|
| Caltrans (Dept of Transportation) = 1,2,3,10,11 CDCR (Dept of Corrections & Rehabilitation) = 2,4,7,10,11 CDPH (Dept of Public Health) = 10,11 CAL FIRE (Dept of Forestry & Fire Protection) = 2,4 CHP (California Highway Patrol) = 2,3,4,7 DFG (Dept of Fish & Game) = 4 DGS (Dept of General Services) = 4,10,11 | DPR (Dept of Parks & Recreations) = 4,10,11 DWR (Dept of Water Resources) = 4 EMSA (Emergency Medical Services Authority)= 4,6,7,10,11 Legislature= 11 OES (Governor’s Office of Emer Services) = 1,2,4,6,7,10,11 **Numerous other departments in category 7 |
|---|---|

3.5 COMPLEXITY OF STATE & LOCAL/REGIONAL GOVERNMENT “SYSTEM OF SYSTEMS”

The challenges associated with developing a permanent “System of Systems” (SoS) for California that will accommodate future technological changes remain. It will require a comprehensive 10-year effort backed by a sustainable funding source. It will be costly indeed as it entails efforts unmatched in size and scope in the United States and even worldwide. The PSRSPC intends to allocate some of its Federal Public Safety Interoperable Communications (PSIC) grant money (Section 2.5) towards the development of a 10-year strategic plan for each member agency as an initial step in developing a statewide SoS.

Regional, local, and state agency specific communications systems have been evolving since well before 9/11 in response to basic communications needs. These efforts have yielded communications alliances, often developed through a patchwork, ad hoc approach toward interagency, inter-regional communications. State agencies and local governments have already invested time and money in their efforts to remedy ongoing regional communications needs. In many cases, exceptionally effective systems that integrate equipment and procedures have developed over time, which has created discrete interoperable communications neighborhoods around California. However, there is the critical need to link these communications neighborhoods together through standards-based bridging technologies and procedural agreements in order to create a statewide interoperable communications network of these discrete systems (i.e., a “System of Systems”), through which all local, regional, and state entities can communicate seamlessly and effectively (Figure 3.2).

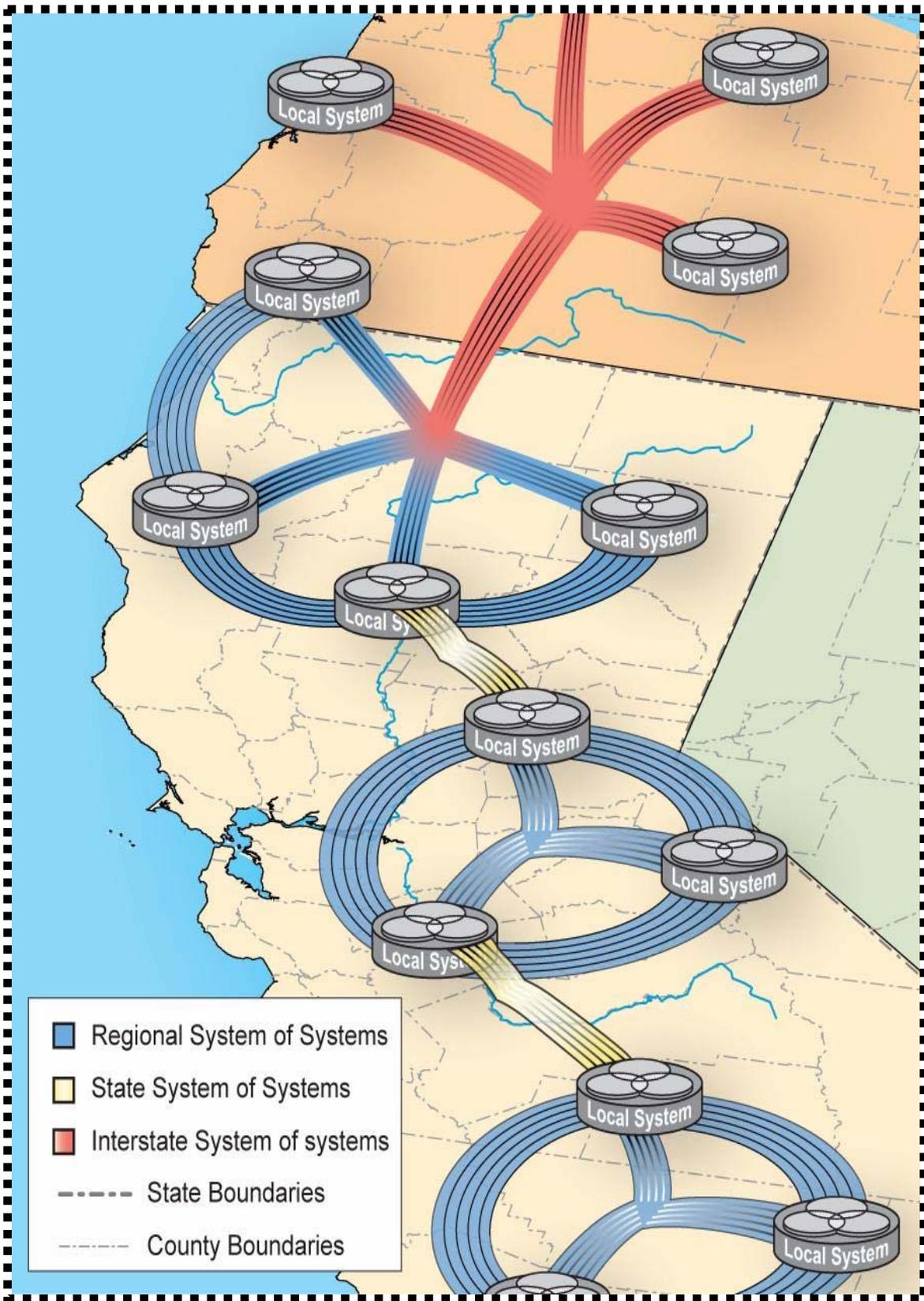


Figure 3.2: Envisioned System of Systems for California by 2017 (source CalSCIP)

3.6 STATEWIDE TRAINING & EXERCISES LACKS ONGOING FUNDS

Proper training and regular exercises are critical to the implementation and maintenance of a successful interoperable system. They are also essential for ensuring that technology works and that first responders use it effectively during emergency operations. The old adage of “practice makes perfect” is fundamental in these planning efforts. The PSRSPC has authorized the expenditure of approximately \$500,000 for the development and implementation of a statewide Communications Unit Leader course from California’s share of the federal PSIC grant. This training will help fill a gap identified by the federal DHS to provide statewide minimum training standards, specific to interoperability, within all 58 counties. This funding will jumpstart critical training until 2010, however, a long-term sustainable funding source is essential if this training is to be maintained. Golden Guardian, the OHS sponsored annual statewide exercise, will add exercise injects in 2008 dealing with interoperable communications.

Although California sponsors and facilitates many well designed and executed exercises, CalSCIP includes a key initiative on training for the future: “*Develop a training strategy and implement a long-term, continuous training program for communications interoperability.*” Like the statewide Communication Unit Leader Training, a long-term funding source will be needed.

“Police, fire, and EMS personnel are deservedly praised by policymakers, but unfortunately, often times the praise is not followed by action that meets their critical needs. Americans rely on the heroic actions of our first responders - they must be given the necessary tools to continue protecting our communities. Communications interoperability will make them safer and more effective, and thus we all will benefit. Faced with insufficient funds, outdated radios, a lack of spectrum, and other hurdles, public safety departments are limited in their response to the most dangerous of emergencies. Technical solutions exist for communications interoperability, but the costs are often too high for individual communities. It will take a coordinated effort from all levels of government, something that has been previously lacking.”

Commissioner William Fox,
Metropolitan Fire Association, New York
First Response Coalition Member

RISKS TO CALIFORNIA'S PUBLIC SAFETY COMMUNICATIONS

4.0

4.1 INTRODUCTION TO RISKS

The State of California owns, operates, and maintains complex and critical public safety communications infrastructure systems that are prone to risks. Based on three perspectives, this section briefly looks at some of the risks and consequences to PSRSPC State agencies, to underscore the recommendations for a long term funding mechanism:

1. FCC Mandates for Narrowbanding & 700MHz
2. October 2007 Southern California Wildland Fires
3. 1906 San Francisco Earthquake Scenario

4.2 KEY RISKS TO PUBLIC SAFETY COMMUNICATIONS

There are a number of key risks to the public safety communications system underscored by the new FCC mandates or emergency events.

- Virtually all state agencies and many local agencies and critical facilities depend on the state's *microwave system* which is *vulnerable* to fires, earthquakes and other hazards. *State and local microwave-based communications systems* would be *limited* due to downed or damaged towers. Operational capacity would also be overloaded with the high volume of first responder traffic.
- *First responder communications* capabilities would be significantly hampered by disruption to dispatch and communications systems; *worker safety* would be jeopardized.
- Communications systems and equipment *operability* is currently compromised due to *obsolescence*; most are 12 to 25 years old.
- *Interoperability limitations* currently exist among local, state, and federal communications systems affecting first responders. These entities cannot communicate with agencies operating on *newer communications platforms*.
- *The lack of state narrowband capability limits communications.*
(Also see section 4.3 for more information)
- If critical facilities' *primary and redundant communications systems* are damaged, overloaded, or destroyed, radio communications with responding agencies will be necessary.

4.3 FCC MANDATES FOR NARROWBANDING & 700MHZ

The State of California must replace a significant portion of voice radio systems by 2013 in order to comply with the FCC regulations of narrowbanding and other standards. Section 3.4 discusses the challenges of these mandates; the consequences are highlighted below. Through a mutual partnership of the Governor's Office, the Legislature, and PSRSPC, California can overcome this shortfall before the 2013 deadline. However funding is critical to this effort. Using part of the funds from the Federal Public Safety Interoperable Communications (PSIC) grant money (Section 2.5), the PSRSPC will work on a specific proposal for a phased approach toward narrowbanding. This approach will require funding and the PSRSPC will continue to work with the Legislature throughout 2008 to identify funding.

Narrowbanding: What are consequences to California's public safety interoperability due to the FCC 2011 and 2013 deadlines for narrowbanding?

- Loss of communications capabilities for State agencies that do not meet the deadlines.
- FCC will prohibit manufacture or importation of new equipment that some State agencies would depend upon to maintain and upgrade their older, obsolete systems.
- State agencies operating radio equipment without meeting the deadlines will be in violation of the federal law and could be subject to substantial monetary fines.
- FCC will not approve applications for new voice operations or applications when using wider channels (25 kHz) as compared to narrower channels. Only narrowband applications will be approved.

700MHz: What are consequences to California's public safety interoperability due to the FCC 2012 and 2017 deadlines for 700MHz?

- Unused spectrum would revert to the planning regions for reallocations available to any eligible public safety users. Local government users have identified an immediate need for more spectrum than is currently available so they are prepared to use any overflow from the state.

4.4 ACTUAL EVENT: OCTOBER 2007 SOUTHERN CALIFORNIA WILD LAND FIRES

Impacts

- 7 counties – 518,021 acres burned;
- 8 fatalities; 130 reported injuries;
- Over 500,000 people evacuated and over 12,000 sheltered;
- 3,107 structures destroyed; 511 damaged, 22,075 threatened;
- 11,049 fire personnel plus law enforcement, medical, utility, and environmental on scene from local, state, federal, tribal, and private entities;
- 5 – 7 multi-agency communications sites damaged.



Figure 4.0: Some Initial Critical Interoperability & Operability State Infrastructure Issues from Southern California Wild Land Fires (as of 10/25/07)

- **Loss of Communications Vaults:** Multiple state agencies collocate equipment in vaults that were damaged in the fires. At least 5-7 sites were damaged. Important peaks with valuable communications equipment were “burned over” in the recent fires and sustained damage but remained in operation. This highlights the fact that structures need to be protected. These facilities and any equipment housed at these sites are critical infrastructure for the State; i.e., the entire public safety community has a stake in their preservation. This continues to raise concerns about how to protect such essential yet vulnerable public safety communications infrastructure. Vaults may be the highest risk for the state in terms of vulnerability. Damage may be in the hundreds of thousands of dollars or higher and take a long time to rebuild. Sharing resources has its advantages in such an event when water dumps are feasible. On the other hand, the vulnerability of the State communications system is increased by the concentration of critical infrastructure, making protection of these sites of utmost importance. DGS-TD was credited with keeping affected sites operational. These fires raise the reality that vaults in other areas, such as the Central Valley or Northern California, may be even more vulnerable than Southern California where response resources are more readily available due to better funded planning and coordination efforts.
- **Remote Major Mobile Relay/Microwave Communications Sites Saved**
The State’s communications infrastructure was at risk in the fires. For example, the Poomacha Fire, which started October 23, 2007, threatened the Boucher Mountain Lookout telecommunications site. The site is a critical link for the State’s Public Safety Microwave System. Loss of this link would have adversely affected communications for many State agencies. If this telecommunications site, as well as many other similar sites, had been down or destroyed, critical public safety communications would have been lost. Costs for the recovery of these sites would be extremely high and take months to rebuild. Boucher Mountain provides service to DOJ; CHP; CAL FIRE; DOT; DPR; DFG and DGS-TD. Thanks to the unified efforts four US Forest Service and one CA DPR engines and crews, the Boucher Mountain Lookout telecommunications site was protected from the Poomacha Fire.

4.5 SCENARIO: RECURRENCE OF 1906 SAN FRANCISCO EARTHQUAKE

A large scale disaster such as a repeat of the 1906 San Francisco earthquake may significantly threaten California's public safety communications systems. Depicted in Figure 4.1, scientists estimate a 62% probability of at least one magnitude 6.7 or greater earthquake, capable of causing widespread damage, striking the San Francisco Bay region before 2032 (see USGS Website - <http://quake.usgs.gov/>). This section highlights the risks based on a scenario of a 7.9 *magnitude quake*, developed for the "100th Anniversary Earthquake Conference Commemorating the 1906 San Francisco Earthquake," by the US Geological Survey (USGS), CA Office of Emergency Services, and Earthquake Engineering Research Institute. While the impacts displayed below are based on a recurrence of the San Francisco earthquake, other earthquake scenarios also exist for the Bay Area.

