Report to the Legislature

Activities of the Public Safety Radio Strategic Planning Committee

Dallas Jones, Chairman

March, 2004

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March 30, 2004

To Members of the California Legislature,

Based upon the requirements of the Public Safety Communications Act of 2002 [AB 2018 (Nakano); Chapter 1091, Statutes of 2002], the Public Safety Radio Strategic Planning Committee (PSRSPC) is required to report to the Legislature on progress of the Committee. The PSRSPC continues an ad hoc effort underway since 1994 to develop and implement an integrated statewide public safety communications system for state agencies that fosters shared use and interoperability with local and Federal public safety agencies. The Committee will expand that effort by examining the need for communications among various public safety disciplines at all levels of government.

Since September 11, 2001, the need for a statewide shared wireless public safety communications system has been elevated in importance, and the passage of AB 2018 provided the support to move forward with interoperability plans. The PSRSPC met initially in March 2003, to review past activities in this area and define the approach to achieve the requirements of the legislation. At that meeting, I was elected chair of the PSRSPC. The following member departments are also participating in this effort:

- The California Highway Patrol
- The Department of Corrections
- The Department of Fish and Game
- The Department of Forestry and Fire Protection
- The Department of General Services
- The Department of Justice
- The Department of Parks and Recreation
- The Department of Transportation
- The Department of Water Resources
- The Department of the Youth Authority
- The Emergency Medical Services Authority
- The Governor's Office of Emergency Services

Subsequently I convened a series of public meetings throughout the state beginning in July 2003. The purpose of these meetings--which included committee members, local, state and federal agencies, and consultant groups--was to highlight local interoperability initiatives, and allow the Committee and its working groups to gather information necessary to formalize interoperable communication models for the state.

Through the information gathered at these meetings, as well as consultation with operational and technical experts, the attached report on Committee activities was prepared. This report, which has the concurrence of the full PSRSPC, provides an extensive review of the current challenges facing public safety communication in the state and includes initial recommendations for prompt action. These include:

- Requiring an annual report from the PSRSPC;
- Providing support funding for the efforts of the PSRSPC; and
- Sustaining current system infrastructure, equipment and mountaintop repeater sites.

As stated in the report, the Committee will continue forth with its efforts to evaluate state radio communications requirements with public safety responsibilities, develop a program to modernize the state's public safety infrastructure and improve public safety communications interoperability.

The attached report, "Activities of the Public Safety Radio Strategic Planning Committee" is hereby submitted to the Legislature. Thank you for your continued support in this important effort.

Sincerely,

DALLAS JONES, Chair
Public Safety Radio Strategic Planning Committee

Executive Summary

The Legislature has recognized the need to develop an integrated network of systems to allow for interoperability and to meet the increased demands placed on the state's first responder agencies, and has created the Public Safety Radio Strategic Planning Committee (PSRSPC). The PSRSPC has been charged with the development of a program to address the needs of California's state departments.

The radio communications systems operated by California's state-level public safety "first responders" are in critical need of modernization, driven by technical obsolescence and by regulatory pressures to operate in an efficient manner in terms of spectrum use. The ten largest state departments operate radios systems that do not provide for interoperability among the departments. Many of these state systems do not provide interoperability with Federal and local first responders.

Notwithstanding the widespread acknowledgment of the critical role that radio communication plays in public safety, convincing policy makers to fund new comprehensive radio communications systems is a tremendous obstacle. The large amount of funding required, the difficulty of documenting a Return on Investment, the lack of physical visibility of this major public safety improvement to a city, county or state, and the lack of vocal advocates make it difficult for the case to improve public safety communications to compete with other civic priorities.

The need for continued and increased legislative and executive level support cannot be overemphasized. The scope, magnitude, and complexity of the core issues surrounding and impediments to improving California's public safety radio communications capability will require strong policy level leadership.

While this report is legislatively required to document the progress of the PSRSPC in organizing and starting to address the needs, it is envisioned that this will be the first of a series of annual reports to the Legislature to document the progress of the PSRSPC and to convey its recommendations.

This report provides a comprehensive summary of regulatory and technical challenges facing Public Safety communications, details the activity of the PSRSPC, and describes its plans for the coming year. The report identifies the other agencies and groups that support Public Safety communications in California. The report also identifies six issues that require attention. The report includes three recommendations for prompt action, a continuing mandate for the PSRSPC, funding for the PSRSPC process, and continued support to existing systems while the PSRSPC develops plans for modernization.

