San Francisco Bay Area
Regional Emergency Coordination Plan

RECP Communications Subsidiary Plan

Prepared by

Governor's Office of Emergency Services
Cities of Oakland, San Francisco, and San Jose
Counties of Alameda, Contra Costa, Marin, Napa, San Mateo
Santa Clara, Santa Cruz, Solano, and Sonoma

With Support from

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Foreword

The San Francisco Bay Area is highly vulnerable to both natural hazards and human-caused disasters, such as earthquakes, fires, industrial accidents, and terrorist incidents. Because the Bay Area is home to nearly seven million residents, major components of the U.S. economy, and vital air, sea, and ground transportation links, the effects of a significant disaster in the Bay Area would extend throughout the State of California and across the nation. Given this vulnerability, the State of California and local governments throughout the Bay Area have made significant investments in the planning and resources necessary to respond to natural and human-caused emergencies and disasters. Such events, however, will likely exceed the emergency response capabilities of individual jurisdictions in the Bay Area, and a multijurisdictional regional response will be necessary. Moreover, the nationwide effort to improve preparedness at all levels of government, as embodied in the National Preparedness Goal, emphasizes the importance of regional response. Consequently, the State of California Governor's Office of Emergency Services and its local government partners developed the Bay Area Regional Emergency Coordination Plan to provide a framework for collaboration and coordination during regional events.

The Regional Emergency Coordination Plan (RECP) was prepared in accordance with national and state emergency management systems and plans — in particular, the National Incident Management System, the Standardized Emergency Management System, the Master Mutual Aid Agreement, the California State Emergency Plan, and relevant mutual aid plans. The Regional Emergency Coordination Plan does not supersede or exclude any of these concepts or plans; rather, it places them in the context of a response to an event in the Bay Area during which time the Regional Emergency Operations Center is activated.

The Regional Emergency Coordination Plan builds on California's existing Standardized Emergency Management System, through better definition of regional components of that system, including coordination across disciplines and levels of government, resource sharing, and regional decision-making. It also incorporates elements that previously have not been addressed in detail at the regional level under the Standardized Emergency Management System. A suite of documents, the Regional Emergency Coordination Plan comprises a Base Plan and the following nine subsidiary plans that address detailed elements for specific disciplines and operational activities:

- RECP Care and Shelter Subsidiary Plan
- RECP Communications Subsidiary Plan
- RECP Fire and Rescue Subsidiary Plan

- RECP Hazardous Materials Subsidiary Plan
- RECP Law Enforcement and Coroner/Medical Examiner Subsidiary Plan
- RECP Logistics Subsidiary Plan
- RECP Medical and Health Subsidiary Plan
- RECP Recovery Subsidiary Plan
- RECP Transportation Subsidiary Plan.

Development of the Regional Emergency Coordination Plan was a collaborative effort among the Governor's Office of Emergency Services, Coastal Region; the cities of Oakland, San Francisco, and San Jose; and the Operational Area lead agencies for the ten Bay Area counties, as described in Section 1. Over two hundred other local, regional, state, Federal, and non-governmental organizations also participated in the process to develop the plan and its subsidiary components.

Preparation of the Regional Emergency Coordination Plan was supported by a grant from the U.S. Department of Homeland Security Urban Area Security Initiative. This program provides metropolitan areas with funding for regional planning, equipment, training, and exercises to prepare for critical incident response.

The Governor's Office of Emergency Services (OES), Coastal Region will maintain the Regional Emergency Coordination Plan and is responsible for all future revisions and modifications. Additional plans and tools that are developed at the regional level, including products using future U.S. Department of Homeland Security grants, will be incorporated into the Regional Emergency Coordination Plan, as appropriate.

A note about a special design element in the suite of documents that comprise the Bay Area Regional Emergency Coordination Plan: the Base Plan and subsidiary plans each has a corresponding icon, which in the electronic version of each document serves as a hyperlink. Clicking on an icon along the right- and left-hand columns on each page will bring the reader directly to that plan.

Acknowledgments

The RECP Communications Subsidiary Plan is a product of the collaborative efforts of the following entities:

- 911 Dispatch Center
- Alameda County Emergency Medical Services
- Alameda County General Services Administration, Communications Department
- Alameda County Regional Communication Center
- Alameda County Sheriff's Office
- Berkeley Fire Department
- Berkeley Police Department
- Campbell Police Department
- Contra Costa County Sheriff's Office, Civil Unit
- Contra Costa County Communications Department
- Contra Costa County Department of Information Technology
- Contra Costa County Fire Department
- Dixon Police Department
- Fremont Police Department
- Golden Gate Safety Network
- Governor's Office of Emergency Services, Communications and Technology Development Branch
- Governor's Office of Emergency Services Law Enforcement Branch
- Hayward Police Department
- Livermore/Pleasanton Fire Department
- Marin County, Office of Emergency Services
- Marin County Sheriff's Office, Communications Division
- Napa County Sheriff's Department, Communications Division
- Oakland Fire Department, Communications Division
- Oakland Fire Department, Office of Emergency Services
- Oakland Information Technology Division
- Oakland Police Department, Communications Division
- Palo Alto Police Department

- Richmond Police Department, West County Consortium
- San Francisco Department of Emergency Management
- San Francisco Department of Telecommunications and Information Services
- San Francisco Metropolitan Transportation Authority
- San Francisco Sheriff's Department
- San Jose Fire Department
- San Jose Office of Emergency Services, Radio Amateur Civil Services
- San Jose Police Department
- San Leandro Police Department
- San Mateo County Information Services Department
- San Mateo County Sheriff's Office, Office of Emergency Services and Homeland Security
- Santa Clara County Communications Department
- Santa Clara County Fire Department
- Santa Clara County Office of Emergency Services
- Santa Clara Police Department
- Santa Cruz County Office of Emergency Services
- Santa Cruz County Information Services Department
- Silicon Valley Regional Interoperability Project
- Solano County Department of Information Technology
- Sonoma County Information Systems Department, Technical Services Division
- Sonoma County Sheriff's Office
- Sonoma County Information System Department
- Urban Area Security Initiative Interoperability Committee
- U.S. Department of Homeland Security, Interoperable Communications Technical Assistance Program

URS Corporation prepared the Communications Subsidiary Plan with consultant support from Cubic Applications, Inc. and Mr. Terry Gitlin; and stakeholder management support from CirclePoint.

Record of Changes

Date	Agency	Comments
March 2008	OES Coastal Region	Final

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Section 1 | RECP Communications Subsidiary Plan

Introduction

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Section 1 – Introduction

PURPOSE

The Regional Emergency Coordination Plan (RECP) provides an all hazards framework for collaboration among responsible entities and coordination during emergency events in the San Francisco Bay Area. The RECP Communications Subsidiary Plan provides a framework for coordination between the OES in the Regional Emergency Operations Center (REOC), the sixteen Operational Areas within the OES Coastal Region,[1] and the State Operations Center (SOC). This plan also provides an overview of emergency communication requirements and the systems that support communications within the region.

The RECP does not replace existing emergency response systems. Rather, it builds on the Standardized Emergency Management System (SEMS) and the California State Emergency Plan to provide methods for cooperation among Operational Areas and OES Coastal Region. The RECP complies with the requirements of the National Incident Management System (NIMS), and is consistent with the National Preparedness Goal.

Descriptions of communications systems, equipment, procedures, and organizations are provided in Appendix B (Communications Systems), Appendix C (Channel Plans), and Appendix F (Communications Background). This information is provided for users who are unfamiliar with the systems described in this plan.

SCOPE AND APPLICABILITY

General Applicability

The RECP Communications Subsidiary Plan describes how emergency communications systems, strategies, tactics, and procedures supplement day-to-day communications systems to meet communications requirements during regional emergencies and disasters.

The RECP does not supersede or exclude any existing plans; rather, it places relevant plans in the context of a response to an event within the region, during which time the REOC is activated. More specifically, it does not address, or supersede, local procedures for:

- Tactical operations and incident command
- Local response activities
- Established mutual aid relationships and procedures at the local level

The communications systems described herein are limited to those

[1] OES Coastal Region is an administrative region under OES that incorporates, and is responsible for, sixteen counties in and around the San Francisco Bay Area.

which are in effect in the Operational Areas, and at the regional and state levels. The description of incident communications shows the context in which regional communications systems support response to an emergency or disaster of regional magnitude. It does not describe day-to-day communications among these entities. In addition, the plan is not tactical; rather, it focuses on regional support and coordination.

Geographic Extent

The RECP was developed for OES Coastal Region,[2] which encompasses the following sixteen counties as illustrated on Figure 1. Ten of these counties (marked with *) supported the development of the RECP through collaboration with OES Coastal Region and the three Bay Area Urban Area Security Initiative cities (Oakland, San Francisco, and San Jose).

- Alameda*
- Contra Costa*
- Del Norte
- Humboldt
- Lake
- Marin*
- Mendocino
- Monterey
- Napa*
- San Benito
- San Francisco*
- San Mateo*
- Santa Clara*
- Santa Cruz*
- Solano*
- Sonoma*

Key Concepts

The RECP Communications Plan incorporates the concepts described below.

Incident Communications

The number of command and tactical networks required during any response to an incident depends on the nature, size, and complexity of an incident, and the response organizational structure. The Incident Communications Unit Leader (COML) is responsible for establishing, maintaining, and documenting an Incident Communications Plan.

The RECP Communications Subsidiary Plan does not provide guidance for establishing or maintaining incident communications. Rather, regional entities are responsible for understanding incident communications plans as they are established to provide for effective communication during responses to incidents.