Potential impacts¹

- Nineteen California counties from Monterey to Humboldt impacted;
- 1,900 people killed outright; over 12,200 people requiring hospitalization and only 35% of hospital beds immediately available;
- Highways, bridges, water systems, and telecommunications networks damaged;
- 600 fire ignitions and 67% of fire stations at risk of moderate damage;
- Almost 241,000 households displaced; 125,000 individuals needing shelter; 789,000 households with power immediately disrupted; and 1.28 million out of 2.25 million households without water after seven days and over 256,000 still without water after thirty days.

¹ "When the *Big One* Strikes Again – Estimated Losses due to a Repeat of the 1906 San Francisco Earthquake" - Charles A. Kircher, M.EERI, Hope A. Seligson, M.EERI, Jawhar Bouabid, M.EERI, and Guy C. Morrow' M.EERI

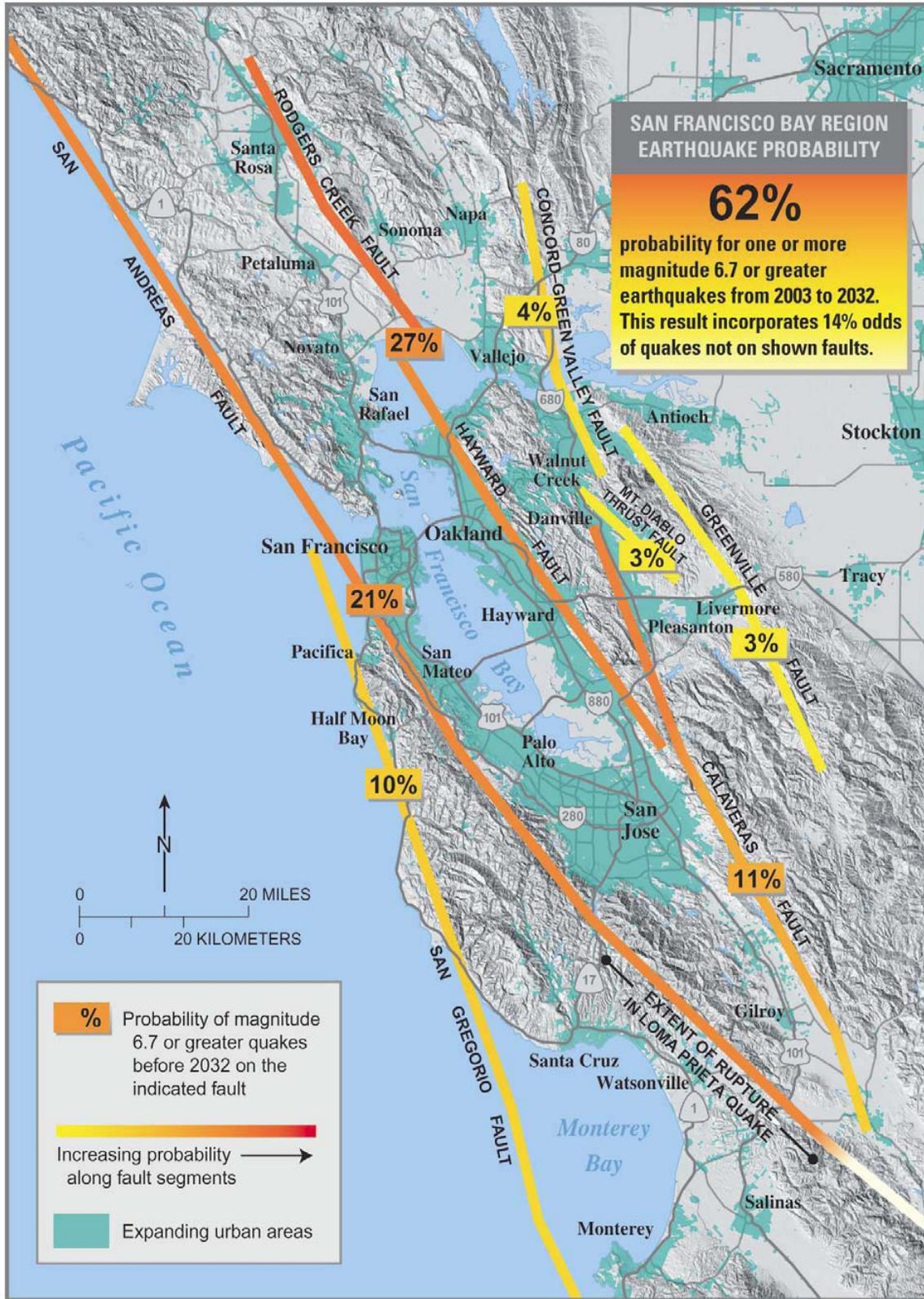


Figure 4.1: San Francisco Bay Region Earthquake Probability from 2003 to 2032

(Source: USGS Fact Sheet 039-03)

RECOMMENDATIONS

5.1 CALL TO ACTION

The public assumes that the State is “taking care of things” when it comes to public safety communications. It is just expected that interoperability will be there when needed. Unfortunately, this is not the case in California but it could be. To begin we need to acknowledge that a renewable and sustainable funding mechanism *for the public’s benefit* needs to be developed. This call to action will not be easy and will demand strong leadership and a united voice made up of the legislature and State, regional, and local government, in addition to the many other partners in California’s public safety communications community.

Providing a secure, sustainable and renewable funding source will allow for immediate critical operability challenges to be resolved first—ensuring public safety—and a longer term, prioritized acquisition of *System of Systems* equipment and personnel to be procured second. The State’s budget deficit makes a large ongoing capital outlay for public safety communications operability and interoperability equipment very unlikely. Local government and regional programs are rapidly moving forward with advanced development of systems with limited State partnerships and coordination. Looming federal deadlines, such as the 2013 FCC narrowbanding requirements, impact the entire State requiring major policy and program collaboration between State agencies and local entities.

“The creation of a secure, revolving funding source is the single most important step to ensuring California’s future public safety communications. Rather than continuing a piecemeal, ad hoc approach to funding the State’s public safety communications, the time is now to develop a secure funding source.”

15 Members of PSRSPC

December 2007

Governor’s Office of Emergency Services – Chairperson, California Highway Patrol, Department of Transportation, Department of Corrections and Rehabilitation, Department of Parks and Recreation, Department of Fish and Game, Department of Forestry and Fire Protection, Department of Justice, Department of Water Resources, Department of Public Health, Emergency Medical Services Authority, Department of General Services, Governor’s Office of Homeland Security, Military Department, Department of Finance.

Many other states are currently funding their public safety communications systems in some form, on an ongoing basis. The time has come for California to establish a mechanism for sustainable funding for critical operability and interoperability systems that work for the state.

PSRSPC continues to search out funding opportunities and has authorized allocation of federal PSIC grant money for use in developing a 10-year PSRSPC strategic plan effort that would also include a spending plan for agencies.

5.2 FUNDING OPTIONS USED AROUND THE COUNTRY

The 2007 PSRSPC report illustrates funding options currently in use throughout the United States. As stated above, a number of States around the country have found funding mechanisms to fit their needs which include: a modified 911 system, bonds, sales taxes, federal grants, driver license surcharges and general fund appropriations. Each option has its pros and cons as explained in the table below. Additionally, the 2007 Report includes interviews with other key State and local interoperability coordinators on challenges faced with funding their interoperability projects.

5.3 RECOMMENDED OPTION - AN INTEROPERABILITY FUND MODELED AFTER THE STATE'S 911 SYSTEM

The PSRSPC believes a funding mechanism modeled after the highly successful California 911 system to be the most effective design for a reliable, dedicated funding source. This source would provide ongoing funding for updating, replacing, designing, and coordinating the complex public safety communications systems around the State – for both local and State efforts. The current 911 Program is viewed as extremely successful by local and State entities, based primarily upon the direct public safety benefit received by users — a key parallel benefit that would also be the case for a new interoperability program dedicated to developing State and local emergency communications systems. Any program developed would ensure funds are protected from redirects or reallocation for non-related purposes to other entities or programs besides those defined in legislation.

5.4 CALIFORNIA'S CURRENT 911 SYSTEM - HOW IT WORKS NOW

The 911 system in California is funded through a surcharge ranging from .5% to .75% on all intra-state telephone calls. DGS annually recommends rates to the State Board of Equalization (BOE), depending on the amount of revenue generated during the previous fiscal year, and the program management needs for the upcoming year. In FY 2001-2002, the surcharge generated a total of \$120,159,000. The funds must be appropriated by the Legislature in the budget each year. Typically, the surcharge on individual telephone users in the state is quite small; DGS currently estimates a total of 30 cents per person, per month for the 911 program. A surcharge gradient based on income and other extenuating circumstances is built into the program. The surcharge applies largely to everyone except *Lifeline* customers and calls originating or routed through other states. The original funding system was designed in 1970 before the advent of cellular technology, voice over IP (VoIP), and bundled services. An examination is now under way on how best to react and modernize the 911 program in order to respond to these new technological, market-based changes.

Table 5.0: SUSTAINED FUNDING SOURCES

Options For California's Public Safety Communications Interoperability Infrastructure

| <i>Type</i> | <i>Pros</i> | <i>Cons</i> | <i>Notes</i> |
|--|---|---|---|
| Public Safety Communications Surcharge | <ul style="list-style-type: none"> • An Interoperability-type system modeled after the 911 System • Renewable** • Recent decrease in surcharges, i.e., federal tax rescinded • Clear financial need | <ul style="list-style-type: none"> • 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 |
| 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. (restrictions how spent) • Often require matching funds | <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 | |
| General Fund Types 1. Recurring fixed line item for entire state 2. Subscriber surcharges | <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 surcharges • “Line item” may be best |

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

5.5 PARTNERSHIPS WITH LOCAL GOVERNMENT AND REGIONAL SYSTEMS IS KEY

Throughout the last three years — and especially during the development of the CalSCIP in 2007 —critically important partnerships with local government and regional systems have been reinforced time and again. Although the development of state government programs and systems is the primary focus of this report, funding needs for California’s statewide interoperability needs for critical public safety transcends State agencies alone. The benefits of such a shared funding strategy are significant and will provide a linkage between local and State efforts that can ensure an effective “System of Systems” build-out for the long term.

Given this reality, and the complexity of California’s needs, the design requires a thoughtful approach and collaborative strategy to address expected issues. Several of the needs in the development of this program include:

- **Key Stakeholders In Early Design Discussions**
Identifying key stakeholders and inviting them to help craft the funding legislation will be essential to designing a successful program. Indeed, many of these groups are listed in the PSRSPC authorizing legislation as coordinating organizations; others are imbedded into local and regional efforts. This partnership list reinforces the need to embark on comprehensive, coordinated efforts between PSRSPC and CALSIEC to provide the sharing of common interests and technical expertise. Several of the stakeholders identified for collaborative involvement of this program include:
 - a. Communications industry associations;
 - b. Equipment manufacturers;
 - c. Service providers;
 - d. Citizens rights groups; (e.g. hearing impaired)
 - e. Public safety associations - Fire, Law Enforcement, Emergency Medical Services, etc.;
 - f. Local government organizations - League of CA Cities, CA State Association of Counties, CA Emergency Services Association, and others.

- **Advisory Board for Stakeholder Feedback**
Similar to the way the current 911 fund operates, an external advisory board will be a valuable addition once a funding mechanism is established. Key organizations, such as local, regional, and State agencies; first-responder associations; and other important stakeholders around the State should be selected to help advise in the initial development and ongoing implementation of the new interoperability public safety fund. Clear criteria will need to be set as to how the funds are used. In addition to an advisory board, there will need to be an entity that administers funds.

- A New Funding effort Modeled After the Successful 911 Program Begins the Process; But Additional Major Investment Is Needed**

As seen in other states and in previous studies by the PSRSPC, the full build-out for the envisioned “System of Systems” (SoS) program in California will take billions of dollars over many years. The nominal program outlined in this chapter allows for the funding of critical operability needs, coordinated strategic planning across California, and an initiation of interoperability equipment and governance implementation. The full program development for a System of Systems can be linked to this initial funding mechanism and, if designed with flexibility, could accommodate future funding needs; or once the full strategic 10 year + needs are identified, a single build-out funding tool could be utilized (such as a one-time bond initiative).
- Certain Exemptions Must Be Allowed**

The PSRSPC analysis of DGS’ successful program identified that exemptions similar to those for the 911 system must be created. Key exemptions should include *Lifeline* users and geriatric communities. The surcharge must adhere to the same strict intra-state rules; no surcharges may be imposed on any interstate communications without triggering federal involvement.
- State And Local Government Revenue Sharing**

The future program should clearly identify the revenue sharing arrangement between local/regional and State funding. This mutually beneficial arrangement will allow for local/regional programs and State agencies to coordinate equipment acquisition, planning, and procedural development both in the near term for operability enhancement as well as the longer term for the System of Systems full statewide build out. Local support is critical to the development of a successful funding program. As some local governments have already started similar efforts, it will be important to determine what is now happening across the State and build a program in concert with these efforts.

5.6 ROAD MAP TO 2017

Figure 5.0 illustrates both the short- and long-term funding needed to achieve the goal of interoperability by 2017 as envisioned by PSRSPC and the CalSCIP.