Public Safety Radio Strategic Planning Committee
Report To The Legislature

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1. Background

California's nearly 34,500,000 residents demand and deserve reliable public safety services -- law enforcement, fire protection, emergency medical service, and related governmental services. The Federal, state, and local agencies providing theses services require efficient wireless voice and data communications systems to receive the public's requests for service, to coordinate the delivery of those services, and to communicate life-safety information among responders. A sufficiently robust and secure public safety radio communications voice and data infrastructure supporting Federal, state and local agency communications is critical to California's future security, health, welfare and vibrancy. California's size (155,973 square miles), topography (ranging from Mt. Whitney's height of 14, 494' above sea level to Death Valley's depth of 282' below sea level), and diverse land use (ranging from urban high-density areas to remote, unpopulated mountains and deserts) create unique challenges in designing and providing Public Safety communications systems to meet the needs of the state's population in a cost-effective manner.

Under international treaty, use of the radio spectrum is administered at the Federal level. Congress has delegated the authority to administer the Federal use of spectrum to the National Telecommunications and Information Administration (NTIA) in the U.S. Department of Commerce. Congress has delegated regulatory authority for the non-Federal use of the radio spectrum to the Federal Communications Commission (FCC). Each of these agencies individually promulgates policies and regulations relating to spectrum use within their respective target audiences.

Public safety's two-way voice and data communications networks are included in the "Private Land Mobile Radio" section of the Code of Federal Regulations (47 CFR Part 90). The public safety services have been allocated operating space in twelve different segments of the radio spectrum (see Table 1). While many of the segments listed in Table 1 may be adjacent to each other, regulatory policies, and technical or operational parameters within the FCC and NTIA frameworks create the separations.

Over the last 70 years California's state and local public safety agencies have developed voice communications systems to meet their individual agency requirements, using technologies and spectrum available at the point in time each system was developed. As the population densities, topography, and land use vary in differing areas of the state, so have the communications systems of the state and local agencies providing the services varied in technology and portion of the public safety spectrum used.

With the exception of some countywide consolidated local networks and a few model regional shared use systems, each state and local public safety agency in California currently operates and maintains largely independent radio communications systems.

Table 1: Public Safety Radio Communications Bands

Reference Name	Frequency Band	Characteristics, State Users, Notes
"High Frequency"	2 – 25 MHz	"Long haul" disaster communications. Used by CDF, CalTrans, and OES for intra-state and inter-state coordination. *Not subject to FCC's "Refarming" initiatives or digital radio standards.*
"VHF – Lo 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 ("skip"). Used by CDC, CDF, CHP, CalTrans, and OES. *Not subject to FCC's "Refarming" initiatives or digital radio standards.*
"VHF – Mid Band"	72 – 76 MHz	Fixed (point – to – point) links. Used by CHP *Not subject to FCC's "Refarming" initiatives or digital radio standards.*
"VHF – Hi 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 in urban areas. Signals are generally not affected by dense foliage, but poor penetration into steel and masonry buildings. Used by CDC, CDF, CHP, CYA, DFG, DGS, DOJ, DPR, DWR, and OES. *Subject to FCC's "Refarming" initiatives*
"220 MHz Band"	220 – 222 MHz	Predominately for industrial users, but some public safety allocations. Lightly used in Calif., mostly by local agencies for non life-safety applications (e.g. public works). *Not subject to FCC's "refarming" initiatives or digital radio standards.*
"406 MHz Band"	406 – 420 MHz	Federal spectrum, NTIA-controlled; used by state departments (CDF, OES, EMSA) who are cooperators with Federal users (USFS, DHS, HHS). NTIA has mandated narrow bandwidths starting 01/01/2005
"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 CDC, CHP, numerous small departments, OES *Subject to FCC's "Refarming" initiatives*

(Continued next page)

Not included in this table are the Aviation frequencies (108-136 MHz) and the Marine Radio Frequencies (156 – 162 MHz) used by some public safety agencies to communicate with non-public safety entities.