Resource Requests

Operational Area requests for resources are sent to the REOC or to one of five mutual aid systems:

- Emergency Services

[2] For the Fire/Rescue and Law Enforcement/Coroner mutual aid systems, this administrative region is referred to as Region II. For both systems, it includes the same counties. This designation is used when referring to these mutual aid systems later in this document.

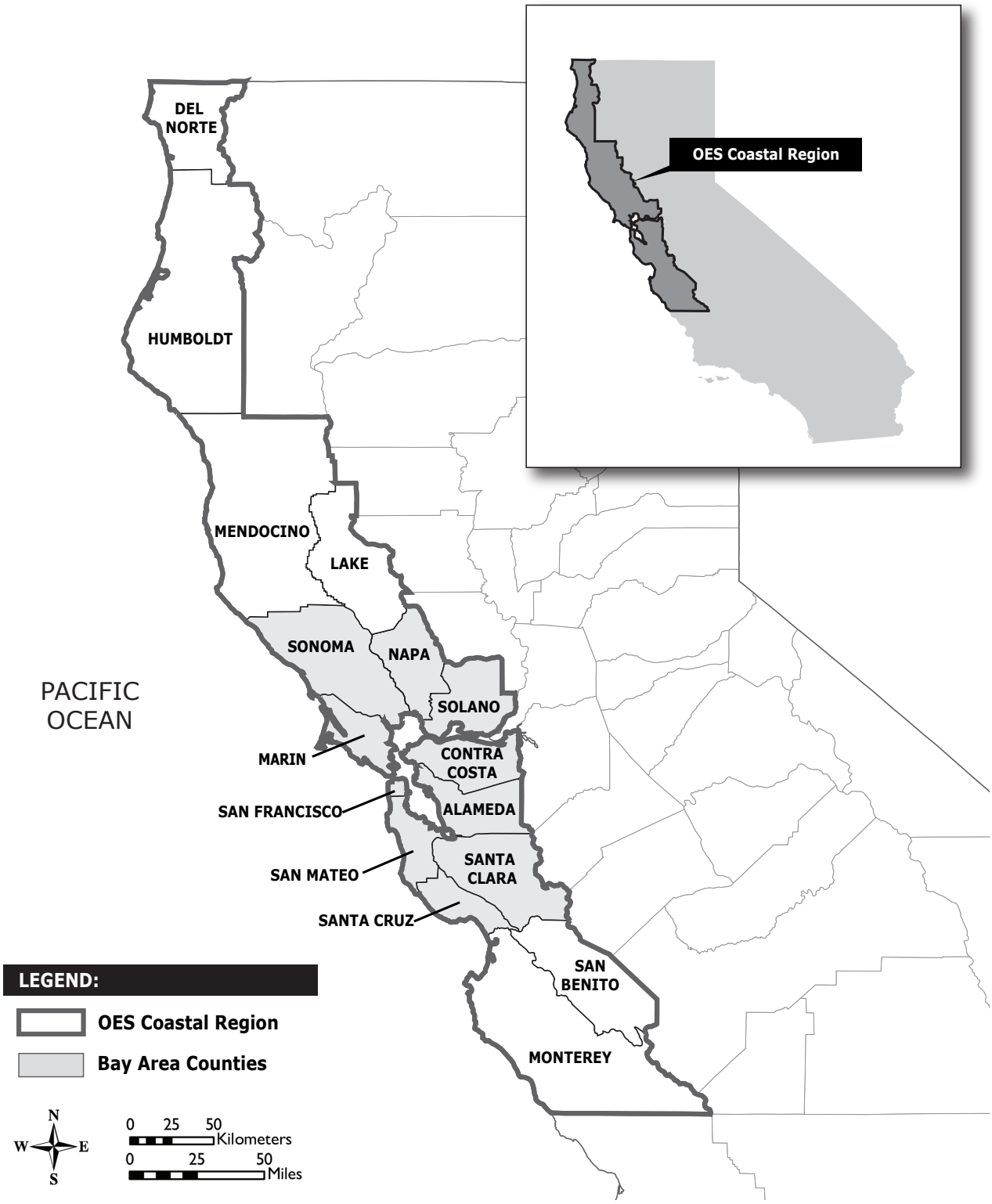

Figure 1
OES Coastal Region and Bay Area Counties

- Fire and Rescue
- Law Enforcement
- Coroner/Medical Examiner
- Medical and Health
- Transportation.

A coordinator for each mutual aid system attempts to fill the request at the same level at which it was received. If a Mutual Aid Coordinator is unable to fill the resource, it is passed to the next higher organizational level (also referred to herein as the "parent" organization). Mutual Aid Coordinators must then notify the resource requestor of the resource requests that are to be filled and when they will arrive.

The REOC supports communications between the Operational Areas and regional coordinators, and between the regional and state coordinators, for the receipt and dispatch of resource orders. The regional coordinators also provide resource order information to and from state agencies that have dispatch authority over state assets within the region.

Resource Dispatch

The dispatch of resources entails communications for notifying the requestor that the resources are forthcoming, relaying information regarding the status of the resources during the transport period, supporting travel communications, and ensuring communications transition to the Incident Command System (ICS). These communications occur sequentially for each resource assigned. At any stage during the dispatch of resources, information about the resource request may be communicated to the resource provider (it is best that the information be provided as early as possible). Dispatch notification to execute the resource order flows from the resource provider to the individual resource (personnel/teams/equipment). Dispatch notification may occur well before the resource actually departs for the incident.

The resource transitions from travel to tactical communications at the incident site in accordance with directions from the COML. In order to achieve effective communication, tactical communications may require the use of an interoperability solution, including radio cache, shared channel, patch, or shared system (see Appendix I).

The RECP Communications Subsidiary Plan describes travel communications within the region for resources that are not covered by an agency's own communications system. Dispatch notification communications between the resource provider's dispatch center and the individual resource (personnel/teams/equipment) is the responsibility of the agency providing the resource.

Situational Awareness

For emergency response to be effective, an Incident Commander must have a good understanding of the situation. Typically located at an Incident Command Post close to the incident, the Incident Commander directs and establishes emergency response objectives and identifies the resources required to achieve the objectives. Communications systems are further required for the following:

- The incident that is larger or more technically complex than the Incident Commander can perceive, in which case he or she requires information from various sources to supplement his or her first-hand knowledge
- All levels of government must provide effective risk communication to the public
- Planners establishing objectives at levels above the incident site require the same detailed understanding of the situation as does the Incident Commander.

The RECP Communications Subsidiary Plan describes the communication paths used to transmit information about an emergency situation. The REOC will not provide more analysis than a summary of regional events. The region supports public risk communication only to the extent that it provides a common operational picture by disseminating situational awareness information. However, regional emergency communications systems may be used to pass public information from the state to Operational Areas in the event that communication directly between the state and Operational Areas is disabled.

Regional Action Planning

Action planning is primarily executed at the incident level. However, conditions may compel authorities to conduct action planning at parent levels. This can occur at the local, Operational Area, regional, state, or Federal level, as appropriate, and as the affected area dictates. The RECP Communications Subsidiary Plan describes communications methods when regional action planning is undertaken.

Federal Interoperability Guidance

Communications with Federal entities is generally the purview of the state. The exception is field level interaction with Federal entities that have an initial response authority. The RECP Communications Subsidiary Plan provides guidance for local governments in the Bay Area to establish and maintain communications with Federal entities that have initial response authority.

AUTHORITIES, REQUIREMENTS, AND REGULATIONS

Refer to the RECP Base Plan for generally applicable authorities,

guidance, and regulations. In addition, the following apply to the RECP Communications Subsidiary Plan.

State of California

- California On-Scene Emergency Coordination Radio Plan. May 2004.
- California Statewide Interoperability Executive Committee Strategic Communications Interoperable Communications Plan (currently under development).
- Region 6 (Northern California) 800 Megahertz (MHz) Regional Plan.
- OES Operations Bulletin #28, White Fire Frequencies – Radio Communications.
- OES Auxiliary Communications Service Plan. November 2004.
- California Law Enforcement Mutual Aid Radio System (CLEMARS) Plan. November 2003.
- California Law Enforcement Radio System (CLERS) Plan. May 1989.
- California Law Enforcement Radio System Manual. May 1989.
- California Emergency Services Radio System (CESRS) Plan and Licensing Guide. July 1990.

Federal Government

- Code of Federal Regulations (CFR) Title 47, Part 90 – Private Land Mobile Radio Services.
- 47 CFR, Part 97 – Amateur Radio Service.
- 47 CFR, Part 202 – National Security and Emergency Preparedness Planning and Execution.
- Manual of Regulations and Procedures for Federal Radio Frequency Management.

OBJECTIVES

The RECP Communications Subsidiary Plan defines the following:

- Emergency communications systems used within the Bay Area during a response to an event within the region; communications activities include:
  - Resource requests
  - Resource dispatch
  - Transmittal of situational information
  - Regional action planning
- Communications systems that can potentially support requirements in the Bay Area during a regional event
- Communication system components to meet emergency communications requirements, including communications degradation procedures
- Protocols for communicating resource requests and the dispatch of regional OES assets among the following entities:
  - Operational Area resource coordinators and administrators
  - OES Regional Administrator and regional mutual aid coordinators
  - OES Director and mutual aid coordinators
  - OES facilities established at the incident site
- Protocols for providing travel communications of dispatched assets to the requesting Operational Area
- Protocols for executing effective transition of communications to the incident.

PLAN DEVELOPMENT AND MAINTENANCE

OES Coastal Region is responsible for the maintenance, revision, and distribution of the RECP and its subsidiary plans. In coordination with the Mutual Aid Regional Advisory Committee, OES Coastal Region will assess the need for revisions annually. Refer to the RECP Base Plan for further details regarding plan development and maintenance.