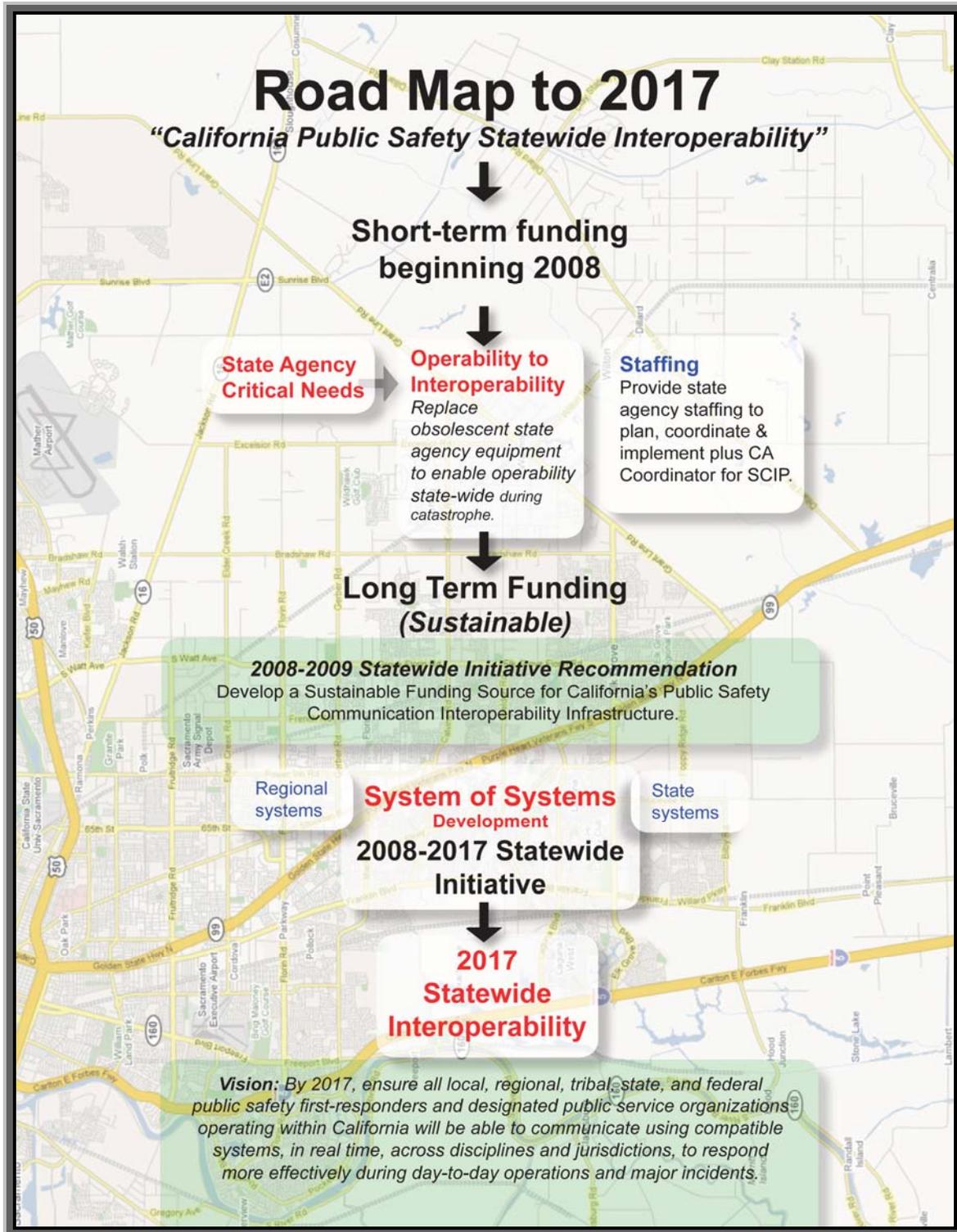


Figure 5.0: Road Map to 2017

2008 STRATEGIC ACTION PLAN GOALS

PSRSPC has authorized the State agencies' portion of the federal Public Safety Interoperable Communications (PSIC) grant money, a total of approximately \$16 million, for critical *operability* projects and a number of key statewide planning projects, including a 10-year strategic planning effort for PSRSPC agencies. This grant money will also be directed at supporting basic state-wide public safety communication systems such as the mutual aid infrastructure.

Given the PSIC funding is only one time and does not begin to cover short term and long-term infrastructure needs, it's important to recognize that the recommendation for a sustained funding source (section 5.0) is in no way diminished. PSRSPC agencies support a plan that follows the basic steps outlined below. This plan envisions the achievement of a System of Systems for California by 2017. PSRSPC has also laid out a number of goals for 2008 that follow, incorporating the PSIC funding when available.

PSRSPC Roadmap to 2017...

1. Address **CRITICAL OPERABILITY, TACTICAL INTEROPERABILITY, and GOVERNANCE** needs.
2. Design and secure **LONG TERM FUNDING** mechanism and initiate **SYSTEM OF SYSTEMS PLANNING**.
3. Build out California's **SYSTEM OF SYSTEMS (SoS)** including governance agreements and protocols.

Figure 6.0, CalSCIP Milestones, at the end of this section is included to illustrate the PSRSPC's efforts in coordination with CalSIEC and the implementation of the CalSCIP. It is a guiding document for the PSRSPC that depicts both major milestones of the CalSCIP so far, as well as future coordination that will occur between the two groups. The Strategic Action Plan Goals of the PSRSPC in 2008 take into account CalSCIP milestones and initiatives as they pertain to the PSRSPC, and thus reflect a greater effort being undertaken not only at the State level, but also at the local and federal level, towards achieving interoperability in California.

Goal 1: **FUNDING**

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

OBJECTIVES:

- A. Build support statewide for a long-term funding program for California's public safety communications systems. [2008]
- B. Encourage state leadership in the development of a long-term funding program for California's public safety communications systems. [2008]
- C. Continue to collaborate with GEOEC in budget coordination, as needed. [Ongoing]
- D. Continue to pursue grant funding for California's public safety communications systems including equipment purchases or system upgrades to support both state and local systems. [Ongoing]

PROJECTED OUTCOME: Statewide understanding and support from state leadership who can initiate a long-term funding program for California's public safety communications systems.

Goal 2: **OPERABILITY**

Identify and attain methods to alleviate operability shortfalls within state agency communications systems which migrate toward interoperability.

OBJECTIVES:

- A. Coordinate the development of a ten (10) year plan for each PSRSPC member agency (to be funded by the PSIC grant) which includes phased approaches that achieve interoperability through operability, while taking into account upcoming federal mandates regarding narrowbanding and 700MHz spectrum. [2008]
- B. Partner with local regional systems to achieve operability, wherever feasible. [Ongoing]

PROJECTED OUTCOME: Secure a coordinated, phased approach for state agencies to achieve operability while migrating to P25 compatible equipment that allows for interoperability solutions over time.

Goal 3: **GOVERNANCE**

Develop long-term, coordinated governance structure for integrated statewide public safety voice and data communications systems.

OBJECTIVES:

- A. Continue to collaborate with CalSIEC to implement the *California Statewide Communications Interoperability Plan* (CalSCIP). [Ongoing]
- B. Collaborate with CalSIEC to finalize a Memorandum of Understanding (MOU) template on interoperability. [4th Quarter 2008]
- C. Finalize the development of equipment selection and purchase policies and procedures which include requirements established in the GC 8592 and which are compatible with the CalSCIP. [2008]
- D. Continue partnering with CalSIEC in the development and compilation of more comprehensive TICPs due in December 2008 from every California operational area. [2008]

PROJECTED OUTCOME: To develop and adopt practices, procedures, and guidelines advancing prevailing legislation and CalSCIP tenets, and conducive to optimizing standards-based, interoperable equipment purchasing and interoperable collaboration across jurisdictional boundaries and disciplines statewide.

Goal 4: **EDUCATION**

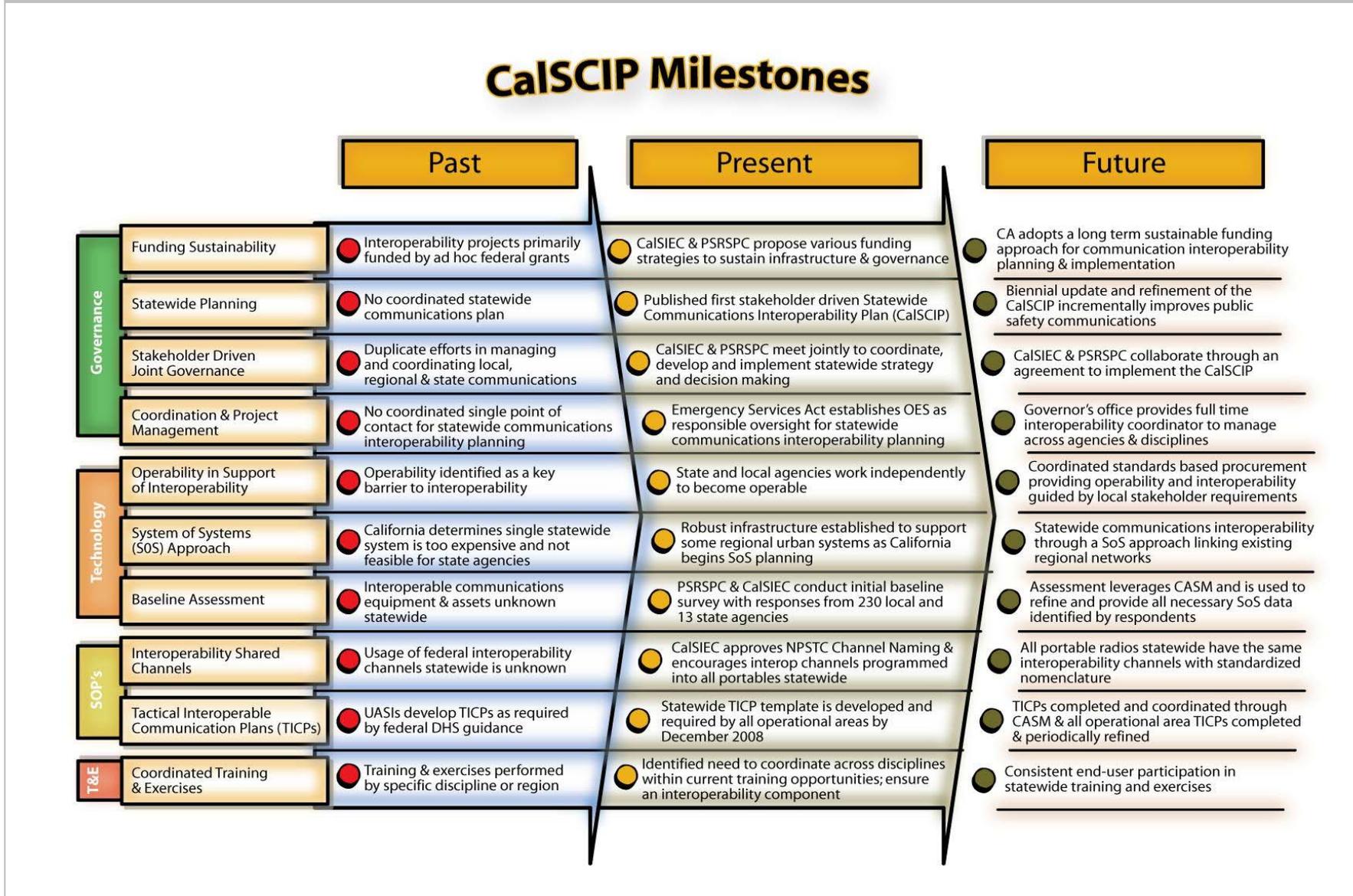
Commence on-going annual opportunities to exchange current information to build knowledge on the multi-faceted topic of public safety communications.

OBJECTIVES:

- A. Conduct a “Public Safety Communications Education Day” in partnership with other public safety organizations to educate state government officials and the public of the importance for a robust public safety communications program. [3rd Quarter 2008]
- B. Review, revise and disseminate educational packets to state government officials and the Legislature. [Ongoing]

PROJECTED OUTCOME: Heightened appreciation and understanding by the public, executive governmental appointees and the Legislature on the components of public safety communications needed to provide timely, coordinated, multi-discipline response to the citizens in California during emergency incidents or catastrophic disasters.