Table 1: Public Safety Radio Communications Bands *(Continued)*

Reference Name	Frequency Band	Characteristics, State users, notes
"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 U.S. Characteristics same as UHF band. Channels 14, 16, and 20 in Los Angeles area Used by Los Angeles County and 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 *Subject to FCC's "Refarming" initiatives*
"700 MHz Band"	764 – 776 MHz 794 – 806 MHz	New band (established 1998) for Public Safety, reallocated from Television Broadcast. Provides shorter range than UHF bands, excellent penetration into some building materials, very poor penetration into other building materials. Requires more infrastructure (fixed sites) to provide coverage over a given area compared to VHF-High or UHF bands. Does not cover well in dense foliage. Voice and data allocations Portion allocated exclusively to States Portion allocated exclusively to Interoperability Not available in most areas of California until incumbent TV stations relocate (date uncertain) *All operations must use new digital technologies.*
"800 MHz Band"	806 – 821 MHz 851 – 866 MHz	Mixed Industrial, Cellular-like (Nextel), and Public Safety systems. Provides shorter range than UHF bands, excellent penetration into some building materials, 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, CDC, DGS, DPR, Legislature, and OES *While not subject to the "Refarming" initiatives or the digital radio standards, the "800" and "NPSPAC" bands are under discussion at FCC for realignment to correct interference issues.*
"NPSPAC Band"	821 – 824 MHz 866 – 869 MHz	Public Safety exclusive band, same coverage as 700 MHz and 800 MHz. Used by CalTrans, CDC CYA, DGS, DPR, and OES *While not subject to the "Refarming" initiatives or the digital radio standards, the "800" and "NPSPAC" bands are under discussion at FCC for realignment to correct interference issues*
"4.9 GHz Band"	4940 – 4990 MHz	New band (established in 2003) for Public Safety wireless data ("Wi-Fi") applications. Low power, small coverage areas (< ¾ mile), share data among PCs PDA,s etc..

The concept of having an integrated, statewide system has been around for decades in many state governments. In California, as departments have recognized the need for radio communications, systems have been developed

using a variety of funding sources, operating on spectrum that was available at the time each system was originally designed and equipment procured. This has resulted in a number of independent radio systems being developed by different state departments within the same one or two segments of the spectrum.

Over the last 30 years, some local agencies have been able to develop agency-owned in-vehicle mobile data communications networks, through grant funds and the assignment of spectrum available within the local area. While some state departments have data capabilities operating on common carrier networks, state departments have had neither the funds nor the spectrum available to develop a state-owned in-vehicle mobile data network.

In 1992, the FCC released the first of a series of regulatory proceedings aimed at increasing the number of discrete channels available for use in the existing Land Mobile Radio spectrum by decreasing the amount of spectrum ("bandwidth") occupied by a user's signal. This process has become known as "Refarming" in the communications industry. The initial proceeding, Docket 92-235, proposed a four-fold increase in the number of users occupying the VHF-High, UHF, and UHF-TV bands. A follow-on proceeding, Docket 99-87, set transition dates for existing communications systems to implement the newer, spectrum efficient technologies. While the exact dates for some milestones in these new regulations are being appealed, in general all legacy public safety radio systems in these bands must migrate to the narrower bandwidths in the next ten years. (Some discrete CDF, CHP, DWR and OES systems must convert by January 1, 2005 to comply with a separate FCC order establishing new interoperability channels).

Upon the release of Docket 92-235, a number of state departments realized the major impacts that the implementation of these new Federal policies would have on state department radio systems. In August 1993, the Director of the Department of General Services sent invitations to the Directors of the ten largest state departments with radio systems asking that they appoint a representative for a strategic planning effort aimed at developing a unified approach to migrate to narrower bandwidths. This effort commenced in 1994, and became the *"Public Safety Radio Strategic Planning Committee."*

With the assistance of a consultant, the *Committee* developed a Strategic Plan and a Cost Benefit Analysis for the procurement and implementation of a new voice *and data* communications infrastructure to support the requirements of state departments, and its operation and maintenance through a fifteen-year lifespan. This proposal was known as the "Public-safety Radio Integrated Systems Management" [PRISM] Project.

From the start, the Committee envisioned partnering with local agencies through either interconnecting systems at the backbone level, or by smaller local agencies subscribing to the state network and thereby enjoying the expanded coverage of a large area system. During the 2000-01 and 2001-02 fiscal years,

$3.4 million was approved to embark on the initial design and engineering work for a Phase 1 program in the ten-county Sacramento area. However, the absence of a mandate to actively develop these partnerships and the cost of the development and support of such a system clouded the issue. As a result, no further action was taken.

Following the terrorist attacks of September 11, 2001, the Legislature recognized that state departments require improved communications with each other and with federal and local counterparts, and took action. The *Public Safety Communication Act of 2002* (AB 2018 [Nakano], Chapter 1091, Statutes of 2002) ("Act") provides the legislative mandate for the PSRSPC, and provided legislative recognition that a coordinated, consolidated effort is required for cost effective modernization. The Legislature also recognized the need for state and local public safety departments to communicate across traditional disciplinary lines.