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Section 2 | RECP Communications Subsidiary Plan

Planning Assumptions and Considerations

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Section 2 – Planning Assumptions and Considerations

The RECP Communications Subsidiary Plan is based on the following development and implementation assumptions:

- Incident personnel will use a documented Tactical Interoperable Communications Plan or follow an approved Incident Communications Plan as developed by a COML within the incident communications guidelines as established in NIMS
- City and county jurisdictions have addressed indigenous communications systems failures in documented degradation plans
- The State Regional Communications Coordinator will conduct linkup operations with the appropriate individuals at the Incident Command Post and perform an initial communications needs assessment
- Sufficient amateur radio volunteers with adequate equipment will be available to support regional secondary and tertiary communications requirements
- Base stations, repeaters, fixed control stations, and mobile radios (as defined by 47 CFR) support regional communications; portable radios support incident communications only
- State agencies will communicate resource orders from their respective dispatch authorities to the individual resource providers
- Operational Area coordinators will communicate resource orders to their respective county and local agencies
- Emergency Services Coordinators at the Operational Area, regional, and state levels will be located at their respective Emergency Operations Centers (EOCs) during an incident
- Law Enforcement Mutual Aid Coordinators at the Operational Area and regional levels will be located at their respective Sheriff's offices during an incident
- The State Law Enforcement Mutual Aid Coordinator will be located at the SOC during an incident
- Medical and Health Mutual Aid Coordinators at the Operational Area, regional, and state levels will be located at their respective EOCs during an incident
- Bay Area transportation network coordinators will be located at their respective operations centers during an incident

Bay Area Rapid Transit (BART) representatives at the Metropolitan Transportation Commission and the REOC will have access to the BART 800 MHz Land Mobile Radio (LMR) system.

Section 3 | RECP Communications Subsidiary Plan

Roles and Responsibilities

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Section 3 – Roles and Responsibilities

This section of the RECP Communications Subsidiary Plan outlines the roles and responsibilities of operational area, regional, state, and Federal agencies and personnel involved in emergency response activities during a regional emergency or disaster.

ALL ENTITIES

- Maintain radio discipline in accordance with the RECP Communications Subsidiary Plan and other relevant radio system plans.
- Operate in accordance with the roles and regulations of the Federal Communications Commission (FCC) or National Telecommunications and Information Administration (NTIA), as appropriate, and any other requirements as established by the licensee of frequencies that are being used.

OPERATIONAL AREA LEVEL

- Ensure the provision of reliable communication between the Operational Area and EOCs within the Operational Area, and between the Operational Area and the REOC.
- Make communications assets available to support major events.
- Staff disaster communications systems.
- Advise the OES Regional Administrator of a local emergency proclamation through the OES Regional Duty Officer.
- Provide OES with estimates of the severity and extent of damage to communications systems resulting from an emergency or disaster.
- Provide the REOC with anticipated or actual mutual aid requirements.
- Process mutual aid requests (resource orders) within the mutual aid system in which they were received.

REGIONAL LEVEL

- Establish formal activation time and initial staffing pattern for the REOC Communications Unit and communications coordination functions.
- Establish and maintain communication links between Operational Area EOCs, the REOC, and the SOC to support regional event notification, resource ordering, resource dispatch, situational awareness reporting, and regional action planning.
- Identify available state communications resources in the region and request such resources in response to appropriate resource orders.

- Forward communications resource requests that cannot be filled at the regional level to the SOC.
- Adjudicate the use of state channel plans and systems by Operational Areas when conflicts arise.
- Request county and state agencies to monitor travel communications channels and relay resource travel issues to the relevant Operations Section coordinators.

STATE LEVEL

- Provide reliable communications between state agency dispatch authorities and individual resources (personnel, teams, and equipment).
- Make communications assets available to support major events.
- Appoint a state telecommunications officer to coordinate with the Federal Emergency Communications Coordinator (FECC).
- Establish formal activation time and initial staffing pattern for the SOC.

FEDERAL LEVEL

- Appoint the National Communications System Regional Manager as the FECC upon activation of Emergency Support Function #2 – Communications.
- Identify operational telecommunications assets available for use within the affected area.
- Identify telecommunications assets not within an affected area that may be brought physically or employed electronically to support an affected area.
- Identify actual and planned actions of commercial telecommunications companies for the recovery and reconstruction of facilities.
- Assess the need for support from the telecommunications industry and ensure such support is available as needed.
- Provide radio communications systems for support of firefighters, law enforcement officers, and incident response operations.
- Provide communications support to state and local officials to assist in disseminating warnings to the public concerning risks and hazards.
- Serve as the on-scene frequency manager and coordinate the assignment and use of all Federal radio frequencies at the incident site in accordance with NTIA's spectrum rules and regulations.

- Coordinate with Federal, state, and local agencies, major voluntary relief organizations and other emergency service functions involved with incident recovery to determine their telecommunications implementations, capabilities, and requirements.

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Section 4 | RECP Communications Subsidiary Plan

Concept of Operations

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Section 4 – Concept of Operations

This section of the RECP Communications Subsidiary Plan defines the concepts and methods of coordination and communication of emergencies and disasters; and identifies regional response communications systems.

RESOURCE REQUESTS

Resource requests are elevated from the Operational Area level to the regional level, and, if necessary, to the state level using the established mutual aid system in which the request originated. The systems listed in the RECP Communications Subsidiary Plan are used to communicate resource requests.

RESOURCE DISPATCH

Dispatch agencies are responsible for communicating dispatch notification information using agency systems. The REOC Communications Branch Director will request that mobile radio system channels be monitored between state and county agencies to provide coverage during the transport of resources. The COML is responsible for establishing and maintaining incident communications. To support the transition from travel to incident communications, assets are assigned a communications transition method in accordance with a Tactical Interoperable Communications Plan, ICS-204 form, an ICS-205 form, or other direction from the COML.

SITUATIONAL REPORTING

Regional situation reports are primarily passed among Operational Areas, the REOC, the SOC, and facilities that support action planning at the Operational Area and regional levels. Formal situation reports among the EOCs are supplemented by periodic activity reports from city, county, and state agencies. These reports are created in accordance with the operational period established by the report originator, and are forwarded to the parent SEMS-level EOC. Each EOC also forwards the reports received from lower SEMS-level EOCs and agency activity reports when they are received.

REGIONAL ACTION PLANNING

Regional action planning occurs at the REOC with inputs from Operational Area EOCs. Because some action planning discussions occur before decisions are made, the assigned communications method must have some level of security. Unencrypted, omni-directional transmissions should be avoided.

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Section 5 | RECP Communications Subsidiary Plan

Regional Response Operations

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Section 5 – Regional Response Operations

This section of the RECP Communications Subsidiary Plan provides an outline of the various notification systems used for the communication process during emergencies and disasters and discusses how these systems provide methods for dispatching resource requests.

NOTIFICATIONS AND WARNINGS

The State Warning Center at OES Headquarters in Sacramento may transmit warnings to local police and sheriffs' departments, Operational Area EOCs, the REOC, the SOC, and state agency department operations centers via the following:

- Operational Area Satellite Information System (OASIS)
- California Law Enforcement Telecommunications System (CLETS)
- California Law Enforcement Radio System (CLERS)
- The California Warning Alert System (CALWAS), which is a component of the National Warning Alert System — a network for transmitting and receiving emergency information to Federal, state, and local agencies
- Telephone, cellphone, or pager.

The State Warning Center may receive warnings from the:

- National Weather Service, for severe weather and flooding
- Federal/State Joint Flood Operations Center, located at the state Department of Water Resources in Sacramento, for flooding
- National Earthquake Information Center, managed by the U.S. Geological Survey, for earthquakes
- Seismological laboratories at the University of California, Berkeley and the California Institute of Technology in Pasadena, for earthquakes
- Pacific Tsunami Warning Center in Honolulu, Hawaii, and the Alaska Tsunami Warning Center for tsunamis
- Nuclear power plants, via CLETS, NAWAS, or OASIS for nuclear power plant emergencies and accidents; although the Bay Area has no nuclear power plants, the region may respond to support other regions in the event of a nuclear power plant emergency warning
- Emergency responders at the scene of the event
- Fire and public safety agencies receiving 911 calls.

Information about a threat of terrorism is conveyed to Federal, state, and local law enforcement officials and emergency managers through the:

- Homeland Security Information Network, which the U.S. Department of Homeland Security manages
- State Terrorism Threat Assessment Center and Regional Terrorism Threat Assessment Centers in northern and southern California
- Regional Terrorism Early Warning Groups.

Law enforcement sensitive information regarding terrorist threats is shared only within the intelligence network. Non-sensitive information that would affect a public safety response is transmitted from law enforcement agencies to the appropriate response agency or to an EOC.

Local Emergency Proclamation

If a local emergency is proclaimed and the Operational Area EOC is activated, the Operational Area notifies the REOC Duty Officer via telephone or OASIS. The REOC Duty Officer notifies the SOC and then other Operational Area EOCs within the region.

Local Event Notification

Any agency may use any communication method with any system and any frequency to notify any party of a state of distress. Distress messages from Operational Areas should first be directed to the REOC using any REOC communications systems, and then to other Operational Areas and city EOCs. Operational Areas that receive distress messages will maintain communication with the distressed Operational Area on the same system until other communications methods have been established. An Operational Area that receives a distress message from a local jurisdiction will relay that information to the REOC via any communication system other than that used to communicate with the distressed jurisdiction.

The REOC will contact Operational Area EOCs in any event perceived by REOC staff as likely to cause a local declaration of emergency. REOC staff will only validate that communication systems are operable and that they are able to contact the respective EOCs in the region. REOC staff will use the Emergency Management Mutual Aid resource ordering communication systems to contact the Operational Areas. The REOC will use all available communication systems to contact Operational Area EOCs that could not be contacted by resource ordering communication systems.