Figure 6.0: CalSCIP Milestones



LEGISLATIVELY REQUIRED ACTIVITIES

| Name | Description | Status / Goals for 2008 |
|--|--|--|
| PSRSPC Membership & Meetings | <p>AB 2041/2116, effective 1/1/07</p> <p><i>Membership:</i> Effective 1/1/07, OES Chairs PSRSPC.</p> <p>Added membership to include Military Dept, Dept Health Services, and DOF.</p> <p><i>Meetings:</i> required to meet at least twice a year, at least once a year with CalSIEC.</p> | <p>2007 PSRSPC Meetings: 3/28/07, 7/11/07, 11/30/07, plus 3 joint meetings with CalSIEC:</p> <p>2007 Joint PSRSPC & CALSIEC Mtgs: 5/8/07, 9/24/07 and 11/15/07.</p> <p><i>GOALS FOR 2008: Continue collaborating with CalSIEC and constituent entities.</i></p> |
| Consultation with Organizations & Entities | 8592.3 (a) | <p>These organizations are invited to participate in all PSRSPC meetings as well as the 9/24/07 and 11/15/07 joint PSRSPC/CalSIEC SCIP review.</p> <p><i>GOALS FOR 2008: Continue collaborating with the listed organizations and entities.</i></p> |
| Model Memorandum of Understanding | Government Code Section 8592.3 (c) | <p>The MOU will be developed by an ad hoc PSRSPC working group using SAFECOM's 'Writing Guide for a Memorandum of Understanding' as its guiding resource. Additionally, the PSRSPC ad hoc working group will leverage information provided by the TICPs developed throughout the State, as well as information gained through the CalSCIP development process.</p> <p><i>GOALS FOR 2008: In conjunction with CalSIEC, develop an MOU for six gateway platforms to be deployed in 2008.</i></p> |
| Equipment Purchases | Government Code Section 8592.4(a) | <p>Each agency determines/identifies its needs</p> <p>After all represented agencies have identified their requirements , PSRSPC establishes a program for purchase after securing DGS-TD's technically-based assurances that:</p> <ul style="list-style-type: none"> a) collective, long term committee goals are met while b) meeting each agencies unique communications needs, and c) equipment conforms to the P25 suite of standards and SAFECOM SoR guidelines |

| Name | Description | Status / Goals for 2008 |
|--|-------------------------------------|--|
| Equipment Purchases (continued) | Government Code 8592.4(a) | <p><i>GOALS FOR 2008: In conjunction with DGS-TD, to develop a composite strategic plan addressing the short- and long-term needs of each participant agency, and identifying a clear path towards a future harmonious with PSRSPC, CalSIEC and CalSCIP objectives – a future enabling interoperable communications throughout California. The Strategic Plan is envisioned as the basis for a procurement plan and will be developed concurrently.</i></p> |
| Equipment Waivers | Government Code 8592.6 (c) | <p><i>Although the need for waivers will diminish over time, Section 8492.4 (c) states the legislation "...<u>does</u> not mandate that a state or local governmental agency affected <u>by this section</u> is required to compromise its immediate mission or ability to function and carry out its existing responsibilities....".</i></p> <p><i>GOALS FOR 2008: DGS-TD will continue to carefully weigh requests for waiver, balancing the criticality of the need and cost/ benefit considerations against the long term objectives of the PSRSPC, CalSIEC, CalSCIP, and SAFECOM program. It will submit its recommendations to PSRSPC for their approval.</i></p> |
| Budget Proposals | Government Code Section 8592.7 | <p>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 BCPs to verify consistency with the statewide integrated public safety communications strategic plan included in the annual report, and for DGS-TD to review the budget proposals for or consistency with the <u>technical requirements</u> of the statewide integrated public safety communications strategic plan included in the Annual Report.</p> <p>GOALS FOR 2008: The PSRSPC and DGS-TD will continue to perform its reviews, refining the process as the new calendar years progresses.</p> |
| Annual Report to the Legislature as State's Strategic Plan | Government Code Section 8592.6. (a) | <p>Completed.</p> <p>GOALS FOR 2008: The PSRSPC will continue to refine the "essence" of the Annual Report to better conform to the purpose and audience for which it is intended.</p> |

8.0 Appendices

TIMELINE: KEY DATES FOR CALIFORNIA'S PUBLIC SAFETY COMMUNICATIONS INTEROPERABILITY

APPENDIX 1



The State of California must replace a significant portion of voice radio systems by 2013 to comply with FCC regulations of narrowbanding and other standards

- ▶ 2008: Establish immediate short-term funding for California's public safety communications interoperability infrastructure and begin statewide initiative for long term sustainable funding source. PSIC grant funds used largely for planning (10 year plan, Narrowbanding, enhancing Mutual Aid Infrastructure), with a small percentage toward critical operability (equipment).
- ▶ 2008: Implementation of the first ever CalSCIP, as required for federal grants.
- ▶ 2009: 700MHz Planning - The 700MHz block of 24 MHz of spectrum conditionally allocated to public safety in 1998 is scheduled to become available in February 2009 throughout California when incumbent TV broadcasters vacate this spectrum for public safety uses. Some state agencies have begun purchasing equipment that can operate on the 700MHz band. Forward planning for the implementation of the state's portion of this key resource is imperative if the state is to meet the aggressive "USE IT OR LOSE IT" implementation conditions imposed on its use by the FCC.
- ▶ By 2012: 700 MHz spectrum mandated by FCC in use by one-third of California's population or geography. The state is required to certify on or before (currently January 2012), that it is providing or prepared to provide "substantial service" to one-third of California's population or territory.
- ▶ By 2013: Systems equipment to meet FCC's narrowband requirements must be replaced. Narrowbanding mandates - 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. See Figure 3.1 in this report highlighting what spectrum state agencies use as well as Appendix 3 of further radio frequency band (spectrum) information. These agencies *must* migrate to narrowband communications system equipment by the end of 2012. The PSRSPC is targeting the beginning of 2012 for completion of this critical migration, allowing for unforeseen developments to be accommodated as necessary.
- ▶ By 2017: 700 MHz spectrum in use by two-thirds of California's population or geography - the State is required to certify on or (currently January 2017), that it is providing or prepared to provide "substantial service" to *two-thirds* of California's population or territory.

STATUS OF 2007 PSRSPC GOALS

| 2007 Goal 1 Leadership: Establish an effective leadership structure. | | |
|---|--|---|
| OBJECTIVE | TASK | STATUS |
| 1.1: Formally recognize 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. | a) Work with the Administration and the Legislature to introduce a bill to include CalSIEC in Government Code. | AB 1738 (Assembly GO) introduced on 3/15/07; passed and sent to Senate on 5/10/07; referred to GO Committee on 5/17/07; amended in Committee on 6/28/07 to remove language dealing with CalSIEC. Content of the bill revised to address tribal gaming compacts. |
| 1.2 Continue to bolster the confidence and participation of local, State, tribal, and federal public safety practitioners statewide by demonstrating consistent world-class leadership to the public safety community throughout California. | a) Initiate interoperability leadership conference. b) Finalize governance infrastructures, including organizational charts with staff and meeting timeframes. c) Continue interoperability outreach with various associations. | The concept of an Interoperability Leadership Conference was deferred, focus placed on collaboration. PSRSPC members actively involved with CalSIEC to bolster public safety entity participation in local planning area efforts, TICPs, and data compilation for the CalSCIP. |
| 2007 Goal 2 Funding: Pursue a phased, renewable and priority-based funding strategy for California’s public safety communications physical infrastructure and governance. | | |
| OBJECTIVE | TASK | STATUS |
| 2.1 Obtain funding for immediate two-year critical operable equipment for the state agency’s obsolete communications systems. | a) PSRSPC agencies detail their two year state critical operability communications systems-related funding requirements which need to be addressed immediately. b) Within the next two-year interval, PSRSPC state agencies operating public safety radio systems obtain funding to mitigate critical communications system needs. c) Create a strategy to coordinate BCP generation that will meet both individual agency and collective needs. | Initial strategy for BCP coordination began with GEOEC during the 3 rd Quarter of 2007. Through this vehicle PSRSPC agencies brought forward their immediate critical operability communications needs. A small percentage of PSIC grant funds will address these needs. Long term funding still has not been found. Efforts to secure funding will continue to be a goal in 2008. |
| 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. | a) Initiate and develop plan with PSRSPC & CalSIEC representatives. b) Fiscal plan is endorsed. | Efforts to develop a fiscal plan were slow and more work is required. These efforts will continue in 2008, or until a mechanism to fund these activities are found. |
| 2.3: Develop a long-term funding program to continue California’s communications systems’ operability and interoperability. | a) Interview participating agencies to validate functional and operational requirements. b) Finalize criteria and document the | Unable to complete in 2007. This objective will be forwarded for inclusion in the 2008 Strategic Action |

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| | needs analysis for each agency's communications systems. c) Develop a Request for Information (RFI) to elicit industry's system solutions and costs. d) Prepare a cost report. | Plan goals. |
| 2.4: Continue to pursue grant funding for limited-term interoperability equipment purchases or system upgrades throughout the state. | a) Identify future federal funding sources applicable to state agencies. b) Apply for federal grants to supplement equipment purchases. | The efforts to fulfill this task are ongoing; however, PSRSPC members experienced some success towards meeting critical operability needs through the PSIC grant. |
| 2.5: Participate in developing a streamlined procurement process. | a) Set up meetings with DGS Procurement to review current processes and propose process changes. b) Prepare streamlined procurement process and present it to DGS Legal staff. c) Set up meetings with DOF's Office of Technology Review, Oversight, and Security to establish feasibility study report waiver for the purchase of Digital Telecommunications Equipment (with data transfer capability). | Underway. This effort will be continued into 2008. |
| 2007 Goal 3 Governance: Develop lasting and coordinated governance for integrated statewide public safety voice and data communications systems. | | |
| OBJECTIVE | TASK | STATUS |
| 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. | a) Meet with CalSIEC members, PSRSPC and Planning Areas to identify areas for seamless collaboration to develop the CalSCIP. b) Assess local agencies survey information to assess interoperability capability. c) Integrate existing Tactical Interoperable Communication Plans into the CalSCIP. d) Develop the CalSCIP draft, incorporating existing interoperability communications plans, the federal plan criteria and the approved gateway unit governance documents. | Coordination with CalSIEC and the CalSIEC Planning Areas has successfully produced the first version of the CalSCIP, based upon federal guidelines. Integration of the TICPs will occur as the document is refined in 2008. |
| 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. | a) Establish a California TICP template. b) Schedule and attend meetings with local and state agencies and CALSIEC members to collaborate on the development of regional TICPs. c) Track status of the Planning Area TICPs completion. | A CA TICP template was produced in the first quarter of 2007. Multiple meetings were conducted in CalSIEC Planning Areas resulting in the development of preliminary TICPs covering 85% of California's population. A tool has been developed to track TICP status. |

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| <p>3.3: Collaborate with CalSIEC in the creation of an interoperability MOU template (or templates) based upon practices statewide.</p> | <p>a) Identify communications interoperability terms of agreement – in accordance with mutual aid policy. b) Schedule and attend meetings with stakeholders to verify agreement terms are suitable. c) Verify terms are in accordance with the California Emergency Services Act and other applicable provisions of the law. d) Initiate contact with bordering states (Oregon, Nevada, and Arizona) to determine communications interoperability needs and feasibility and to consider interoperability agreements.</p> | <p>Data continues to be developed and amassed on behalf of fulfilling this requirement (e.g., TICP input through the CalSCIP effort). This task is being carried forward into the 2008 annual reporting period.</p> |
| <p>3.4: Develop a training strategy and implement a long-term, continuous training program for stakeholders regarding the PSRSPC and CalSIEC and its processes.</p> | <p>a) Continue to enhance and augment an interoperable communications training program that is SEMS/NIMS compliant. b) Design an equipment training program for the various cache resources and telecommunications equipment available via mission tasking requests. c) Collaborate with CalSIEC on the development of a multi-discipline communications training program.</p> | <p>Interoperable communications enhancements and cache resource equipment training procedures are evolving and will continue to be addressed in 2008. PSIC grant money is being solicited to fund the COML training statewide.</p> |
| <p>2007 Goal 4 Convergence: Focus technology research and “best practices” investigation through strong interagency coordination to enhance technology transfer and efficiency.</p> | | |
| <p>OBJECTIVE</p> | <p>TASK</p> | <p>STATUS</p> |
| <p>4.1: Continue to assess the equipment and procedural systems being used currently at both the state and local levels.</p> | <p>a) Evaluate the accuracy of data and follow up with agency respondents. b) Augment survey assessment where needed and compile data reports. c) Analyze local government agency systems and assess their potential role in a system of systems.</p> | <p>Useful data continues to be acquired. In 2007, the majority of this information was derived via the TICP process.</p> |
| <p>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.</p> | <p>a) Continue defining/refining SoS functional and operational requirements documenting potential implied risks along the way. b) Finalize functional and operational requirements for the transportable gateway project.</p> | <p>As in 4.1, all work directed at soliciting and supporting the development of TICPs throughout the year has benefited this goal. PSRSPC's support in developing the CalSCIP has furthered our database of functional requirements.</p> |
| <p>4.3: Continue to document and publish communications technology “best practices” and “lessons learned.”</p> | <p>a) Gather data on gateway best practices to incorporate into gateway governance documents. b) Review major event and exercise after action reports for communications technology issues and recommendations.</p> | <p>TICP and CalSCIP development has augmented the PSRSPC's knowledge base in this area.</p> |

2007 Goal 5 Technology: Outline realistic parameters of a “System of Systems” that could accommodate and build upon California’s public safety communications network.

| OBJECTIVE | TASK | STATUS |
|--|--|---|
| <p>5.1: Establish the procedure for, and ensure accessibility through, strategic distribution of California’s Interagency Communications Support Caches (CICSC), with an invitation for local participation. The cache would be available for use by public safety emergency personnel responding to disasters, in accordance with OES’ mission tasking procedures.</p> | <p>a) Continue assessment and data review regarding cache equipment. b) Establish an interagency procedure for sharing cache resources.</p> | <p>As in 4.2 above, all work directed at soliciting and supporting the development of TICPs throughout the year has benefited this goal.</p> <p>PSRSPC’s support in developing the CalSCIP has furthered our database of cache resources and their use throughout California.</p> |
| <p>5.2: Continue defining systems’ integration standards conducive to adoption by state and local agencies.</p> | <p>a) Further define system standards for state agency procurement. b) Define procurement standards to ensure future P25 compliance statewide. c) Develop testing and training procedures.</p> | <p>As in 5.1 above, all work directed at soliciting and supporting the development of TICPs throughout the year has benefited this goal.</p> <p>PSRSPC’s support in developing the CalSCIP has refined our abilities in further defining standards for state agency procurement; procurement standards to ensure future P25 compliance; testing and training procedures.</p> |
| <p>5.3: Continue the purchase and deployment process for transportable gateway units.</p> | <p>a) Compile “best practices” gateway information to prepare gateway governance documents (e.g. operating procedures, etc.) b) Proceed with gateway unit purchases, engineering and deployment. c) Develop gateway unit training and exercise programs.</p> | <p>This process is underway. The projection for gateway unit deployment is calendar 2008.</p> |
| <p>5.4: Ensure that future acquisitions of equipment support standardized modernization and interoperable parameters.</p> | <p>a) Continue to research manufacturers’ products for P25 compliance and innovative components enhancing interoperability capabilities.</p> | <p>The culmination of 2007 efforts has led to a 2008 goal to develop a composite strategic plan addressing the short- and long-term needs of each member agency and to identify a clear direction towards a future enabling interoperable communications throughout California.</p> <p>A key section envisioned in the proposed report will address technologies and nationwide best practices.</p> |