AB 1211 (Nakano, Chapter 314, Statutes of 2003) provides minor changes to the Act, including the addition of two additional organizations to the list of groups the PSRSPC is to consult with in the performance of its duties. Well in advance of AB 1211's effective date of January 1, 2004, the PSRSPC extended an invitation to the two new groups to join as of the date the Governor signed the bill (one of the new groups has appointed its liaison and is now participating in the effort).

It is the desire of the PSRSPC that this recently heightened level of interest will result in a strong commitment to improving California's public safety communication capability at all levels of government. While we have been a leader in some areas such as our mutual aid operations, investments in California's public safety communications planning and infrastructure have not been a priority, despite our being the world's 5th largest economy and home to numerous technological innovations. From a national perspective, California is not recognized as a front-runner with regards to state efforts to improve public safety communications. The *National Interoperability Scorecard,* an April 2003 federal report by the Public Safety Wireless Interoperability National Strategy Project (http://www.publicsafetywins.gov/), identified that California was one of thirty-three states still in the "developing" stage with respect to assessing interoperability with regard to six key criteria: shared systems development, coordination and partnerships, funding, spectrum, standards and technology, and security. Some of the fourteen states that are significantly ahead of the pack are Florida, Utah, Colorado, Pennsylvania, Ohio, and Michigan.

Despite the widespread acknowledgment of the critical role that radio communication plays in public safety, convincing policy makers to fund new comprehensive radio communications systems is a tremendous task. The amount of funding required, the lack of visibility of a communications system to a city, county or state, and the lack of vocal advocates make it difficult for the case to improve public safety communications to compete with other civic priorities.

2. PSRSPC Activities to Date

The PSRSPC has organized, convened a Working Group, and has met with local and regional public safety communications officials around the state to describe the efforts of the state, and to discuss local shared use and interoperability systems.

As previously discussed, prior to the codification of the PSRSPC activities most of the planning accomplished to date by the state departments has been without the benefit of federal and/or local public safety agency participation. Consequently this created many inaccurate perceptions regarding what the state departments were trying to accomplish. Since the codification of PSRSPC activities encouraged a broader interaction and planning effort, the initial meetings have been tremendously beneficial in *beginning* to dispel the inaccurate perceptions at the local level. Due to the magnitude and complexity of the endeavor, there is still a significant need to conduct additional outreach and education efforts in order to foster the kind of partnerships that will allow the resolution of the associated geopolitical, operational, funding and technical impediments.

2.1 First Meeting: March 18, 2003 (Sacramento, CA)

Acting Chief Information Officer J. Clark Kelso, and Office of Homeland Security Director George Vinson convened the first meeting of the PSRSPC on March 18, 2003. Dallas Jones, Director of the Office of Emergency Services, was elected to the position of Chair.

Following the first meeting, OES staff contacted the groups named in the Act to establish liaisons for the PSRSPC. A web presence for the PSRSPC was established on the OES Web site. This web site provides a repository for the announcements, minutes, and presentations made to the PSRSPC, and the products generated by the committee. OES staff also contacted representatives from known regional communications systems to invite them to learn about the PSRSPC effort, and to share their information with the Committee. A series of three information-gathering meetings was scheduled at various locations around the state.

2.2 Second Meeting: July 28, 2003 (Los Angeles, CA)

The first of the three information-gathering meetings was held in Los Angeles. Briefings were received from representatives of:

- San Diego County Regional Communications System
- Orange County consolidated communications system
- Interagency Communications Interoperability System (a network of small cities in Los Angeles County)

- Los Angeles Regional Tactical Communications System.

2.3 Third Meeting: July 31, 2003 (Oakland, CA)

The second of the three information-gathering meetings was held in Oakland. Briefings were received from representatives of:

- Santa Clara County "Bay Area Mutual Aid Coordination System"
- Golden Gate Safety Network

2.4 Fourth Meeting: August 5, 2003 (Rancho Cordova, CA)

The third of the three information-gathering meetings was held in Rancho Cordova. Briefings were received from representatives of:

- Sacramento Regional Communications System

2.5 Fifth Meeting: October 27, 2003 (Rancho Cordova, CA)

The fifth meeting of the PSRSPC was a joint meeting with the PSRSPC Working Group to define the tasks and work plan for the Working Group.

Note: Meeting agendas and presentation notes are available on the PSRSPC page of the OES web site (http://www.oes.ca.gov).