The Emergency Operations Centers Tactical Call Signs are listed in Appendix D.

RESOURCE REQUESTS

Resource requests are executed within the five mutual aid systems listed in Section 1. Resource ordering includes notification to the requesting authority that a resource has been assigned.

Emergency Services Mutual Aid

Figure 2 illustrates the communications paths for Emergency Services Mutual Aid. The REOC passes resource requests from Operational Area emergency management staff in their respective EOCs using the following primary and secondary systems:

- Response Information Management System (RIMS) via the Internet or OASIS
- Voice or fax via the Public Switched Telephone Network (PSTN)
- Voice via the OASIS
- Voice via the Auxiliary Communications Service (ACS)
- Voice via California Emergency Services Radio System (CESRS).

The REOC forwards resource requests that cannot be filled at the regional level to the SOC using RIMS over the PSTN. Secondary systems include:

- RIMS via the Internet or OASIS
- Voice or fax via PSTN
- Voice via OASIS
- Voice via OES high frequency (HF) radio
- Voice via ACS.

Fire and Rescue Mutual Aid

Figure 3 illustrates the communications paths for Fire and Rescue Mutual Aid. The Region II Fire and Rescue Mutual Aid Coordinator receives fire and rescue mutual aid resource requests from Operational Area Fire and Rescue Mutual Aid coordinators using the following systems and secondary systems:

- Resource Ordering and Status System (ROSS) via the Internet
- ROSS via OASIS
- Voice via PSTN
- Fax via PSTN
- Voice via the OES Fire Radio System
- Voice via commercial satellite phone
- Voice via ACS.

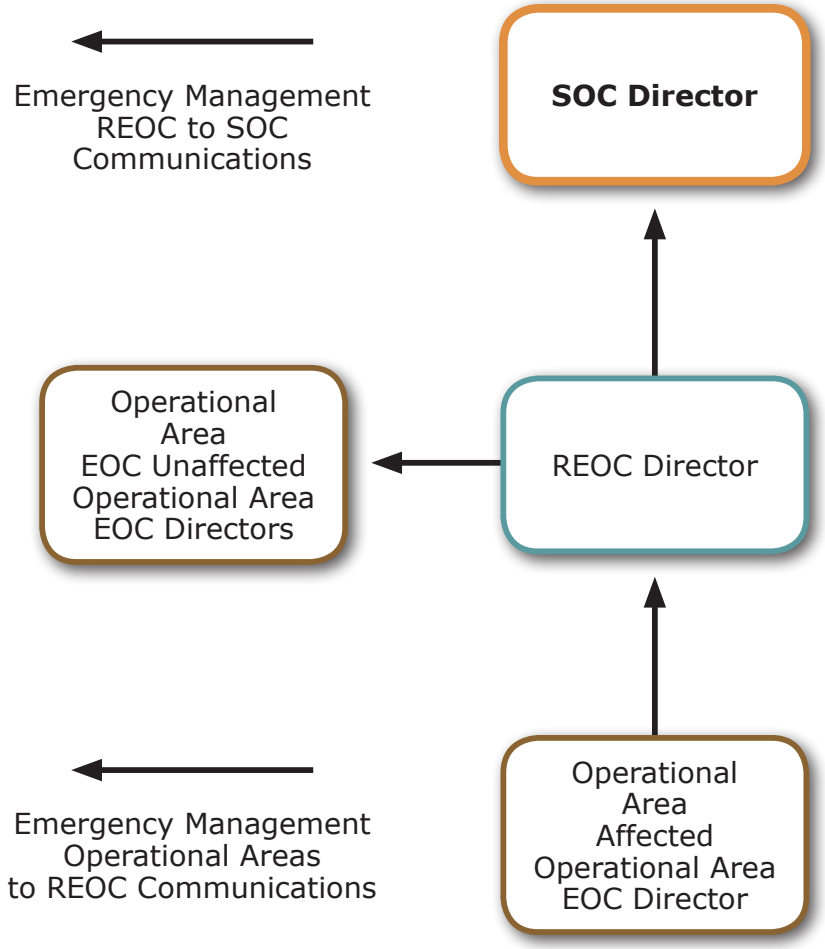

Figure 2
Emergency Services Mutual Aid System
Resource Request Path

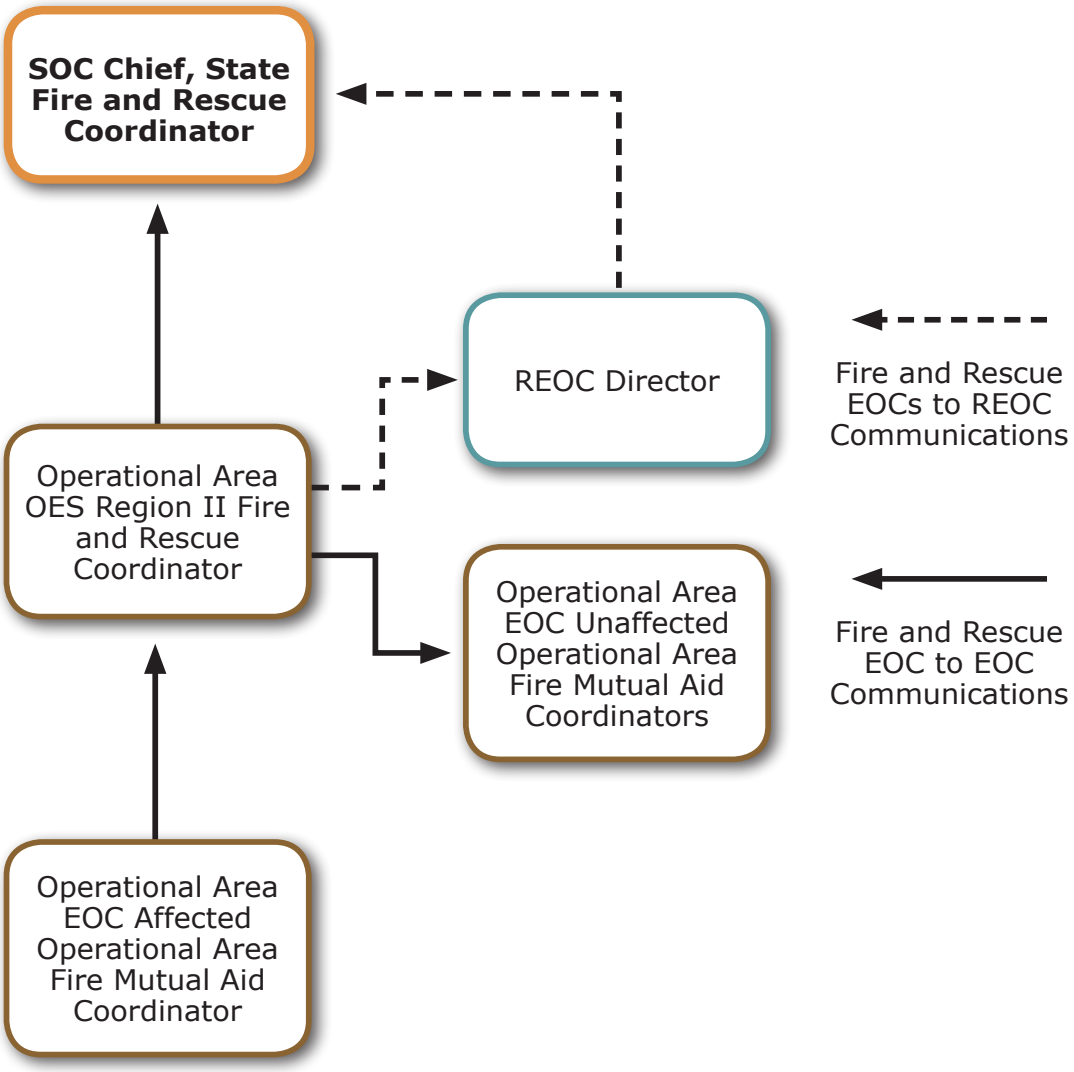

Figure 3
Emergency Services Mutual Aid System
Resource Order Communication Plan

These systems, in order, also are used to communicate resource requests from the Region II Fire and Rescue Mutual Aid Coordinator to unaffected Operational Area(s) Fire and Rescue Mutual Aid coordinators and to the SOC Fire and Rescue Branch. If the SOC is disabled, these systems are used to communicate resource order information from the Operational Area EOCs to an alternate facility, such as the REOC.

Law Enforcement Mutual Aid

The Region II Law Enforcement Mutual Aid Coordinator receives law enforcement mutual aid resource requests from Operational Area Law Enforcement Mutual Aid coordinators using the following systems and secondary systems. Figure 4 illustrates the communications paths for Law Enforcement Mutual Aid. The Region II Law Enforcement Mutual Aid Coordinator uses the following systems to pass resource information to unaffected Operational Area(s) Law Enforcement Mutual Aid coordinators, the SOC Law Enforcement Branch, and the REOC Law Enforcement Branch:

- RIMS via the Internet
- RIMS via OASIS
- Voice via PSTN
- Voice via CLERS
- Voice via ACS.

The REOC Law Enforcement Branch forwards resource information to the SOC Law Enforcement Branch using the following systems and secondary systems:

- RIMS via the Internet
- RIMS via OASIS
- Voice via PSTN
- Voice via CLERS
- Voice via OES HF Radio
- Voice via ACS
- Voice via CESRS.