FREQUENCY BANDS

| Reference Name | Frequency Band | Characteristics, State Users, Notes |
|-------------------------|----------------------------------|---|
| High Frequency | 2 – 25 MHz | “Long haul” disaster communications. Used by CAL FIRE, Caltrans, and OES for intra-state and inter-state coordination. <i>Not subject to FCC’s “Refarming” initiatives or digital radio standards.</i> |
| VHF Low Band | 30 – 50 MHz | Good for penetration in hilly or open areas, but not into buildings or for hand-held radios. Local activities are frequently interfered with by out-of-area operations, known as “skip.” Used by CDCR, CAL FIRE, CHP, Caltrans, and OES. <i>Not subject to FCC’s “Refarming” initiatives or digital radio standards.</i> |
| VHF Mid Band | 72 – 76 MHz | Fixed (point to point) links. Used by CHP, and Caltrans. <i>Not subject to FCC’s “Refarming” initiatives or digital radio standards.</i> |
| VHF High Band | 136 – 174 MHz * | Mixed Federal / non-Federal spectrum. 136 – 150 MHz Military [NTIA-controlled]. 150 – 162 MHz non-Federal [FCC-controlled]. 162 – 174 MHz Federal [NTIA-controlled]. Widely used band in state and federal systems. Offers good coverage in hilly terrain and urban areas. Signals are generally not affected by dense foliage, but poor penetration into steel and masonry buildings. Used by CDCR, CAL FIRE, CHP, DFG, DGS, DOJ, DPR, DWR, EMSA, and OES. <i>Subject to FCC’s “Refarming” initiatives</i> |
| 220 MHz Band | 220 – 222 MHz | Predominately for industrial users, but some public safety allocations. Lightly used in California, mostly by local agencies for non life-safety applications (e.g. Public works). <i>Not subject to FCC’s “Refarming” initiatives or digital radio standards.</i> |
| 406 MHz Band | 406 – 420 MHz * | Federal spectrum, NTIA-controlled. Used by state departments (CAL FIRE, and OES) who are cooperators with Federal users (USFS, DHS, and HHS). <i>NTIA mandated narrow bandwidths starting 01/01/05.</i> |
| UHF Band | 450 – 470 MHz * | Non-Federal spectrum. Shares many of the aspects of VHF High Band; better building penetration, in exchange for less range on signals. Used by CDCR, CHP, EMSA, numerous small departments, and OES. <i>Subject to FCC’s “Refarming” initiatives.</i> |
| UHF TV Band | 470 – 512 MHz * | Television Broadcast spectrum (Channels 14 – 20) reallocated to public safety and industrial services in 13 largest metropolitan areas of USA. Characteristics same as UHF band. Channels 14, 16, and 20 in Los Angeles area; used by Los Angeles County and the majority of cities for law enforcement operations. Channels 16 and 17 in San Francisco Bay area; used by local systems in Marin, San Mateo, and Santa Clara counties. <i>Subject to FCC’s “Refarming” initiatives.</i> |
| 700 MHz Band | 769 - 775 MHz 799 - 805 MHz * | New band (established 1998) for public safety, reallocated from Television Broadcast. Provides shorter range than UHF bands, excellent penetration into some building materials, and very poor penetration into other building materials. <i>Requires more infrastructures (fixed sites) to provide coverage over a given area compared to VHF-High or UHF bands. Does not cover well in dense foliage.</i> Voice and data allocations. Portion allocated exclusively to States; portion allocated exclusively to Interoperability. <i>Not available in most areas of California until incumbent TV stations relocate. This is scheduled to be completed by February, 2009.</i> <i>All operations must use new digital technologies.</i> |
| NPSPAC Rebanded | 806 - 809 MHz 851 - 854 MHz * | Public safety exclusive band, same coverage as 700 MHz and 800 MHz. Used by Caltrans, CDCR, DGS, DPR, and OES <i>While not subject to the “Refarming” initiatives, the “800” and “NPSPAC” bands are under an FCC-mandated reconfiguration plan to correct interference issues. Being handled in four ‘waves’ nationally; the 48 northern-most counties in California are in Wave 1, and the 10 southern-most counties in California are in Wave 4. This “rebanding” transition (to the frequency range shown) is underway and will be completed within the next few years.</i> |
| 800 MHz Rebanded | 809 - 816 MHz 854 - 861 MHz * | Mixed Industrial and public safety systems. Provides shorter range than UHF bands, excellent penetration into some building materials, and very poor penetration into other building materials. Requires additional infrastructure (fixed sites) to provide coverage over a given area compared to VHF-High or UHF bands. Does not cover well in dense foliage. Used by Caltrans, CDCR, DGS, DPR, EMSA, Legislature, and OES. <i>This spectrum is part of the “rebanding” effort defined under “NPSPAC” above. The “rebanded” frequency ranges are shown at the left.</i> |
| 4.9 GHz Band | 4940 – 4990 MHz | New band (established in 2003) for public safety broadband wireless data “Wi-Fi” applications. Low power, small coverage areas, share data among PCs, PDAs, etc. |

Background Information on Legislative Request of Agencies

Throughout 2007, PSRSPC executive members and staff worked with legislative staff clarifying key information to cover in this report. As a result of this dialogue, legislative staff requested PSRSPC responses to seven questions (Appendix 4) addressing several aspects of the current and future state of communications operability and interoperability in California. This appendix contains an overview of current State agency needs and actions specific to the seven questions from the Legislature and summaries of the PSRSPC agencies' responses to those questions.

The core need reflected in the current request for information by the Legislature is a summary of budgetary expectations by PSRSPC agencies. In last year's report, budgetary needs were also addressed. In particular, the need for critical "operability" funding solely for equipment for 2007-2009, was highlighted. However, these critical operability funds to support PSRSPC agencies' needs were not approved.

Faced with the absence of budgetary action to meet the 2007 recommendations, PSRSPC agencies moved forward with the Administration's 2007-2008 budget process to continue to seek funds that address both last year's documented needs on critical operability as well as current needs. Nine PSRSPC departments submitted their budgetary requests through the Governor's Emergency Operations Executive Council (GEOEC) interdisciplinary coordination for Budget Change Proposals to the Administration. The other five departments/agencies did not submit requests due to timeframes, changing situations, capacity, or other variables.

All PSRSPC departments and agencies look forward to discussing budgetary needs for immediate and critical operability - required before hopes of reaching interoperability can be attained - with the Legislature during this year's budget discussions. Future requirements and planning to create a solid public safety communications system in California are in need of action; but, of foremost importance is the immediate critical equipment and personnel needed to pursue these challenges. This year's report also recommends statewide leadership to develop a sustainable funding source for the state's public safety communications systems as described in Section 5.0 of this report.

**PSRSPC OPERABILITY/INTEROPERABILITY
SEVEN QUESTION WORKSHEET
AS REQUESTED BY LEGISLATURE**

APPENDIX 5

PSRSPC MEMBER DEPT NAME: _____

Completed by: _____

Date: _____

1. PSRSPC MEMBER DEPARTMENT PROJECTS DESCRIPTION

Include a description of planned technology, radio frequency, coverage area, etc.

2. COST PER PROJECT

What is the cost by year if not fully funded in the year proposed, and source of funding to pay for the projects?

3. PRIORITIZATION OF THE PROJECTS

Include prioritization of the projects for your department and a description of how the prioritization process works.

4. TIMELINE FOR IMPLEMENTATION

Provide brief description of the timeline for implementing the projects.

5. INTRA-DEPARTMENT IMPROVEMENT OF OPERABILITY

Provide brief description of how the projects would improve your communications.

6. FEDERAL, LOCAL & OTHER STATE AGENCIES-IMPROVEMENT OF

INTEROPERABILITY Description of how the projects will improve interoperability with these entities.

7. EFFICIENCIES BY SHARING RESOURCES

Description of how the projects may be able to incorporate efficiencies by sharing resources with other state agencies, including shared remote-site equipment, shared frequencies, etc.

Overview of Current State Agency Needs/Actions Based on Responses to Legislature's Seven Questions

| Department | Needs/Action Overview |
|-----------------|--|
| CAL FIRE | Replace repeaters, control stations, and base stations statewide with P25 capable radios by 2010 Fire Season to improve reliability and a platform for interfacing with System of Systems. |
| Caltrans | Complete 800MHz radio conversion to ensure all Caltrans staff can communicate on one radio system; enhance ability to participate in regional, interoperable communications systems; and allow direct communications with CHP. |
| CDCR | The CDCR has proposed the upgrade of their existing Type I Motorola 800MHz trunked radio system and infrastructure to improve critical operability and to provide interoperability. The existing Type I operational platform is incompatible with other public safety/first responder agencies and regional communications systems and prohibits interoperability. |
| CDPH | Replace existing equipment with radios to be used in the Joint Emergency Operations Centers (both the primary site in Sacramento and the backup site in Rancho Cordova), the Richmond Campus Coordinating Center where CDPH public health laboratories and key communicable disease control programs are located, and at a statewide Strategic National Stockpile warehouse; ½ PY to support efforts. |
| CHP | <p>Additional funding to upgrade existing 302 remote radio equipment vaults statewide.</p> <p>Projects currently underway will:</p> <ul style="list-style-type: none"> • Separate tactical frequencies enabling each Division to operate emergency radio traffic during critical incidents without interfering with radio traffic for normal operations; • Provide increased range with acquisition of 700 MHz frequency spectrum for the officer while out of the vehicle, in addition to providing interoperability with other first responders • Allow consolidation of various mobile radio equipment to interface with multiple frequency bands using the Consolidated Patrol Vehicle Environment (CPVE), a vehicle tactical network, providing temporary links to create interoperable systems anywhere in the state • Link disparate radio systems as well as, satellite, landline, and cellular phone systems through real time, field unit-to-unit, and direct voice communications through a statewide/regional radio communications interoperability network utilizing the gateway boxes in each of the CHP 25 communications centers. • Equip nine vehicles with satellite, airborne video downlink, and interoperable communications equipment to perform as a mobile command, as well as provide internet access, satellite services, and a command and control system display. • Provide back-up communications using four vault trailers and two antenna trailers. |

| Department | Needs/Action Overview |
|---------------|---|
| DFG | Replace all existing obsolete radio infrastructure and equipment to keep the system operational and meet federal narrowband requirements and, as recommended by DGS-TD, double the number of radio repeater sites to provide adequate radio coverage; 1 PY to support efforts. |
| DGS-TD | System of systems build out will necessitate further <i>statewide</i> Public Safety Microwave Network (PSMN) enhancements as well as California Multiple Agency Radio System (CMARS) enhancements; further expansion and resources associated with the PSMN network, and the initializing and resources associated the modernization of CMARS will both be required within 5 years. |
| DOJ | Currently upgrading equipment, including 34 repeater sites, control stations and all mobile and portable radios, with the latest Project 25 compliant communications and narrowband capable components; purchase gateway units for each DOJ regional office allowing multi-agency communications during tactical operations; ½ PY to support efforts. |
| DPR | Upgrade VHF High Band radio system equipment to meet narrowbanding requirements; reprogram and/or replace 800MHz radio system equipment in order to be compliant and operable within the rebanded Public Safety frequencies; replace obsolete radio equipment with Project 25 compliant radio. |
| DWR | Replace existing VHF radio system with reliable up-to-date equipment that can be maintained and allows for more accurate interoperability with other public safety agencies; 2 PYs to support efforts |
| EMSA | Develop Communications/Dispatch Program to address the challenges and issues facing local EMS agencies and partners in pursuit of radio communications interoperability and modernization; plan for twenty-four radio frequency pairs within the 700MHz radio spectrum towards a statewide EMS communications system; 1 PY to support efforts |
| CMD | Obtain HF network to enable the CMD's Joint Forces Headquarters to have better command and control throughout the state through enhanced communications tools; expand Incident Commander's Command and Control, Communications Unit (IC4U) capability on civilian suburban-type vehicles; obtain equipment to conduct ground-to-air communications; augment limited radio cache in the 700/800 MHz range to allow communications with other responders; and purchase of deployable communications units that deliver voice, data, and video communications using satellite; 2.5 PYs to support efforts. |
| OES | Replace all fixed, mobile and portable radios to meet narrowbanding requirements for the OES Fire Command Network radio system (Fire Net); California Emergency Services Radio System (CESRS); California Law Enforcement Radio System (CLERS); Operational Area Satellite Information System (OASIS); and all other radio inventory; 4 PYs to support efforts. |

California Department of Forestry and Fire Protection (CAL FIRE)

CAL FIRE is responsible for the fire protection of 31 million acres of wild land forests, and provides emergency services to 36 of 58 Counties in the State of California. Radio communications are critical during CAL FIRE's day-to-day activities with over 300,000 emergency responses annually for structure fires, medical assistance, traffic accidents and wild land fires. During larger emergencies interoperable communications are critical due to the varied agencies that respond to incidents and the radio systems they use to communicate. CAL FIRE is giving priority to compliance with the Federal Communications Commission (FCC) requirements for narrowbanding. CAL FIRE's frequencies are currently being licensed by private and local government agencies. The State will not have the capability to license the narrowband channels until the state has narrowband capable infrastructure.

CAL FIRE's current priority project is to replace all repeaters, control stations, and base stations statewide on every CAL FIRE Net with P25 capable radios. The current system is VHF high band conventional with statewide coverage. The goal is to have all infrastructure replaced by the 2010 Fire Season and implement narrowbanding at a cost of approximately \$2.4 Million per year for 5 years. CAL FIRE has started with replacements in FY 07/08 in 10 of the 21 Units statewide from San Diego to Humboldt-Del Norte Counties.