2.6 Working Group Activities

At the request of Chairman Jones, DGS Telecommunications staff reconvened the ad hoc *Committee* as the PSRSPC Working Group on September 24, 2003. This Working Group consists of the Telecommunications staff of the PSRSPC member departments involved in the PSRSPC process prior to the enactment of the Act. The Working Group has elected a chair, has met with the full PSRSPC to define tasks, and has started the process of developing the work products called for in the Act.

3. PSRSPC Work Plan for 2004

The PSRSPC's Legislative Charter as defined in GC §8592 (et seq.), specifies a number of activities for the Committee to undertake. 2003 has been a year of organization and information gathering. As the effort moves into 2004, the Committee and its Working Group will be undertaking the following efforts to fulfill the Charter:

- §8592.3(c): "The committee shall develop a model memorandum of understanding…"

The Department of General Services Telecommunications Division has undertaken lead responsibility for the development of the model Memorandum of Understanding, in consultation with the other PSRSPC member departments and consultative groups. Several existing local communications system governing documents have been collected. Many of these include limited agreements with state departments, which will provide examples of appropriate wording. DGS Telecommunications will work with DGS Legal staff to develop model paragraphs for future use.

- §8592.4: "The committee shall determine which agencies need new or upgraded communication equipment and shall establish a program for equipment purchase."

The Working Group will address this task in two phases. The first phase ("The committee shall determine which agencies need new or upgraded communication equipment…") has three parts:

a. Determining State Department Operational Requirements.

Section 1 of AB 1211 states:

> SECTION 1. It is the intent of the Legislature to build upon the work of the Public Safety Radio Strategic Planning Committee in its 1997 report, Partnering for the Future: A Strategic Plan for California's Radio Communications, and to encourage partnerships among local, state, and federal agencies to improve California's overall public safety radio capabilities.

Partnering For the Future was written without the benefit of a clear mandate to work with non-state public safety agencies to achieve shared use or interoperability. Some departments feel the recommendations in *Partnering For the Future* present an impediment to their operational requirements in the post-9/11 environment. The Working Group is in the process of examining the recommendations in *Partnering For the Future* in light of the changes of scope since that report was written. This review is scheduled to be completed in the first quarter of CY 2004, and will contribute to the definition of equipment requirements and the overall strategy for forward migration.

b. Continuing to Assess Local and Regional Capabilities

The Committee conducted three information-gathering meetings during 2003, where local and regional systems were invited to exchange information with the PSRSPC. The Working Group will continue proactively to solicit information from local and regional initiatives yet to be heard from; to provide the PSRSPC a high-level assessment of current and future trends in interoperability solutions for use in the development of the State's strategy; and to balance the need for interfacing with local and regional programs against the need to provide a framework to facilitate the statewide movement of resources.

Defining State Department Equipment Requirements

Since *Partnering For the Future:* was written, technology and operational changes have impacted the identified needs in the report. Current equipment requirements, in light of changed operational requirements, partnership opportunities, and changed industry standards will be developed to support the development of a program for equipment purchase.

The second phase ("… and shall establish a program for equipment purchase") will address both the existing needs of state departments, and the requirements to provide connections for shared use applications with local or regional systems. The Working Group envisions a variety of technical solutions will be required to achieve the goals. In the short term, the program may include recommendations for the limited procurement of additional equipment for existing systems to maintain their functionality until modernized systems become operational. In the longer term the program will include recommendations for modernization, enhanced shared use/interoperability, funding requirements, and an orderly transition plan. Some issues that will be the subject of preliminary recommendations are included in Section 5 of this report.

- Legislative intent: Encouragement of Partnerships

To meet the needs of public safety communications in the future, partnerships will be a necessity in developing interoperable or shared use infrastructures. In 2003, the FCC released a new section of spectrum for Public Safety use in the development of wireless high-speed data networks. Successful implementation of systems in this band will rely on collaboration between agencies at all levels, and between public safety Communications system professionals and Information Technology professionals. The Committee and the Working Group will be looking at these relationships in the development of the program for forward migration.

4. Other Partners in Interoperability and Spectrum Planning

Throughout this process, the Committee and its Working Group are actively interacting with the FCC's Regional Planning Committees (RPCs) and other Federal, state, or local entities with responsibilities for interoperability of the public safety spectrum as referenced in §8592.2 (a); the organizations and entities specified in §8592.3 (a); and other interested parties who have identified themselves to the Committee staff.