Medical and Health Mutual Aid

Figure 5 illustrates the communications paths for Medical and Health Mutual Aid. The Regional Disaster Medical Health Coordinator passes resource request information to and from the Medical and Health Operational Area(s) Coordinators using the following systems and secondary systems:

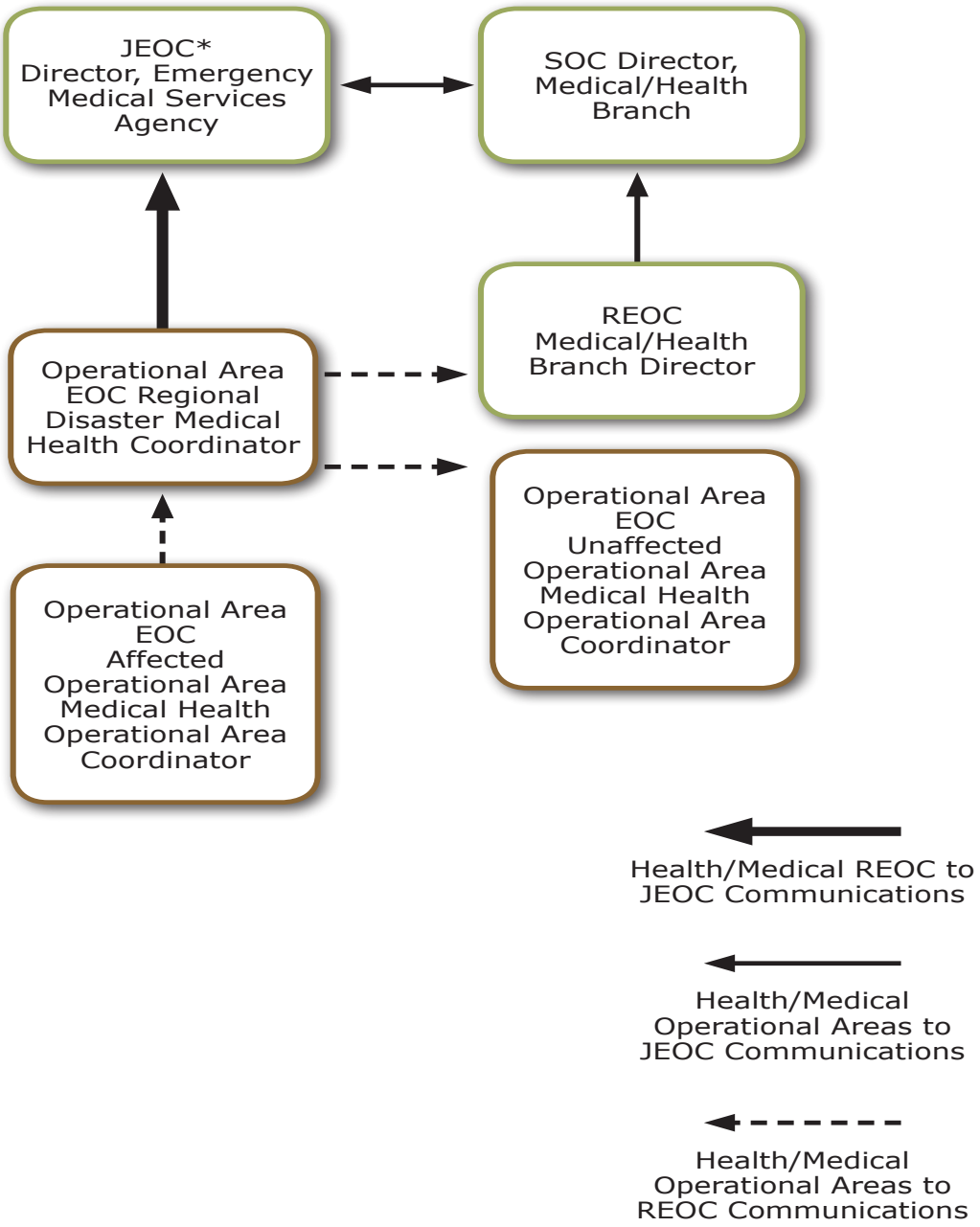

Figure 4
Law Enforcement Mutual Aid System
Resource Order Communication Paths

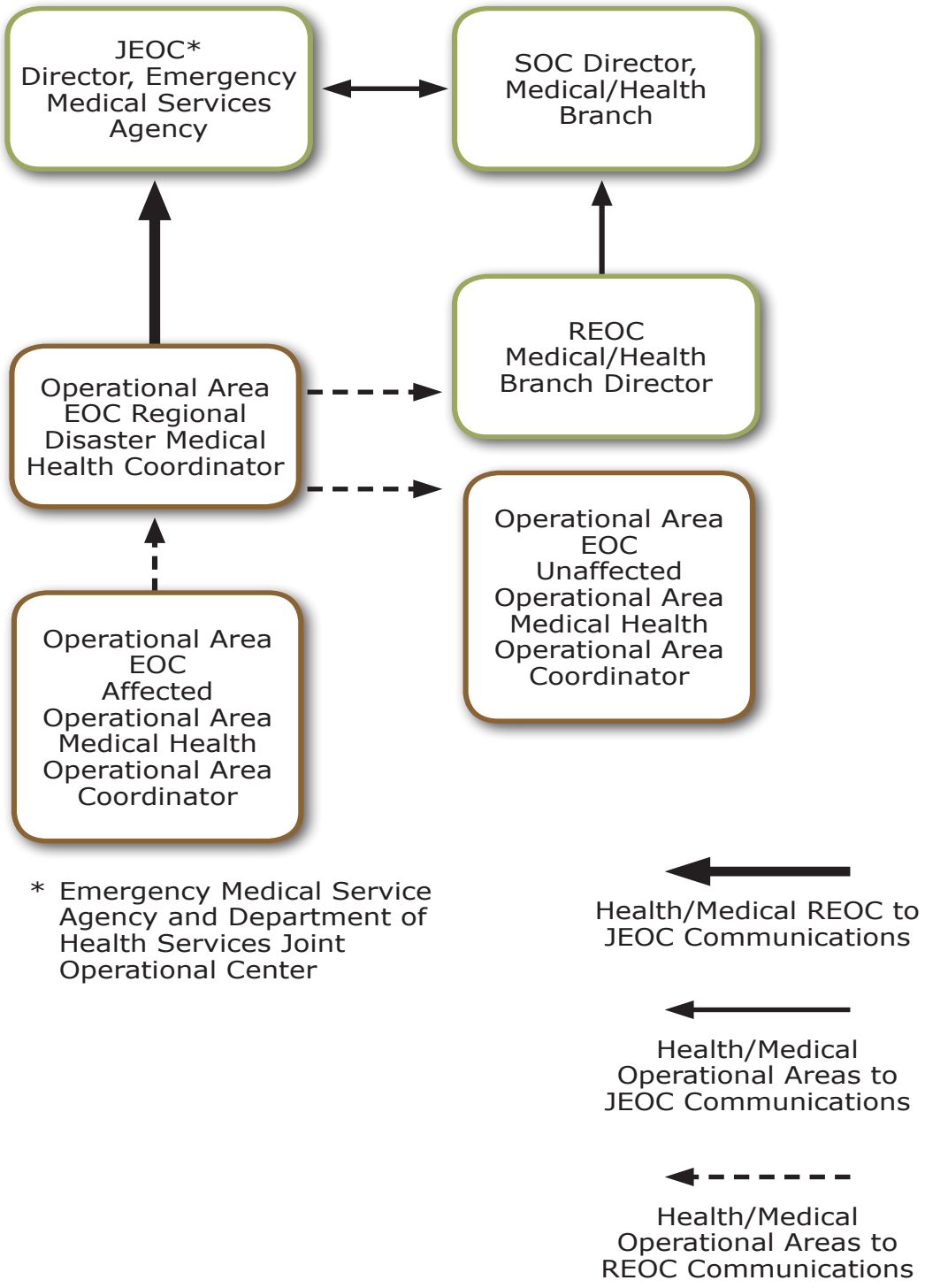

Figure 5
Health and Medical Mutual Aid System Resource Request Path

- RIMS via the Internet
- RIMS via OASIS
- Email or fax via PSTN
- Voice via OASIS
- Voice via ACS
- Voice via CESRS.

These systems are also used to communicate resource information from the Regional Disaster Medical Health Coordinator to the REOC Medical Health Branch Director. The REOC Medical Health Branch Director and the Regional Disaster Medical Health Coordinator communicate resource order information to the Director of the Emergency Medical Services Authority (EMSA) at the Joint Emergency Operations Center (JEOC) using the following systems and secondary systems:

- RIMS via the Internet
- Email or fax via PSTN
- Voice via ACS.

In addition to these systems, the JEOC may receive communications via commercial satellite phones.

Transportation

The Metropolitan Transportation Commission EOC Director passes resource requests to and from the Bay Area Transportation Network using the systems and secondary systems listed in the Bay Area Transportation Network Communications Systems Annex. The Metropolitan Transportation Commission EOC Director sends transportation resource requests that cannot be filled to the REOC Operations Section Chief using the following primary and secondary systems:

- RIMS via the Internet
- Fax via PSTN
- Voice via satellite radio
- Voice via ACS
- Voice via BART 800 MHz.

Transportation Network resource requests received by the REOC enter the Emergency Services Mutual Aid System and use the appropriate communications systems. In the event that the Metropolitan Transportation Commission EOC is destroyed or rendered inoperable, Transportation Network Mutual Aid requests will be directed to the

REOC Operations Section Chief, through respective Operational Area EOCs, using Emergency Services Mutual Aid channels. If the REOC is destroyed or rendered inoperable, transportation requests will be directed to the SOC Operations Section Chief as Emergency Management Mutual Aid requests using the following systems and secondary systems:

- RIMS via the Internet
- Email or fax via PSTN
- Voice via ACS.

Resources Requested from State Agencies

Resource requests and mission tasks from regional mutual aid coordinators and REOC mission task authorities to state agency dispatch authorities use the systems listed by agency in Appendix C.