The replacement of 20 year old radios with P25 capable radios will improve reliability and provide a platform capable of interfacing with the PSRSPC's future System of Systems concepts. CAL FIRE will have radios capable of interfacing with other agencies radios site by site if the other agencies are able to upgrade their equipment and radios capable of interfacing with any future system designed.

California Department of Transportation (Caltrans)

Caltrans' primary responsibility is to construct, operate and maintain California's state highway system. Radio communications are critical during Caltrans' day-to-day activities, especially when responding to traffic incidents where quick response results in reduced traffic congestion. During larger emergencies, interoperable communications are necessary to facilitate coordination of responders from multiple agencies and jurisdictions. Reliable communications between those responding to any incident enhances worker safety. Caltrans gives priority to those communications projects that directly affect its field staff by, for example, providing radio coverage to those areas currently without coverage and by replacing aging and obsolete radios.

Caltrans' current communications system is a combination of low band and 800 MHz conventional and trunked systems statewide. Caltrans has been converting its low band radio systems to 800 MHz since the mid-1980s. Only Districts 1 (Eureka), 2 (Redding), 5 (San Luis Obispo), 10 (Stockton) remain to be converted. Funded through the State Highway Account, the projected cost to convert the remaining districts is approximately \$52 million (spread over a 5-year period.) Work has begun in District 10 with anticipated completion in June 2012. If funding is available, work to complete the conversion in Districts 1, 2, and 5 could begin in July 2008 with an anticipated completion date of June 2013.

Completing the 800 MHz radio conversion ensures that Caltrans field staff within and between Districts will now be able to communicate on one radio system. With a more uniform radio system, resources between Districts can be shared and more easily deployed. Radio coverage will be available in areas currently without coverage. Maintenance costs will be reduced as older and obsolete equipment is replaced. Training efforts will be less with only one operating radio system. Implementing an 800 MHz radio system also enhances Caltrans' ability to participate in regional, interoperable communications systems. Counties including San Francisco, San Diego, Sacramento, and Santa Clara have all implemented multi-agency, shared interoperable 800 MHz radio systems and Alameda County is in the process of implementing the 800 MHz East Bay Regional Communications System. The CHP upgrade of their radio system to 700/800 MHz portable and mobile radio equipment will allow direct communications between Caltrans and the CHP.

Caltrans actively promotes and acts upon cost-sharing opportunities, where feasible. Of the radio sites within Districts 1, 2, 5 and 10, Caltrans is co-located with other State, city and county agencies in 71 of the 80 radio sites. Participants in regional communications systems share operations and maintenance costs and realize the benefits of operating in a multi-agency interoperable communications system. Caltrans participates in the San Diego and Sacramento Regional Communications systems and is in discussions with Alameda County about the East Bay Regional Communications System.

California Department of Corrections and Rehabilitation (CDCR)

CDCR is responsible for providing radio communications for 33 adult institutions, 8 juvenile justice facilities, adult and juvenile justice parole operations consisting of 2,200 adult parole agents and 2,000 vehicles, 88 juvenile justice parole agents, and 88 vehicles; 14 field offices, and 6 branch parole offices; 19 re-entry centers, and 2 restitution centers. The CDCR also provides radio communications for the Transportation Unit (TU) which is responsible for the extradition of parolees and escapees back to California, and the transportation of inmates on a statewide basis. The TU also coordinates with institutions, Classification Services Unit and California Out-of-State Correctional Facilities Administration for transferring inmates out-of-state. The TU fleet consists of 32 buses, 43 vans, 5 mini-buses, 2 para-transit vans and 40 sedans. The TU transported over 194,000 inmates and traveled over 3,504,000 miles for FY 2005-06 via the intrastate bus and van schedule. The TU extradition unit completed approximately 2,600 extraditions in FY 2005-06.

Radio communications are critical during CDCR's day-to-day activities to ensure the safety of the inmates, wards, custodial staff, parolees, and the public. During larger emergencies interoperable communications are critical for direct and coordinated communications with allied agencies for the custodial staff and/or parole agents to perform their duties. CDCR parole agents participate daily in tactical operations with allied agencies. These operations require effective communication capabilities.

CDCR's current communications system utilizes an 800 MHz trunked radio system (TRS) and currently has 27 radio communications systems (six co-located systems) serving the 33 adult institutions. Of these 27 systems, 21 significantly exceed the DGS-TD recommended 12-year life cycle for replacement. The CDCR anticipates a multi-year, phased replacement of its existing trunked radio system infrastructure beginning with the adult institutions. The current operating system platform (TRS Type I) has not been supported by the manufacturer since the 1990s--portable and mobile radios that operate on the department's operational platform have been discontinued and portable and mobile replacement radios are incompatible with the Department's platform. A total infrastructure replacement is required because the Type I operational platform is also incompatible with other public safety/first responder agencies, thereby making radio communications interoperability impossible.

The CDCR cannot communicate with most public safety/first responders operating on newer communications platforms. By upgrading the department's existing trunked radio system infrastructure, radio communications interoperability will be greatly improved. The CDCR must continue to emphasize the importance of solving the department's radio system operability needs. In order to do that a financial investment is needed to ensure the department's future radio system can achieve robust operability in addition to interoperability.

By upgrading the existing trunked radio systems infrastructure, the department will also have the ability to participate on current regional communications systems, i.e., San Diego Regional Communications System, Orange County Consolidated Communications Radio System, and Sacramento Regional Radio Communications System. There is also the opportunity for the department to participate on other radio communications interoperability efforts such as the CHP – Radio Communications Interoperability Project (RCIP). However, in order to participate, the financial investment must be made to ensure the department's future radio system can achieve robust operability in addition to interoperability. The CDCR also utilizes the State-owned California Multiple Agency Radio System (CMARS), maintained by the DGS-TD. CMARS is a stand alone shared 800 MHz repeater system that comprises mobile relay stations distributed at 40 locations statewide. The locations of these stations were selected to provide maximum coverage to the major traffic arteries used by CA State agencies as well as the more densely populated areas within CA. The CMARS system and its subscriber equipment are approximately 15 years old. The ultimate modernization of all fixed network and subscriber equipment is required.

California Department of Public Health (CDPH)

CDPH has lead responsibility for public health issues in California's emergency response system and, with the Department of Health Care Services (DHCS) and Emergency Medical Services Authority (EMSA), operates two Joint Emergency Operations Centers (JEOCs) to manage the response to medical and health emergencies. The JEOCs have primary and redundant communications systems (land line phones, cell phones, internet, and satellite phones) that provide the backbone for transmission and receipt of vital information needed to manage an emergency response. However, during emergencies, it is possible that these infrastructure dependent networks may be damaged, overloaded or destroyed, preventing effective and reliable communications. When this occurs, CDPH would use radios for communications within the state and to federal agencies, particularly the Centers for Disease Control and Prevention (CDC) and local health departments. CDPH also has responsibility for communicating with the Governor's Office of Emergency Services and EMSA and with other first responder agencies such as the CHP in its response activities related to the Strategic National Stockpile (SNS).

The current CDPH radio communications system is comprised of ten CMARS 800 MHz radios statewide. The locations of these stations were selected to provide maximum coverage to CDPH users. This radio system and its subscriber equipment are six years old. All ten CMARS radios are obsolete, no longer supported by the vendor or by DGS-TD, and do not meet the operable criteria specified in the SAFECOM Project 25 compatibility standards published by the Department of Homeland Security. During emergencies, the CDC, CDPH, and local health departments are called upon to provide vital response information from any location. However, during emergencies it is not uncommon for these infrastructure dependent networks to be damaged, overloaded, or destroyed preventing effective and reliable communications. The National Public Health Radio Network (NPHRN) provides a backup High Frequency communications platform for public health stakeholders to transmit and receive vital information. CDPH is currently unable to communicate with the CDC, other state health departments, and local health departments via radio during emergencies using the NPHRN with existing equipment.

The proposed ten radios will replace existing equipment in the JEOCs (both the primary site in Sacramento and the backup site in Rancho Cordova) and the Richmond Campus Coordinating Center where CDPH public health laboratories and key communicable disease control programs are located. The equipment will also be used at a statewide Strategic National Stockpile (SNS) warehouse. The proposed upgrades to CDPH's CMARS 800MHz radio system represent the *highest* priority request and upgrades to NPHRN represent the *second* highest priority request. The equipment would be operational within six months of receipt and cost approximately \$87,800. Additionally, recent amendments to Government Code §8592.1 through 8592.7 added CDPH as a member of the PSRSPC. CDPH allocates .50 PYs to PSRSPC-related activities. The 2006-2007 cost of the .50 PYs is approximately \$39,503.

The Department of Homeland Security and the Governor's Office of Homeland Security have identified communications interoperability and survivability as a top priority for the State of California. CDPH is a legislated member of the CALSIEC, PSRSPC, and a member of the first responder community during a public health emergency. The equipment, installation, and training described in this document would enable CDPH to meet CALSIEC interoperable guidelines.

California Highway Patrol (CHP)

The California Highway Patrol (CHP) was created in 1929 and is the largest statewide law enforcement agency in the nation. The mission of the CHP is to provide the highest level of safety, service, and security to the people of California. This is accomplished through five departmental goals: prevention loss of life, injuries, and property damage; maximize service to the public and assistance to allied agencies; manage traffic and emergencies incidents; protect public and state assets; and improve departmental efficiency. Effective radio communications capability is paramount to accomplishing the mission of the CHP. During larger emergencies interoperable communications are critical to ensure rapid and efficient CHP coordination with responders from multiple agencies and jurisdictions.

The department is currently authorized to upgrade its radio system. The CHP Enhanced Radio System (CHPERS) project is a five year plan which will provide for the development and implementation of an enhanced statewide radio communications system in support of CHP's mission. The CHPERS project will provide an improved state-of-the-art radio system and employ modern methodologies to enhance and leverage the existing infrastructure and meet the future operational and interoperability needs.

The CHPERS project plan has incorporated efficiencies identified in coordination with the Department of General Services. The CHPERS project focuses on the enhancement of the radio system infrastructure, as well as continuing the acquisition of 700MHz frequency spectrum, the acquisition of mobile/portable 700/800MHz radios, the separation of radio frequencies, and exploring the development of a radio solution for the CHP's motorcycles and specialty vehicles. To ensure there are no radio frequency interference problems, a statewide effort is underway to acquire additional radio rack space and equipment. As a result, the CHP will be able to separate tactical frequencies enabling each Division to operate emergency radio traffic during critical incidents without interfering with radio traffic for normal operations. The acquisition of 700MHz frequency spectrum will provide increased range for the officer while he is out of the vehicle, in addition to providing interoperability with other first responders.

The CHP is seeking alternative technology solutions for integrating and enhancing the Patrol Officer Mobile Environment as part of its program to upgrade the existing statewide communications infrastructure and plans for future growth. An important part of the plan is to acquire systems integration and enhancement of the existing enforcement vehicle communications functions. The Consolidated Patrol Vehicle Environment (CPVE), a vehicle tactical network, will allow the consolidation of various mobile radio equipment to interface with multiple frequency bands. The patching of disparate radio systems will provide temporary links to create interoperable systems anywhere in the state, utilizing a single screen graphical user interface (GUI) system. The vehicle tactical network is software-driven and the operating software will be designed to automatically select the appropriate in-trunk radio unit for the frequency band associated with the operational channel selected. The CPVE is configured for touch screen operation that allows multiple technologies (radio, video, mobile data, siren, public address, emergency lights, license plate reader, gun locks, and radar) to be readily available to CHP officers for their day-to-day operations.

California Highway Patrol (CHP) Continued-

The CHP is in the process of completing the installation of a statewide/regional radio communications interoperability network utilizing the gateway boxes in each of the CHP 25 communications centers. The goal is to connect each local gateway switch to other gateway switches statewide. Using Voice-over Internet Protocol (VoIP) connectivity, the gateway box allows direct voice communications between CHP and any allied agencies responding to both short term and long term incidents. The gateway box has the ability to link disparate radio systems (VHF low band, VHF high band, UHF, UHF-T, and 700/800 MHz) as well as, satellite, landline, and cellular phone systems to enhance communications through real time, field unit-to-unit, and direct voice communications. Connectivity can be established to provide remote access for command and control anywhere in the state for remote incident or on-scene command utilizing the Wide Area Interoperability System (WAIS) software, through the internet or existing CHP LAN/WAN.

In January 2006, the Department purchased nine Chevrolet Tahoes through the 11-22 program, utilizing a Homeland Security grant. The vehicles were equipped and integrated with satellite, airborne video downlink, and interoperable communications equipment, allowing the vehicle to perform as a mobile command, as well as provide internet access, satellite services, and a command and control system display. Utilizing the gateway box, the vehicles provide incident commanders direct communications between allied agencies and first responders involved in a particular disaster response using disparate radio systems. In addition, the gateway boxes provide command and control capabilities in the event of catastrophic damage to the local infrastructure. The RRV provides CHP with a mobile command where needed. In effect, an RRV could replace a CHP Area office or communications center, with remote access to radio communications systems, telephone, internet, email, fax, and satellite television services. The RRV's are assigned statewide, to the eight CHP divisions.

The CHP infrastructure is comprised of radio base station equipment installed at 302 remote radio sites, 102 Area offices, 25 communications centers, and 16 inspection facilities. To ensure minimal downtime of the infrastructure equipment or in the event of catastrophic failure, four vault trailers and two antenna trailers have been purchased to provide back-up communications. The self-contained mobile trailers will house over 20 racks of radio base station equipment that can be deployed anywhere in the state and will provide the CHP and its tenants (allied agencies) with immediate relief from disruption of vital equipment used for communications in a wide coverage area. The antenna trailers are self-contained units that can accommodate a multitude of antennas (low band, high band, UHF, 700/800 MHz, and microwave dishes) with a maximum height of over 60 feet. Once these units reach their destination they can be activated and operational within an hour without requiring an external power source. With these tools and technologies, the CHP is prepared to meet its operability and interoperability needs and responsibilities.