Included in the list of Federal, state and local entities are:

- Region 5 Regional Planning Committee (RPC) (Southern California), and
  Region 6 Regional Planning Committee (RPC) (Northern California)

  Originally chartered by the FCC in the late 1980s, California's two RPCs had responsibility for planning and administering the "National Plan" (or "NPSPAC") segment of the 800 MHz band. As an outgrowth of this effort, the RPCs have had limited involvement in the VHF-High and UHF Bands.

  In 1998 the FCC called on the RPCs to plan and administer the 'General Use' segment of the new Public Safety 700 MHz band, and again this year to manage the new 4.9 GHz band.

  FCC Region 5 covers the ten southern-most counties in the state. FCC Region 6 covers the remaining forty-eight counties.

- California Statewide Interoperability Executive Committee (CALSIEC)

  In a 2001 Report & Order allocating the 700 MHz Band to Public Safety, the FCC requested each state to establish a "State Interoperability Executive Committee" (SIEC) to administer the interoperability spectrum in that band on behalf of all of the public safety eligible entities within the state. The FCC's Public Safety National Coordinating Committee has recommended models and practices for the SIECs to manage the interoperability spectrum in each of the public safety bands.

  OES, in its role as the State Mutual Aid Radio Systems coordinator, has accepted the FCC's charter, and has established the California Statewide Interoperability Executive Committee to develop technical and operational practices for the spectrum designated nationally or statewide for 'Interoperability' or 'Mutual Aid' use. CALSIEC's goal is to develop and maintain a Statewide Interoperability Communications Plan as an annex to the California Emergency Plan.

- FIRESCOPE (FIrefighting RESources of California Organized for Potential Emergencies)

  A cooperative program between Federal, State and Local fire agencies, the FIRESCOPE program has promoted common resource typing, command structure, and fire ground communications interoperability standards for public safety personnel for more than thirty years. Members of the PSRSPC Working Group are also members of the FIRESCOPE structure, promoting information exchange between the two entities.

- California Military Department

  While the National Guard does not have a “first responder” role in day-to-day public safety, the Guard does support public safety during periods of crisis. The headquarters staff of the Adjutant General has been participating in the Working Group to ensure that provisions for integration of Guard elements into the public safety interoperability mix are in place.

- Adjacent States

  California’s neighboring states (Arizona, Nevada, and Oregon) operate Public Safety Communications systems that impact or are impacted by California’s systems. The PSRSPC Working Group will be maintaining contact with the public safety communications efforts in our adjacent states to promote commonality and interoperability for cross-border issues.

5. Other Related Issues

Successfully improving California's public safety radio communications capability will require legislative and executive level support and strong policy level leadership. It will be a daunting and complex task. The following are some of the near term issues that must be addressed. The PSRSPC stands ready to assist wherever it can.

5.1 Technology Selections

The PSRSPC is concerned about attempts to specify a certain technology standard in future equipment procurements prior to the development of a coordinated equipment procurement strategy, or without an adequate understanding of where (and when) a proposed technology is applicable.

For example, there is ongoing interest in the interoperability communications standards outlined in Suite 102 of the American National Standards Institute (ANSI) and the Telecommunications Industry Association (TIA). The ANSI Suite 102 standards apply to voice communications equipment only; and the ANSI Suite 102 standards are not applicable to operations in the High Frequency bands; VHF-Low band, VHF-Mid band, the 220 MHz band (which has a more restrictive emission mask), the Marine Radio Service (used for interface with water craft in the ports and rivers) within VHF-High band, or for data communications in the 700 MHz, 800 MHz, and 4.9 GHz Public Safety bands. In addition, the ANSI Suite 102 standard does not provide backwards compatibility to existing trunked radio systems used by some state departments.

If the ANSI Suite 102 standards were to be mandated for all future procurements, state departments would be prohibited from purchasing data communications equipment; replacing VHF-Mid band link equipment; obtaining 220 MHz Public Safety radio equipment to provide interoperability with local systems; or replacing damaged 800 MHz hand held radios without a major system upgrade prior to normally scheduled replacement, etc.

As another example, a number of equipment manufacturers are developing and marketing "tactical audio switching" devices designed to network two to twenty four radio systems in a given geographic area. The staff of some PSRSPC member departments have received inquires from Legislative members and staff suggesting a perception exists that procuring and installing these units is all that is required to achieve interoperability. While these devices have a useful purpose for the short-term interconnection of agencies with no common operating frequency, they tie up each radio system that is connected for the duration of the period of time the connection is in place. Depending on the circumstances, these "black boxes" satisfy some current basic interoperability needs on an interim basis, and some on a more permanent basis.