RESOURCE DISPATCH

Any state, county, or local agency that has accepted or been assigned a resource order or mission task is responsible for notifying and dispatching the assigned resource. Before the resource is sent to the incident it must be assigned travel communications and a communications transition method.

Travel Communications

Travel communications convey information about resources en route to an incident, in particular to provide information about any situation that might prevent the timely execution of the resource order or mission task.

State agency resources operating with statewide LMR coverage report travel issues to their dispatch office, or to the dispatch office of the relevant EOC unit. The dispatcher relays this information to the mutual aid coordinator that is assigned the mission task. The mutual aid coordinator passes the information via resource order channels to the Operational Area mutual aid coordinator who originated the resource order.

To provide travel communications for assets without statewide mobile radio coverage, the REOC COML requests available channels from state and county agencies to monitor and relay travel communications from resource providers. Channels that are made available are forwarded to the resource dispatcher to relay to the resource provider.

The REOC Communications Branch Director requests that county and state agencies monitor and relay travel communications channels listed in the Bay Area Travel Communications Annex. If agencies cannot provide the channels requested, the REOC requests that unaffected county agencies identify alternate channels in the respective band. If

unaffected county agencies cannot provide for travel communications in their Operational Areas, the REOC requests travel communications coverage from state agencies for that Operational Area.

Travel communications may need to be relayed on channels on a secondary basis. Communications must be short and convey the following information:

- Resource identification
- Incident assigned
- General location
- Estimated delay time.

Communications Transition

The incident COML is responsible for assigning the method by which resources join and participate in incident communications. The resource request will contain the desired communications transition method for the resource. If a resource that is capable of the desired communications transition method cannot be provided, the resource notification will include the communication capability of the assigned resource. The incident COML must then assign a communications method that is operable with the dispatched resource's communications capability. The final assignment by the incident COML is documented in the Radio Communications Plan (ICS-205), and also may be in the Assignment List (ICS-204). Both of these forms are part of the Incident Action Plan, and are passed among EOCs in accordance with the situational awareness model described below. If the REOC is the dispatching EOC, the final communications assignment is relayed to the resource's dispatch authority based on the ICS 204 or 205. Appendix I – Communications Transition Methods describes communications transition methods.

Situational Awareness

Situational awareness during a regional event is achieved by passing standard Incident Command System forms among SEMS levels. For each Incident Command established within the region, the REOC requests an Incident Action Plan from each Operational Area for each operational period. The REOC expects the Incident Action Plans to be forwarded when received. If Operational Areas receive supplementary situational awareness information in a periodic report, the REOC requests such information be forwarded when received. The REOC forwards all situation reports, including Incident Action Plans, to the SOC and the Operational Areas within the region. The communication systems used for situational awareness are the same as those used for resource requests. Figure 6 illustrates the flow of situational awareness information.

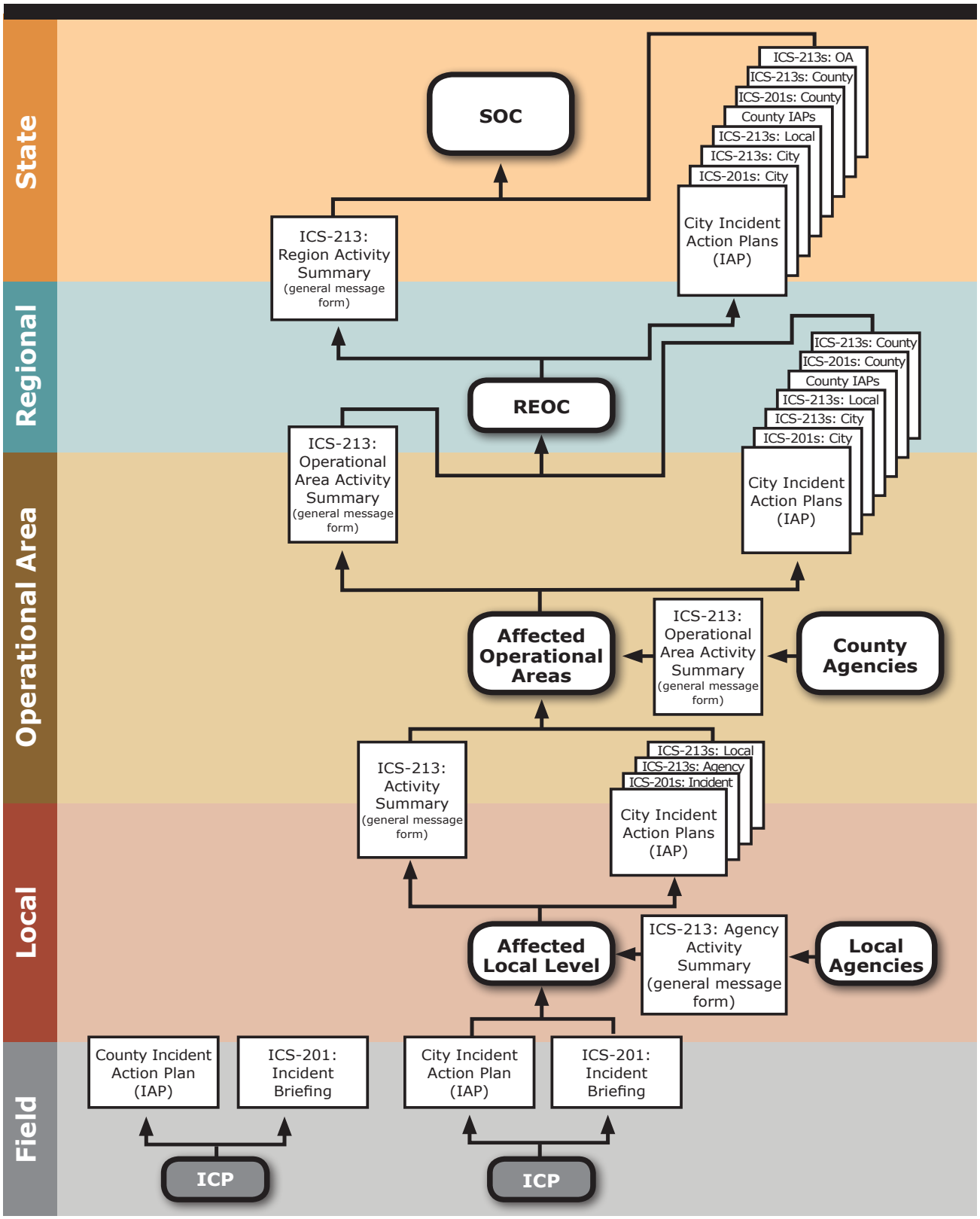

Figure 6
Situational Awareness Information Flow

REGIONAL COORDINATION GROUP

As described in the Base Plan, the REOC Director may seek input regarding resource prioritization and other regional issues through the Regional Coordination Group, which communicates via a conference bridge at the REOC. Operational Area(s) representatives whose basic phone service is disabled will connect to the bridge using OASIS. If the PSTN has failed at the REOC, Regional Coordination Group members will use a conference bridge at the SOC.

COMMUNICATIONS SUPPORT REQUESTS

Communications resource orders that originate in the Fire and Rescue Mutual Aid System stay within the system. The Region II Fire and Rescue Mutual Aid Communications Coordinator (COMC) has coordination authority for Fire and Rescue Mutual Aid resources. The Region II Fire and Rescue Mutual Aid COMC coordinates the use of the following systems and channel plans:

- OES Fire
- Fire Mutual Aid Radio System (FIREMARS).

The REOC COML is responsible for the provision and operation of state communications systems to execute regional resource ordering and situational awareness functions to and from the REOC.

The REOC provides a communications coordination function for the following items:

- Execution of communications-related resource orders outside of the Fire and Rescue Mutual Aid System, including:
  - Equipment
  - Spectrum
  - Personnel
- Deconfliction of frequencies among Operational Areas
- Establishment of travel communications
- Assignment of communications transition method to ordered resources.

The REOC COML executes the functions of the Communications Coordinator and reports, for this function, to the REOC Operations Section Chief. This does not remove his or her duties as the COML, and he or she also reports to the REOC Logistics Branch Chief in the COML function. The REOC Director may designate personnel as seen fit to the COMC position, and relegate the REOC Communications Unit Leader solely to COML functions.

During a disaster, the FECC coordinates Federal spectrum licensed by the NTIA. OES coordinates spectrum licensed by the state.

COMMUNICATIONS RESOURCE TYPES

Equipment

- **Radio Caches**. A radio cache is any set of transceivers that is not physically constrained to a single location. A transceiver, at a minimum, consists of an antenna, amplifier, resonator/tuner/phase-lock-loop, modulator, and information input and output (I/O) devices. The I/O devices may be a speaker and microphone, or a data device. To communicate, radios must be capable of the same mode, modulation, frequency, access, and air interface. In general, the following terms describe radio caches:
  - Radio class (portable, mobile, fixed)
  - Service licensure (aircraft, public safety pool, and conventional)
  - Quantity
  - Power capable (Effective Radiated Power [ERP])
  - Power licensed (ERP)
  - Location licensed (latitude and longitude, county(ies), state(s), or latitude and longitude and radius)
  - Antenna mount (Bayonette Neil-Concelman [BNC] and Threaded Neill-Concelman [TNC], fixed)
  - Antennas (monopole [1/4 and 5/8 wave], dipole, yagi, and log-periodic)
  - Operational frequency range (minimum and maximum MHz)
  - Mode (conventional or trunked)
  - Modulation (digital or analog)
  - Channel plan (FIRESCOPE, CCRIS-C, NIFC, Federal Incident Response)
  - Power source (AA batteries, rechargeable [Li-Ion, Ni-MH, etc.])
  - Access (Frequency-Division Multiple Access [FDMA]), Time Division Multiple Access [TDMA], and Code Division Multiple Access [CDMA])
  - Air interface (conventional [wideband and narrowband analog FM]/[TIA-102 (P-25) digital])/ (Trunked [TIA-102 (P-25) digital]/[vendor proprietary])
  - Duplex operation (full or half).