Department of Fish and Game (DFG)

The Department of Fish and Game (DFG) mission is to manage California's diverse fish, wildlife, and plant resources and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. DFG is responsible for protecting these resources including 1,100 miles of coastline, 18,000 miles of streams, 3,648 lakes, and 163,707 square miles. Radio communications are used during DFG's day-to-day activities by departmental personnel statewide, including game wardens, biologists and other wildlife personnel. During emergencies, interoperable communications are critical for DFG personnel to protect and maintain public safety, wildlife, and habitat.

DFG currently maintains a VHF highband radio communications system with seventy-six (76) remote radio sites. DFG must provide its 400 wardens with a means to assure officer safety and timely enforcement action against those who would destroy wildlife resources. DFG also provides communications for those who oversee important regional projects. Two-way radio communications to a specific dispatch point are required.

The FCC issued an executive order which mandated use of smaller bandwidth technology, known as narrowbanding. January 1, 2013 is the deadline for complete transition to narrowband technology and only narrowband radio license applications will be accepted after January 1, 2011.

The Public Safety Communication Act of 2002 established the Public Safety Radio Strategic Planning Committee (PSRSPC) to improve existing state agency radio systems and develop interoperability among public safety departments. DFG is a statutory member of PSRSPC. DFG has identified over \$4 million of current obsolete radio equipment that needs to be replaced to keep the system operational and narrowband capable. In addition, it was recognized that one personnel year (PY) was needed to continue the current and future efforts of this committee.

DFG does not have radio communications equipment capable of meeting the narrowband requirements or the ability to keep up with the continued increase of statewide microwave system costs. This has caused a substantial impact on the department's ability to maintain existing equipment and ensure its on-going replacement. Due to these budgetary constraints, most existing radio infrastructure will now have to be replaced in order to meet the federal mandates of narrowbanding for all public safety radio frequencies. New equipment must be purchased and installed at DFG's remote radio sites; in hundreds of vehicles, aircraft and watercraft; and throughout various district and regional offices. Regional coordination with all state and local public safety agencies across all disciplines will be necessary in order to minimize radio interference.

In addition to existing radio infrastructure, DGS-TD's 1998 Radio System and Public Safety Dispatch Service Study done for the department indicates that DFG needs to double their number of radio repeater sites. An additional seventy-five repeaters were recommended with specific locations identified in order to provide adequate radio coverage to field personnel statewide. These sites may well be required within the narrowband mandates as the coverage area(s) for each remote mountain-top will likely decrease.

DFG actively promotes and acts upon cost-reduction opportunities, whenever possible. As DFG's communications system evolves, cost savings opportunities are likely and will be pursued. Currently DFG collaborates with other state agencies in both their daily operations and radio infrastructure remote sites. DFG contracts with Department of Parks and Recreation to dispatch field personnel and over seventy percent of the radio sites which house DFG's mountain-top repeaters and control stations are state facilities. Specifically, DFG is a tenant in twenty-four (24) CAL FIRE, twenty-six (26) CHP, eleven (11) Caltrans and three (3) DGS-TD locations. Additional sites are leased from local or private entities.

Department of General Services–Telecommunications Division (DGS-TD)

The Department of General Services-Telecommunications Division (DGS-TD) through its Office of Public Safety Communications Services provides technical assistance (engineering and technician) to all state agencies in the planning, design, procurement, implementation, and maintenance of microwave and land mobile radio systems. These services directly support the operational missions of the state’s public safety agencies. In addition to these services, the Division owns and operates two radio systems that are used by state agencies.

The first of these systems is the Public Safety Microwave Network (PSMN). This system provides state agencies with the ability to interconnect centralized dispatch centers to radio facilities located throughout the state. In this manner, state agencies (along with some federal and local agencies) are able to communicate with personnel over wide geographic areas. Additionally, the PSMN provides an operational telephone network. This network provides telephone-type interconnection between/amongst critical command personnel in the event the commercial telephone networks (e.g. PacBell, AT&T, etc.) are overloaded or out-of-service.

DGS-TD continually modifies the PSMN to replace ageing equipment, expand “points-of-presence”, and update technology. Currently, the system is being converted from the use of analog to digital technologies. In making these upgrades, DGS-TD is leveraging internet technologies to provide internet-type services while protecting the vital public safety communications systems from problems associated with the public internet (e.g. security of access, overloading, “hackers”, etc.).

The second of these systems is the California Multiple Agency Radio System (CMARS). This system provides limited land-mobile radio communications for some smaller state agencies that are unable to justify their own, independent radio systems. By using CMARS, which is a shared system, these agencies are able to satisfy their operational needs while minimizing cost.

DGS-TD continually reviews and evaluates the need to upgrade and expand the CMARS system. There are no current plans to make such modifications.

The primary goal of DGS-TD is to work with the various state agencies, including all of the member-agencies of PSRSPC, to acquire and implement communications systems that satisfy their operational needs. In doing this, the Division actively promotes the appropriate use of technology in a cost-effective manner.

Department of Justice (DOJ)

The Department of Justice is responsible for enforcement of state and federal controlled substance laws and in the investigation and apprehension of violent criminals who utilize illegal weapons, career criminals, sex offenders, and clandestine drug manufacturers. Providing radio communications for the various DOJ bureaus is critical on a day-to-day basis to ensure efficient communications and reduce any potential officer safety issues due to communications failures. During larger emergencies interoperable communications are critical to ensure the success of the operations and to maintain public and officer safety. The majority of the DOJ's radio equipment exceeds the manufacturer's recommended life span.

The Department of Justice is currently upgrading their antiquated 18-year-old subscriber equipment with the latest Project 25 compliant communications components. This includes 34 repeater sites, all desktops, control stations, and all mobile and portable radios. The DOJ utilizes the VHF band statewide. The repeater station locations were selected to provide maximum coverage to the DOJ users. In addition, as a statutory member of PSRSPC, DOJ has identified the short-term need for 1/2 position to accommodate the next two years of PSRSPC interoperability-related activities.

The projected cost to replace the DOJ's equipment is approximately \$2.7 million dollars in General Fund authority in Fiscal Year 2006-07 to replace infrastructure and establish, beginning in 2007-08, an annual replacement program with \$936,000 of on-going General Fund authority for portables, control stations and phased installation of gateways required for interoperability. DGS has estimated that the end of fiscal year 2007-08 will complete the upgrade project. The 2006-2007 cost of the necessary the DOJ's 1/2 PY for PSRSPC was quantitatively derived to be approximately \$58,000. Funding needs to be provided to support this PY.

The equipment-based requests *in priority order* are upgrades to: (1) DOJ's infrastructure; (2) portables and control stations; and (3) interoperable gateways. The request for 1/2 PY represents the single personnel request. Both are proposed to be fulfilled simultaneously.

The life span of a public safety radio repeater is approximately fifteen (15) years. The DOJ's repeaters are more than eighteen (18) years old and most are more than twenty-one (21) years old. Replacement of these repeaters will minimize repeated system failures and reduce down time for repair due to non-availability of replacement parts, as the manufacturer will no longer support them.

The equipment purchased is Project 25 compliant and narrow band capable aligning DOJ with future interoperability requirements. In addition, the purchase of gateway units for each DOJ regional office will allow multi-agency communications during tactical operations as necessary. The majority of DOJ's repeaters are co-located with various state agencies' communications equipment in state-owned communications vaults. DOJ has also entered into various MOUs with other state and local agencies for shared frequency use during multi-agency operations.

Department of Parks and Recreation (DPR)

The Department of Parks and Recreation is responsible for protecting the State's most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation. The DPR communications system is a combination of 800MHz conventional and VHF High Band radio systems, comprised of mobile relays, base/control stations, mobile radios, portable radios, and law enforcement/public safety communications centers. These communications systems provide DPR Peace Officers with the day-to-day communications tools necessary for law enforcement and public safety action and response, critical infrastructure protection, and emergency medical response. During larger emergencies interoperable communications are critical to allow DPR to coordinate and participate in law enforcement/public safety actions with other local, State and Federal agencies. The majority of these systems and the subscriber equipment are well over 15 years old, making most of the equipment obsolete.

In the next 5 years, DPR must upgrade its VHF High Band radio system equipment to meet the current FCC VHF/UHF Narrowbanding Order (2013 deadline). In the next 5 years, the DPR 800MHz radio system equipment, under the current FCC 800MHz Rebanding Order, must be reprogrammed and/or replaced in order to be compliant and operable within the rebanded 800MHz Public Safety frequencies. Additionally, all new and replacement radio system equipment must be Project 25 compliant. DPR's 800MHz conventional radio system and VHF High Band radio systems are subject to the specific timelines within each FCC Order. For DPR, the VHF High Band radio system equipment replacement is the *first priority* and the DPR 800MHz radio system rebanding is the *second priority*.

Replacement of obsolete radio equipment with Project 25 compliant radio equipment will improve both DPR's 800MHz radio system and DPR's VHF High Band radio system reliability, reduce maintenance costs, and be compliant with FCC requirements. Replacement of obsolete radio equipment with Project 25 compliant radio equipment allows DPR to be capable or upgradeable for any future interoperability requirements.

DPR has many mobile relays co-located with other state agency communications equipment in state-owned communications facilities. DPR provides dispatch services for the Department of Fish and Game's (DFG) Law Enforcement Division, linking the DFG radio system into DPR's law enforcement/public safety communications centers. With the inclusion of the DFG Law Enforcement Division, the DPR communications systems provide dispatch services for over 1,000 peace officer positions throughout California.

Department of Water Resources (DWR)

The Department of Water Resources (DWR) operates and maintains the State Water Project, which spans more than 600 miles and includes 32 storage facilities, 17 pumping plants, 3 pumping-generating plants, 5 hydroelectric power plants, and approximately 693 miles of canals and pipelines. DWR supplies quality source water for municipal, industrial, agricultural, and recreational uses and for protecting and enhancing aquatic and wildlife habitat. DWR is also responsible for flood management and protection, regulating over 1,250 jurisdictional dams, and for responding to drought, impacted watersheds, and other disasters that may occur. DWR's radio system is relied upon for day-to-day activities and emergency communications.

DWR's radio communications include VHF (150 MHz) and UHF (450MHz) radio systems and the California Multi-Agency Radio System (800 MHz). The existing VHF radio system is 25 plus years old and is failing throughout the state causing serious reliability issues. Equipment is obsolete and parts for repairs are non-existent. Additionally, DWR is a statutory member of PSRSPC. For the short term, there is the need for 2 PYs to accommodate the next two years of PSRSPC-related activities. The projected total cost to replace DWR's VHF equipment is approximately \$9.1 million. The 2006-2007 cost of the necessary DWR's PYs is approximately \$150,100 annually. Funding needs to be provided to support these PYs in order to complete the projects on a timely basis and successfully.

The proposed upgrades to VHF radio system are comprised of base stations, control stations, mobile and hand-held radios throughout the department which **MUST** be replaced simultaneously and represents the *highest* priority equipment-based request. The request for 2 PYs represents the sole personnel request. Both are proposed to be fulfilled simultaneously; however, if this is impossible, the request for PYs needs to be fulfilled first. The PY requirement will increase after the two year period in proportion with the availability of funding to implement the "System of Systems" communications infrastructure throughout CA.

The replacement of the existing VHF radio system will provide end users with reliable up-to-date equipment that can be maintained and improve intra-agency communications by providing communications where it is currently failing. This will also bring the radio system up to current FCC and P25 standards allowing for more accurate interoperability with other public safety agencies. Through the DWR proposed planned project work, reliable interoperability with Federal, State, Tribal, County, City, and Special District Public Safety agencies, and participation of non-governmental organizations with FCC Public Safety Radio Services eligibility will be accomplished.

DWR actively promotes and acts upon cost-reduction opportunities. As the communications system DWR relies on evolves, economies of scale savings opportunities will be realized. For this project, the maintenance costs associated with a non-standard and out-of-date assortment of equipment is higher than the costs that will be realized in migrating towards a standards-based, contemporary public safety radio communications system. DWR works closely with DGS-TD for specifications standards of radio equipment to ensure that the best, most efficient and cost effective equipment is obtained that meets DWR's needs based upon its mission.

Emergency Medical Services Authority (EMSA)

The Emergency Medical Services Authority is responsible for ensuring quality patient care by administering an effective statewide system of coordinated emergency medical care, injury prevention, and disaster medical response. The EMS Authority is also responsible for leadership in developing and implementing EMS systems throughout California and setting standards for the training and scope of practice of various levels of EMS personnel.

EMS Authority's current projects include the Communications/Dispatch Program to address the challenges and issues facing local EMS agencies and partners in pursuit of radio communications interoperability and modernization. This effort also includes the Emergency Medical Dispatch (EMD) Program which involves the provision of life-saving, pre-arrival medical instruction given by emergency medical dispatchers when a medical emergency call is received over the State's 9-1-1 system. In addition, as a statutory member of PSRSPC, EMSA has identified the short-term need for 1 position to accommodate the next two years of PSRSPC interoperability-related activities. The 2006-2007 cost was quantitatively derived to be approximately \$125,200 annually. The PY requirement will increase after the two year period in proportion with the availability of funding to implement the System of Systems proposed with the Department of Public Health. This joint communications system will allow seamless coordination between the emergency medical community and the public health community throughout California, enhancing public safety preparedness significantly.

In disaster preparedness, where multiple local and state agencies need to communicate seamlessly, the need for statewide radio communications interoperability is essential. Twenty-four radio frequency pairs within the 700MHz radio spectrum have been allotted to the EMS Authority towards a statewide EMS communications system. However, these frequencies will not become available until sometime in 2009. Additionally, the Federal Communications Commission (FCC) deadline for narrowbanding of 150-512 MHz radio frequency bands is January 1, 2013. On January 1, 2011, FCC will no longer accept the wideband licensing applications. Each of these items affect EMS radio communications statewide; in fact, all disciplines (EMS, fire and law) will be impacted. The EMS Authority's collaboration is required in this major effort of planning and coordinating how to efficiently narrowband EMS radio frequencies in California.