5.2 Sustaining Current Department Communications Systems

While the PSRSPC effort is underway to develop the next generation of voice and data communications for state departments, the existing state communications infrastructure is eroding.

- Many of the state departments have never been adequately funded for life-cycle system and equipment replacement. Additionally, as agencies have taken on additional programs or duties without a budget augmentation, some agencies had to redirect the funding previously allocated for replacement radio communications equipment to support the new programs.

- Over the last 20 years, engineering, maintenance, and equipment costs have increased, and the Legislature has required the state's remote communications facilities to become self-sufficient, resulting in an approximately three-fold increase of lease rates to state agencies. At the same time, operating expense budget lines in the state agencies have remained constant or have decreased, resulting in recurring shortfalls.

- Throughout the 1996 – 2002 time frame, some state departments' requests for funding augmentations to maintain or replace current equipment were denied, citing the (unfunded) PRISM program effort as meeting their needs.

These existing systems must continue to be supported to maintain the current levels of service while the PSRSPC develops its program for equipment modernization, and throughout the build-out of new communications systems developed under the program. Consistently providing adequate funding for the lifecycle replacement of existing systems infrastructure and end user equipment for all state public safety departments is critical to ensure the safety of the public.

5.3 Funding the PSRSPC Efforts

Throughout the PSRSPC effort to date, the member departments have been required to approach the budget process each cycle to augment individual department budgets, allowing the individual departments to transfer the funds to the DGS Telecommunications Service Revolving Fund to cover DGS staff time and consultant fees. As the state has no method for multiple departments to jointly submit one consolidated funding request, this process resulted in eleven departments submitting Budget Change Proposals through the individual department's budget analytical processes.

The PSRSPC member departments are currently funding their participation (and the participation of DGS) at the expense of other critical communications projects in these austere fiscal times. Lack of funds to support the PSRSPC effort will adversely affect the speed with which the Committee completes its tasks. Current and anticipated Federal grant funding guidelines

may offer some opportunities to assist the effort; but should not be relied upon to ensure forward progress.

5.4 Funding the Move Forward

Funding for the public safety communications infrastructure in California is becoming a critical issue at all levels. The state must find monies to maintain what is currently in place, and to move forward to meet upcoming Federal mandates. Federal grants will address only a small part of the cost of this critical infrastructure. Methodologies for supporting the effort, including initial and ongoing operator training, will have to be developed. The funding strategy needs to be a requirements driven, balanced approach that strongly encourages partnerships between Federal, state and local jurisdictions.

5.5 Spectrum Management

Improving California's public safety communications capability will require the availability of new spectrum as well as the more effective use of existing spectrum. Consistent with California's size and diversity, the scope of California's spectrum challenge is tremendous.

The FCC has handed the state an unprecedented allocation of 2.4 MHz of exclusive spectrum in the new 700 MHz band. To retain this allocation, the state must be actively using this spectrum to provide services covering a minimum of one-third of California's population or territory by January 1, 2012, and two-thirds by January 1, 2017. If these milestones are not met, the spectrum will revert to the General Use Pool, available for non-state public safety users to license and occupy. The PSRSPC will be working to have a plan for the use of this new spectrum in place, so as to allow procurement and installation to start once access is granted and funding is available. The administration should pursue the release of additional spectrum from the Federal Communications Commission, and if necessary Congress, to satisfy the requirements of public safety in California.

5.6 Emerging Public Safety Communications Technologies

The PSRSPC Chairman has asked the Working Group to expand its examination to include the emerging areas of wireless data communications and mobile applications of satellite technology.

- As previously mentioned, the FCC has allocated specific spectrum for wireless data transmission that is restricted for use by public safety agencies only. A new allocation in 2003 utilizes the technology most often associated with residential networking and computing "hot spots" at coffee shops and airports. When used for public safety purposes, it offers the possibility for cooperating agencies at an incident location to share data as well as talk to one another. It also allows for the use of remote devices to gather

information in hazardous situations. Although the commercial applications of this technology are showing significant development, public safety use will require special efforts to develop protocols and procedures that ensure rapid connectivity for authorized users and robust defense against intruders. The PSRSPC can play a vital role in providing model protocols and in publishing procedures for shared use of these systems as it will for traditional push-to-talk systems.