- Deployable Interoperability Gateway (Audio Patch). An Interoperability Gateway is a device that interfaces with the control logic of two radios and repeats the received information signal from one radio and transmits it on the other radio. This allows two different radio systems that normally would not be able to communicate to relay information. Deployable units are normally designed for mobile units and usually have ports for up to ten radios. Mobile units are normally restricted to 35 Watts ERP and thus would only be appropriate for small incident sites. Deployable patches take some time to employ, but once established, the patched radio systems can be used quickly, and shift changes using the patched radios do not need to exchange radios. One significant disadvantage is that they are spectrally inefficient. In a simple two-radio patch, communications are limited to the capacity of one channel, but two channels are used, and may make them inappropriate for a spectrally crowded environment. In general, the following terms describe audio patches:
  - Quantity
  - Mobility (trailer, or self propelled)
  - Power (self-powered, 120 V interface, etc.)
  - Maximum simultaneous patches
  - Manufacturer interface cables.
- **Deployable Repeaters**. A repeater is any device that receives a radio transmission and automatically re-transmits it on the same or different frequency, modulation, access, or air interface. An audio patch, once connected to radios, is effectively a repeater. A deployable repeater can be licensed as fixed-itinerant and may be authorized to transmit at a greater ERP than mobile radios, potentially making it appropriate to replace a failed transmitter tower. In general, the following terms describe a deployable repeater:
  - Radio class (portable, mobile, fixed)
  - Service licensure (AC – aircraft, PW – public safety pool, conventional, etc.)
  - Quantity
  - Power capable (ERP)
  - Power licensed (ERP)
  - Location licensed (latitude and longitude, county(ies), state(s), or latitude and longitude and radius)
  - Transmit antenna mount (BNC, TNC, fixed)
  - Receive antenna mount (if different)

- Transmit antennas (monopole [1/4, 5/8 wave], dipole, yagi, long periodic)
- Receive antennas (if different)
- Transmit frequency response (Minimal maximum MHz)
- Receive frequency response (if different)
- Transmit mode (conventional or trunked)
- Receive mode (if different)
- Transmit modulation (digital or analog)
- Receive modulation (if different)
- Channel plan (FIRESCOPE, CCRIS-C, NIFC, Federal Incident Response)
- Power source (AA batteries, rechargeable [Li-Ion, Ni-MH, etc.])
- Transmit access (FDMA, TDMA, CDMA)
- Receive access (if different)
- Transmit air interface
- Receive air interface (if different)
- Transmit duplex operation (full or half)
- Receive duplex operations (full or half).

• **Intercom Systems**. An intercom system is any deployable telephone style communication system. Intercom systems are normally only effective for use at an Incident Command Post. Some systems may include a Phone Branch Exchange, which can interface with the PSTN. In general, the following terms describe intercoms:

- Quantity
- Handsets (or other interface device, such as a 'softphone' on a computer display)
- PSTN interface requirement—Local Exchange Carrier (LEC) required Network Interface Device
- Mobility (trailer or self propelled).

Many of the aforementioned elements are deployed as aggregated equipment. For example, mobile communications centers are often a converted bus or recreational vehicle equipped with an intercom system, audio patch or repeater, and a radio cache.

Spectrum

Agencies use radio systems to meet their day-to-day needs. Communication during a disaster, however, is much more intense, because more content must be communicated, and the interagency nature of the conversations increases the time required to communicate information. Requests for additional spectrum may be made when agency towers have failed, or when channels are crowded, as evidenced by dropped calls or long queuing times.

Requests for additional spectrum can generally be described as local area, wide area, or point-to-point. Local area spectrum consists of channels that are transmitted by portables and mobiles (5 to 35 Watts ERP). Local area spectrum requests are almost exclusively used for incident tactical communications. Wide area spectrum requests are channels that will be transmitted at fixed-base sites (greater than 35 Watts ERP). Wide area spectrum is for any multi-point activity that reaches beyond the confines of one incident site (such as area commands and action planning at levels above the incident site). Often, incident command, incident resource order, and incident situation functions will employ wide area communications so that parent SEMS levels can “listen in” to understand the situation and anticipate incoming resource orders. Point-to-point communications are communications that are relayed from a single entity to another.

Agencies in Operational Areas will attempt to meet these requirements with indigenous systems and state-licensed channel plans and systems. The agencies that are already participants in the state systems have authority to transmit on those systems during a disaster, in accordance with the specifics of the system plan. If the REOC receives a resource order for additional spectrum with an accompanying request for authorization to transmit on state-licensed channel plans or systems, the COMC will recommend to the REOC Logistics Section Chief that the requesting agency be granted provisional authority to operate in accordance with the respective channel plan or systems.

The provision of spectral resources outside of the requesting agency’s indigenous system and state channel plans is possible, but should be carefully considered. Spectrum can be technically found from every service in the radio spectrum, but providing it has significant consequences for each category. Adding spectrum to existing communications systems is time consuming. It may take hours or days to reprogram enough radios to take advantage of available spectrum. The existing radios of any agency are also limited by the frequency response of the equipment. Radios can only use channels whose frequencies are spectrally close to the frequency band in which the radios were originally designed to operate. Because these are public safety bands, any provision of additional spectrum would take public safety resources away from other agencies in the vicinity of the event.

If spectral resources are requested and the state channel plans and systems are exhausted, it will be more effective to seek independent communications resources based on the local area, wide area, or point-to-point requirements, and not to try supplementing indigenous systems—with one exception. The California Department of Forestry and Fire Protection (CalFire) has twenty-three tactical channels licensed for statewide use, and many city and county agencies with VHF-Hi systems have the CalFire channels programmed into their radios. If the request is for a VHF-Hi spectrum, the REOC COMC could request use of available CalFire tactical channels.

Personnel

Communications resource orders for personnel consist of the following three SEMS/NIMS positions:

- Radio operators
- COML
- COMC.

Requests for ACS personnel are forwarded to the SOC.

FREQUENCY DECONFLICTION

City, county, and state agencies operating on their respective radio systems do not normally interfere with each other because their systems have been reviewed by a frequency coordinator and licensed by the FCC. However, multiple incident sites using state channel plans and systems may interfere on state frequencies. Incidents that are close to one another (respective to the ERP of the transmission), operating on agency systems, and participating in the same properly implemented state channel plan, will overlap radio frequencies. If the conflicting transmitters are within a single Operational Area, that Operational Area EOC will address the conflict. If necessary, the REOC COMC will recommend to the Logistics Section Chief that the Operational Area EOC be granted the authority to order local agencies to cease transmissions on state channel plans. It is recommended that the Operational Area EOC consider the same factors that the REOC COMC uses for deconfliction among multiple Operational Areas. If state channel plans are conflicted among multiple Operational Areas within the region, the REOC COMC will recommend deconfliction actions to the Logistics Section Chief.

Regional frequency deconfliction is addressed when a conflict occurs or is imminent, based on the conditions and particulars of the event. Factors that are considered by the REOC COMC are as follows.

Joint Use

Conventional implementation of state channels require that radio operators listen to the channel before transmitting to ensure that it

is clear. If multiple agencies are operating a channel close to one another, all agencies may transmit on the channel if each one knows that the other is using that channel. Agencies operating channels in joint use arrangements must announce the recipient and the transmitter with every transmission. This implementation can be limited by the total loading of the channel.

Hazardous Duty

The risks to public safety personnel performing tasks that are supported by the channel in question are considered.

Potential to Preserve Life and Property

The potential to preserve life and property is considered. The REOC COMC will also consider that agencies might disregard instructions by the state to cease transmission if the agencies believe such communication is "related directly to the imminent safety-of-life or property,"[3] or that such communications are used "during a period of emergency in which the normal communications facilities are disrupted."[4]

Channel Loading

The current and projected loading of all available channels in the most efficient manner possible for each communications requirement is considered. It is the responsibility of the COML, radio operators, and, as appropriate, Communications Coordinators at all SEMS levels to apply existing resources to meet their communications requirements in the most efficient manner.

Cross-Band Requirements

The use of state channel plans and systems to meet cross-band (patch) interoperability requirements is considered. Agencies with single-band indigenous radio systems and no or insufficient radio caches may have no other available means to communicate with mutual aid assets whose radios are in a different frequency band. The use of state channel plans and systems to facilitate cross-band patches reduces the spectral efficiency of the communication, a factor in the consideration of cross-band requirements.

Functional Implementation

The applicability of the state channel plan or system to meet local area, wide area, and point-to-point communication requirements is considered. The assignment of excess resources to one requirement removes capabilities from other requirements. For example, when a jurisdiction is granted authority to transmit a state channel from a high-level site at a high ERP to supplement a single incident's tactical communications (local area), it denies the ability of nearby incident

[3] In accordance with Federal regulations at 47 CFR, Section 90.405.
[4] In accordance with Federal regulations at 47 CFR, Section 90.407.

sites to employ that channel. Within the radio frequency footprint of one high-level site, many low-level and low ERP implementations of that same channel could be employed.

Existing Plan Participation

The participation of agencies in the channel plan or system is considered. Documented plan or system participants are more likely to use a resource efficiently because they have had the opportunity to incorporate them into doctrine, training, and equipment.

FEDERAL INTEROPERABILITY GUIDANCE

This section describes interoperability considerations for Federal agencies operating within the Bay Area region.

National Park Service

The National Park Service's communication systems are generally specific to park areas. Immediate response communications on or near national parks are executed through the Operational Areas.