Emergency Medical Services Authority would provide continued statewide support for emergency medical first responders in the areas of radio communications interoperability and emergency medical dispatch. A permanent Communications/Dispatch Program within the EMS Authority would also provide efficient oversight of statewide EMS radio communications interoperability and EMD program implementation and would increase the proportion of persons who have access to rapid, responsive pre-hospital emergency medical services by providing EMD programs statewide.

California Military Department (CMD)

The California Military Department is responsible for providing support to civilian authorities in emergencies and disasters.

The California Military Department has identified five critical communications and interoperability projects. These projects would improve communications with the CMD Joint Operations Center. The projects described below could be completed within three years for a total cost of approximately \$5.84 million. In addition, as a statutory member of PSRSPC, CMD has identified the short-term need for 2.5 positions to accommodate the next two years of PSRSPC interoperability-related activities. The cost for the positions is \$310,000 annually.

The CMD has 120 armories and three major training sites within the state. About 10 armories currently have the new high frequency (HF) radios installed. At any given moment a National Guard armory may be used as a staging area for a state emergency. The *first priority* is an HF network to enable the CMD's Joint Forces Headquarters to have better command and control throughout the state through enhanced communications tools.

The CMD also possesses gateway units known as the Incident Commander's Command and Control, Communications Unit (IC4U). The *second priority* is expanding this capability on civilian suburban-type vehicles to compliment the current gateway units mounted on the High Mobility Multipurpose Wheeled Vehicle. The current units do not allow for communications on the move and these new vehicles would be able to do this.

The CMD conducts numerous regular scheduled exercises using military aircraft and currently lacks the equipment* to conduct ground-to-air communications. The purchase of special equipment to support state and local agencies is the *third priority*. CMD used ground- to -air communications (on loan from a vendor) during the San Diego wildfires and was able to provide a direct link from the Incident Commander to the military aircraft to fight fires. This asset proved invaluable during this state emergency.

The CMD has vehicle mounted radios and does not possess enough Land Mobile Radios to have sufficient communications in an emergency. The *fourth priority* is to augment CMD's limited radio cache in the 700/800 MHz range to allow communications with other responders.

To augment the state's communications capabilities, the CMD's *fifth priority* is the purchase of deployable communications units that deliver voice, data, and video communications using satellite. These units are not vehicle mounted and could be transported and set up at any site.

All the above equipment meets Department of Defense specifications and can be used with any other state or federal agency in the country provided that the other agencies have like equipment that can access interoperable radio frequencies. Since these products will be commercial off-the-shelf (COTS) equipment, the CMD will be able to interoperate with any first responder. The CMD works with OES on a regular basis and could use this equipment to help "round out" what they currently possess and will purchase in the future. The end state is to help the "have not" cities/counties in the event there is a state emergency.

Office of Emergency Services (OES)

The Office of Emergency Services is statutorily required to ensure that preparations within the state will be adequate to deal with natural, manmade, or war-caused emergencies. OES has traditionally been viewed by State and local government agencies as the primary broker/coordinator of resources deployed in disaster response. This role necessitates OES ability to interoperate with Mutual Aid resources across disparate radio frequencies, modes and over-the-air protocols. All proposed projects are crafted to support the interoperability requirements that result from OES role as the primary node in any disaster response coordination.

OES' current communications system is comprised of three statewide microwave-interconnected mobile relay systems. The locations of these stations were selected to provide maximum coverage to OES and Mutual Aid users. This system and its subscriber equipment comprise equipment approximately 20 years old. The replacement of all fixed, mobile and portable radios is required to meet Federal Communications Commission narrowbanding regulatory changes due to go into effect in the next three to five years. The procurement for the replacement of critical communications equipment described below would be started in July 2008 at a cost of approximately \$3.5 million. In addition, as the statutory chair of PSRSPC, OES has identified the short-term need for 4 permanent positions and \$593,000 in General Fund addressing the need for OES to lead the collaborative development of interoperability statewide while supporting the complex array of other communications systems

The equipment-based requests *in priority order* are upgrades to: (1) the OES Fire Command Network radio system (Fire Net); (2) California Emergency Services Radio System (CESRS); (3) California Law Enforcement Radio System (CLERS); (4) Operational Area Satellite Information System (OASIS); and (5) all other radio inventory. The request for 4 PYs represents the single personnel request. Both requests are proposed to be fulfilled simultaneously, but, if this is impossible, the request for PYs needs to be fulfilled first. The PY requirement will increase in proportion with the availability of funding to implement the System of Systems communications infrastructure throughout CA.

Telecommunications public safety radio equipment is critical to the ability of OES and first responders. In any disaster or large scale incident involving multiple response agencies, there is a need for on-scene communications between services. Unfortunately, most systems are designed to serve a single agency, and the ability to intercommunicate is severely restricted. There may also be a need for supplementing communications channels between the scene and the control centers. OES equipment and cache resources support the local and state agencies in all 58 operational areas, enabling first responders to mobilize efficiently, combine resources and communicate needs. OES must be able to upgrade equipment to continue to support agencies as needed.

OES actively promotes and acts upon cost-reduction opportunities as they present themselves. As the communications system OES relies on evolves, chances for economics of scale savings are likely. For this project, the maintenance costs associated with a non-standard and out-of-date assortment of equipment is higher than the costs that will be realized in evolving towards a standards-based, contemporary public safety radio communications system. Currently, if multiple state agencies have response & service requirements in a given geographical area, each agency will have its own system to provide coverage. The result is that as many as three or four systems duplicate radio. Significant cost reductions should result through the application of this approach.

REFERENCES

- **Public Safety Radio Strategic Planning Committee (PSRSPC)** <http://psrspc.ca.gov>
- **California Public Safety Communication Act, Government Code Section 8592-8592.7**
<http://www.leginfo.ca.gov/cgi-bin/waisgate?WAISdocID=7260442173+0+0+0&WAISaction=retrieve>
- **California Statewide Interoperability Executive Committee (CALSIEC)**
<http://rimsinland.oes.ca.gov/CALSIEC.nsf/home?OpenForm>
- **SAFECOM Interoperability Planning Methodology**
http://www.safecomprogram.gov/SAFECOM/library/interoperabilitycasestudies/1223_statewidecommunications.htm
- **SAFECOM Statewide Communications Planning Overview**
<http://www.safecomprogram.gov/SAFECOM/tools/scip.htm>
- **SAFECOM Statement of Requirements (SoR) for Public Safety Communications**
http://www.safecomprogram.gov/NR/rdonlyres/B20DC842-B760-4DB0-B3B6-D3F1B0A5F26B/0/PS_SoR2_v10_9112006.pdf
- **NIMS Compliance Website**
http://www.fema.gov/emergency/nims/nims_compliance.shtm
- **Project 25 Website.** <http://www.p25.com/>
- **US Department of Homeland Security.** <http://www.dhs.gov>
- **National Public Safety Telecommunications Council (NPSTC)**
<http://www.npstc.org/index.jsp>
- **Governor's Office of Homeland Security (OHS), Public Safety Interoperable Communications Grant Program (PSIC) Guidance and Application.**
http://www.homeland.ca.gov/pdf/PSIC_CA_Supplement.pdf
- **SAFECOM Writing Guide for a Memorandum of Understanding (MOU)**
<http://www.safecomprogram.gov/NR/rdonlyres/70169F1E-F2E9-4835-BCC4-31F9B4685C8C/0/MOU.pdf>
- **Tactical Interoperable Communications Planning Guidance and Template**
<http://www.ojp.usdoj.gov/odp/docs/TICPGuidanceandTemplate.pdf>
- **OHS Office of Grants and Training**
http://www.ojp.usdoj.gov/odp/grants_programs.htm
- **FY-07 Homeland Security Grant Program Guidelines**
<http://www.safecomprogram.gov/NR/rdonlyres/B24B992A-AF65-4EBC-BC19-321F64002D74/0/FY07SAFECOMGrantGuidanceFINAL.pdf>
- **California Statewide Communications Interoperability Plan (CalSCIP).**
This document is posted on the PSRSPC website: <http://psrspc.ca.gov>

DEFINITIONS AND ACRONYMS

Bandwidth – The amount of spectrum occupied by a radio signal (usually measured in kilohertz). There is an ongoing effort nationally to increase the amount of usable spectrum by reducing the bandwidth (‘wideband’) used today in half (‘narrowband’), and adding new users between the existing users.

Broadband – In the context of public safety communications, a data transmission in which the bandwidth is more than 1.0 MHz. These data transmissions include image files (fingerprint images, photos of a missing person, video from an incident, or maps of buildings) and large text files such as reports.

CAL FIRE – Department of Forestry and Fire Protection

CalSCIP – The California Statewide Communications Interoperability Plan is seen as the primary guiding document for statewide communications interoperability planning within California. The document serves as the glue holding together and directing California’s various communications interoperability governance groups and efforts.

CalSIEC – The California Statewide Interoperability Executive Committee has been tasked with managing the State and federally designated interoperability spectrum on behalf of all of our public safety first responders. CalSIEC develops and maintains the agreements that define practices for the use of interoperability channels. It functions as part of the Standardized Emergency Management System (SEMS) / National Incident Management System (NIMS). CalSIEC was established and operates under a Federal Communications Commission charter to the states to administer that portion of the 700 MHz band designated as interoperability spectrum. The Director of OES chartered CalSIEC, in 2003, to combine existing efforts and to provide a single committee to administer all interoperability spectrums in California.

Caltrans – Department of Transportation

CASM – The Communication Assets Survey and Mapping Tool collects, displays and assesses Public Safety & First Responder Land Mobile Radio (LMR) Voice communications equipment and interoperability methods for Agencies in an Urban Area.

CDCR – Department of Corrections and Rehabilitation

CDPH – Department of Public Health (Former Department of Health Services was split into the Department of Public Health and Department of Health Care Services)

CHP – California Highway Patrol

CMD – California Military Department

DFG – Department of Fish and Game

DGS – Department of General Services

DGS-TD – Department of General Services, Telecommunications Division

DHCS- Department of Health Care Services (Former Department of Health Services was split into the Department of Public Health and Department of Health Care Services)

DOF – Department of Finance

DOJ – Department of Justice

DPR – Department of Parks and Recreation

DOT – Department of Transportation

DWR – Department of Water Resources

EMSA – Emergency Medical Services Authority

Gateway – The commonly accepted term to describe a standalone device that is used to patch two or more radio systems together to bridge the users of each system, creating interoperability.

Interoperability – *Interoperability* generally refers to the ability of public safety emergency responders to work seamlessly with other systems or products without any special effort. Wireless communications interoperability specifically refers to the ability of public safety officials to share information via voice and data signals on demand, in real time, when needed and as authorized. For example, when communications systems are interoperable, police and firefighters responding to a routine incident can talk to each other to coordinate efforts. Communications interoperability also makes it possible for public safety agencies responding to catastrophic accidents or disasters to work effectively together. Finally, it allows public safety personnel to maximize resources in planning for major predictable events such as the Super Bowl, or an inauguration, or for disaster relief and recovery efforts¹.

Narrowband – In the context of current public safety voice and data communications, operation in most of the public safety bands is limited to narrowband operations using either 25-, 12.5-, or 6.25-kHz-wide bandwidth requirements.

Narrowbanding – Narrowbanding is the process of adopting updated technical standards to permit more individual voice channels to operate in a given slice of spectrum. In the affected public safety communications VHF high band and UHF frequency spectrum, most current public safety radio systems use 25 kHz-wide channels. The Federal Communications Commission (FCC) has mandated that all non-Federal public safety licensees using 25 kHz radio systems migrate to narrowband 12.5 kHz channels by January 1, 2013. Agencies that do not meet the deadline face the loss of communications capabilities.

NPSTC – National Public Safety Telecommunications Council (NPSTC)

OES – Governor’s Office of Emergency Services

OHS – Governor’s Office of Homeland Security

Operability – The ability for members of a public safety agency to communicate as authorized with other members of that agency at any time from anywhere within the agency's responsibility area.

PSRSPC – *Public Safety Radio Strategic Planning Committee* was codified by the Public Safety Communications Act of 2002 (Government Code section 8592 et seq.). It continues an ad hoc effort underway since 1994 to develop and implement an integrated statewide Public Safety communications system that facilitates interoperability among the member state agencies, and fosters shared use and interoperability with local and federal public safety agencies.

Rebanding – A process of moving groups of channels to different chunks of spectrum in the same radio band. The remedy for Nextel cell sites causing interference to public safety radios at 800MHz was to *reband* Nextel and public safety from a commingled situation to separate, exclusive, contiguous chunks of spectrum.

Refarming – There are two fundamental changes in the FCC “Refarming” Docket. The width of each channel (bandwidth) is reduced. Also, the spacing between each FCC channel assignment is reduced.

SAFECOM – The SAFECOM program in DHS’ office for Interoperability and Compatibility provides research, development, testing and evaluation, guidance, and assistance for local, tribal, state, and federal public safety agencies working to improve public safety response through more effective and efficient interoperable wireless communications.

SoS – System of Systems: the result of the amalgamation of disparate communications systems statewide via digital networking technologies into a linked infrastructure (or network) capable of supporting interoperable communications.

Spectrum – The entire range of electromagnetic communications frequencies, including those used for radio, radar, and television

TICP – Tactical Interoperable Communications Plan—FY-05 Homeland Security Grant Program requirement that each urban area receiving FY05 UASI funds must develop a plan to achieve tactical interoperable communications across jurisdictions in the urban area.

Trunking – Trunking is a technology used to increase the efficiency of a radio system by distributing conversations over a pool of radio channels, as needed.

UASI – Urban Area Security Initiative. A program of DHS covering (for the year 2007) the 50 largest urban areas in the United States.