- California already operates its own dedicated public safety satellite communications system, the Operational Area Satellite Information System (OASIS). OASIS is now over 10 years old and, like the 'traditional' public safety radio networks, is based on what was then mature technology. Its components are aging and no longer capable of near state of the art performance.
  Many state departments and local jurisdictions operate satellite earth stations that range from telephones through full-featured data terminals. Unlike OASIS, these stations rely on commercial bandwidth that is shared with non-public safety users. The PSRSPC may work to develop shared use arrangements for satellite capability and include efforts to modernize OASIS in its overall plan for state agency modernization.

6. Recommendations

The need for continued and increased Legislative and executive level support cannot be overemphasized. The scope, magnitude, and complexity of the core issues surrounding and impediments to improving California's public safety radio communications capability will require strong policy level leadership.

With this in mind, the PSRSPC makes the following initial recommendations:

- Require an annual report from the PSRSPC.

  This report (January 1, 2004) is the only report the Legislature has required of the PSRSPC. The PSRSPC intends to file a report at least annually with the Legislature detailing the activities of the past year.

- Provide support funding for the efforts of the PSRSPC.

  Coordination with the Federal and Local partners requires the investment of staff time and travel support on the part of the PSRSPC partner departments. A revolving fund should be created for the departments to draw from in support of these efforts.

- Sustain current systems infrastructure, equipment, and mountaintop repeater sites.

  Many of the PSRSPC member departments have systems, equipment and facilities that are in dire need of upgrade or replacement. These systems / sites expand the coverage area of radio channels that the state licenses for use by public safety agencies for incident command activities. Many face "Refarming" requirements in the near future. Many others are old equipment long past design life and are no longer supported by manufacturers or aftermarket vendors. Past practice has buried these requirements deep in agency budgets.

7. Glossary

Terms and abbreviations used in this report:

Act	Public Safety Communication Act of 2002 (§8592 GC, et seq.) Statute establishing the Public Service Radio Strategic Planning Committee and providing its charter from the Legislature.
CALSIEC	California Statewide Interoperability Executive Committee. OES – administered committee under FCC charter to establish technical and operational standards for communications Interoperability. While the FCC charter is for the 700 MHz band, OES has consolidated the existing Mutual Aid Radio Systems advisory committees into CALSIEC to provide a comprehensive all-band interoperability focus. CALSIEC has been charged with developing a Statewide Interoperability Communications Plan covering the FCC and State designated Interoperability / Mutual Aid frequencies. *[See also "SIEC"]*
DHS	US Dept. of Homeland Security
FCC	Federal Communications Commission The FCC has responsibility for non-Federal uses of the radio spectrum in the United States.
NPSPAC	National Public Safety Planning Advisory Committee NPSPAC was a FCC-chartered Federal Advisory Committee during the late 1980s. Its purpose was to make recommendations to the FCC on policies and draft regulations for the use of the 821-824 / 866-869 MHz spectrum by Public Safety. NPSPAC recommended the creation of fifty-five Regional Planning Committees throughout the U.S., and the adoption of five Interoperability Channels on an international basis (Canada – US – Mexico).
NTIA	National Telecommunications and Information Administration The NTIA is responsible for the administration of Federal uses of the radio spectrum.

OASIS — Operational Area Satellite Information System
OASIS is the restricted access satellite system that California operates to connect state and local emergency operations centers and incident sites providing basic telephone and very limited data service.

PRISM — Public-safety Radio Integrated System Management
The proposed consolidated state department communications system envisioned as operating in the VHF-High and 700MHz frequency bands initiated by the 1997 report "*Partnering for the Future: A Strategic Plan for California's Radio Communications"* and synopsized in the 1999 report *"Partnering for the Future: Cost Benefit Analysis for California's Public Safety Radio Communications Project".*

PSRSPC — Public Safety Radio Strategic Planning Committee
The committee created by the Legislature to develop a program for modernization of state public safety radio systems and to develop and support interoperability and shared use. The author of this report. This title previously referred to the ad hoc committee of state departments examining modernization and integration of state radio systems.

Refarming — The FCC's process of increasing the efficiency of the Land Mobile Radio Spectrum (including Public Safety) through the reduction of occupied bandwidth of the individual signals. The FCC is implementing this effort through a series of regulatory proceedings.

RPC — Regional Planning Committee.
FCC – established body for the purpose of planning Public Safety spectrum allocation and utilization. There are fifty-five RPCs in the United States, two in California.

SIEC — State Interoperability Executive Committee.
In 2001, the FCC established this function to manage the 2.6 MHz of Interoperability spectrum in the 700 MHz band. If the function were not accepted by a state, then the function would revert to the RPCs. The FCC was advised that OES would administer the SIEC function in California. *[See also "CALSIEC"]*