U.S. Coast Guard

Immediate response communications from state and Operational Area(s) agencies to the U.S. Coast Guard Sector Duty Officer first occur on the following channels:

- Channel 21: 175.050 MHz
- Channel 16 (Maritime Distress): 156.800 MHz.

The Sector Duty Officer likely will request that first responders move to Channel 83: 157.175 MHz.

First responders without VHF-Hi band capability should call the U.S. Coast Guard Command Center, Sector Duty Officer at (415) 399-3547 for initial response coordination.

Appendix A | RECP Communications Subsidiary Plan

List of Acronyms

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Appendix A – List of Acronyms

ACS	Auxiliary Communication Service
ARES	Amateur Radio Emergency Service
BART	Bay Area Rapid Transit
BNC	Bayonette Neil-Concelman
CALCORD	California On-Scene Emergency Coordination Radio System
CalFire	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CALWAS	California Warning Alert System
CDMA	Code Division Multiple Access
CESN	California Emergency Services Net - Amateur Radio Service
CESRS	California Emergency Services Radio System
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CLEMARS	California Law Enforcement Mutual Aid Radio System
CLERS	California Law Enforcement Radio System
CLETS	California Law Enforcement Telecommunications System
CMARS	California Multi-Agency Radio System
COMC	REOC Communications Coordinator
COML	Incident Communications Unit Leader
CTCSS	Continuous Tone-Coded Squelch System
DGS	Department of General Services
EMS	Emergency Medical Services
EMSA	Emergency Medical Services Authority
EOC	Emergency Operations Center
ERP	Effective Radiated Power
FCC	Federal Communications Commission
FDMA	Frequency-Division Multiple Access
FECC	Federal Emergency Communication Coordinator
FEMA	Federal Emergency Management Agency
FIREMARS	Fire Mutual Aid Radio System
FNARS	FEMA National Radio System
GETS	Government Emergency Telecommunications Service
HF	High Frequency, 3MHz to 30MHz
I/O	Input/Output
ICS	Incident Command System
JEOC	Joint Emergency Operations Center
LEC	Local Exchange Carrier
LMR	Land Mobile Radio
MAA	Mutual Aid Asset
MARS	Military Affiliate Radio System
MHz	Megahertz

NASA	National Aeronautics and Space Administration
NAWAS	National Warning Alert System
NCS	National Communications System
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
NPSPAC	National Public Safety Planning Advisory Committee
NTIA	National Telecommunications and Information Administration
NWR	National Weather Radio
NWS	National Weather Service
OASIS	Operational Area Satellite Information System
OCC	Operations Control Center
OES	Office of Emergency Services
PBX	Phone Branch Exchange
PLMRS	Private Land Mobile Radio Services
PSAP	Public Safety Answering Point
PSTN	Public Switched Telephone Network
RACES	Radio Amateur Civil Emergency Services
RECP	Regional Emergency Coordination Plan
REOC	Regional Emergency Operations Center
RIMS	Response Information Management System
ROSS	Resource Ordering and Status System
SEMS	Standardized Emergency Management System
SHARES	Shared Resources High Frequency Radio Program
SOC	State Operations Center
STACOM	State Communications - nationally known as SECURE
TDMA	Time Division Multiple Access
TNC	Threaded Neill-Concelman
UHF	Ultra High Frequency, 300MHz to 3000MHz
USGS	U.S. Geological Survey
VHF	Very High Frequency, 30MHz to 300MHz
WPS	Wireless Priority Service

Appendix B | RECP Communications Subsidiary Plan

Communication Systems

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Appendix B – Communication Systems

CALIFORNIA STATE PUBLIC SAFETY MICROWAVE NETWORK

The Public Safety Microwave Network is a high capacity communications system that interconnects communications facilities statewide. In general, it provides audio and signaling control links between the various dispatch centers and the dispersed base stations/ repeaters that are essential to providing the land-mobile radio networks for the state's public safety agencies. While it is capable of carrying voice, data, and video communications, it is used primarily for voice. Currently, the system is divided into eight major segments (three between Sacramento and Redding, three between Sacramento and Los Angeles, one in Southern California, and one in the Sacramento Area) each of which is capable of providing over 600 circuits. Individual circuits can (and are) patched from one segment to another. The State of California's Department of General Services (DGS) is in the process of upgrading this network to a fully digital mode of operation and will be re-configuring the network to allow all eight segments to be fully interconnected into an internet-like system. This re-configuration will allow for the automatic re-routing of communications links in the event of a "path failure."

BAY AREA PUBLIC SAFETY DIGITAL MICROWAVE SYSTEM

This Digital Microwave System is mostly developed and is being built-out to provide a reliable digital microwave network connecting key communication sites and Public Safety Answering Points (PSAPs) throughout the 10-county Bay Area region. This system will provide the microwave links necessary to connect the three sub-regional communications systems in the Bay Area to allow interoperability and seamless roaming for public-safety first responders throughout the Bay Area. The respective sub-regional communications systems are the West Bay Regional Communications System, the East Bay Regional Communications System and Silicon Valley Regional Communications System. This system will also provide fully redundant communication paths between the PSAPs in the 10-county Bay Area region and provide the communication paths necessary to integrate the regional tactical communications systems, and implement data sharing solutions.

OPERATIONAL DIAL TELEPHONE SYSTEM

The Operational Dial Telephone System is a switched, telephone-like communications network that provides emergency communications between and among the State's operational elements. The system

provides one or more telephone-like circuits into each of the State's critical command facilities including all dispatch centers, all California Highway Patrol (CHP) Division and Area Offices, all California Department of Forestry and Fire Protection (Calfire) command centers, and Governor's Office of Emergency Services (OES) Operations Centers. While the system utilizes standard telephone technology and functions in a manner very similar to a standard telephone, it operates independently of the Public Switched Telephone Network (PSTN). Thus, the system is not affected by outages and "system overload" issues that may affect the PSTN during an emergent event.

OPERATIONAL AREA SATELLITE INFORMATION SYSTEM

The Operational Area Satellite Information System (OASIS) is a satellite radio system designed as a reliable disaster communications system. It is licensed maintained by DGS and operated by state, regional, and Operation Area Emergency Operations Centers (EOCs). OASIS has terminals at the Governor's Office of Emergency Services (OES) State Operations Center (SOC), Regional Emergency Operations Centers (REOCs), and Operational Area EOCs. The OASIS system can support six simultaneous voice conversations per location and limited data throughput.

CALIFORNIA MULTI-AGENCY RADIO SYSTEM

The California Multi-Agency Radio System (CMARS) is a statewide Land Mobile Radio (LMR) repeater system in the National Public Safety Planning Advisory Committee (NPSPAC) band licensed and maintained by DGS. It has six repeated channels: two in each of six regions of the state. CMARS 1 and 2 are in the NPSPAC Region 6, which encompasses the San Francisco Bay Area. It is intended for use by any public safety agency in the state that has insufficient requirements to procure its own LMR system. Agencies enter into airtime contracts with the DGS Telecommunications Division for access to this system. Individual repeaters on the CMARS system are accessed through Continuous Tone-Coded Squelch System (CTCSS) tone assignments. Figure B-1 shows the locations of CMARS transmitters.

Name	Base	Mobile
CMARS1	856.2625	811.2625
CMARS2	857.2625	812.2625

CALIFORNIA EMERGENCY SERVICES RADIO SYSTEM

The California Emergency Services Radio System (CESRS) is a statewide LMR repeater system in the VHF-Hi band licensed and owned by the state. State and county agencies may operate their own equipment on the system provided that the equipment and rules of operation are coordinated through the state. It is intended for coordination between state and regional OES staff. Approximately 30 Operational Area EOCs are also participants in CSERS. The California Youth Authority also uses

CSERS for day-to-day operations. Individual repeaters on the CESRS system are accessed through CTCSS tone assignments. Figure B-1 shows the locations of CESRS transmitters.

Name	Input	Output
CESRS	154.98	153.755

OES FIRE RADIO SYSTEM

The OES Fire Radio System is a statewide LMR simulcast repeater system in the VHF-Hi band. It is used by Fire Mutual Aid Coordinators at the state, regional, and Operational Area level. It is also used as a dispatch and travel channel for OES Fire and Rescue apparatus. OES Fire is licensed and maintained by DGS and operated by the OES Fire and Rescue Branch. Individual repeaters on the OES Fire system are selected by the tone of the mobile transmitter. Figure B-1 shows the locations of OES Fire radio facilities.

Name	Inputs	Outputs
OES Fire 1A	159.135	154.160
OES Fire 1B	159.195	154.160
OES Fire 2A	159.135	154.220
OES Fire 2B	159.195	154.220

CALIFORNIA LAW ENFORCEMENT RADIO SYSTEM

The California Law Enforcement Radio System (CLERS) is a statewide fixed repeater system in the VHF-Hi and UHF (450 MHz) bands licensed by the state and local governments. CLERS has two functions: to coordinate mutual aid among dispatchers; and to serve as the backbone for the California Emergency Alert System. Some termination points are directly off the CLERS microwave relay. The CLERS backbone is licensed and maintained by DGS. Participating city and county agencies may maintain and license their own equipment after coordination with OES. Figure B-1 shows the locations of CLERS facilities.

WHITE FIRE

The White Fire set of simplex frequencies are licensed, owned, and operated by the state, county, and local governments, but initially coordinated by OES. The Federal Communications Commission (FCC) assigns frequencies for multiple-agency fire coordination operations. The White Fire channels are listed below; facilities are shown on Figure B-1.

Name	Freq.	Base/Mobile	CTCSS
White Fire 1	154.280	Base or Mobile	None
White Fire 2	154.265	Mobile only	None
White Fire 3	154.295	Mobile only	None

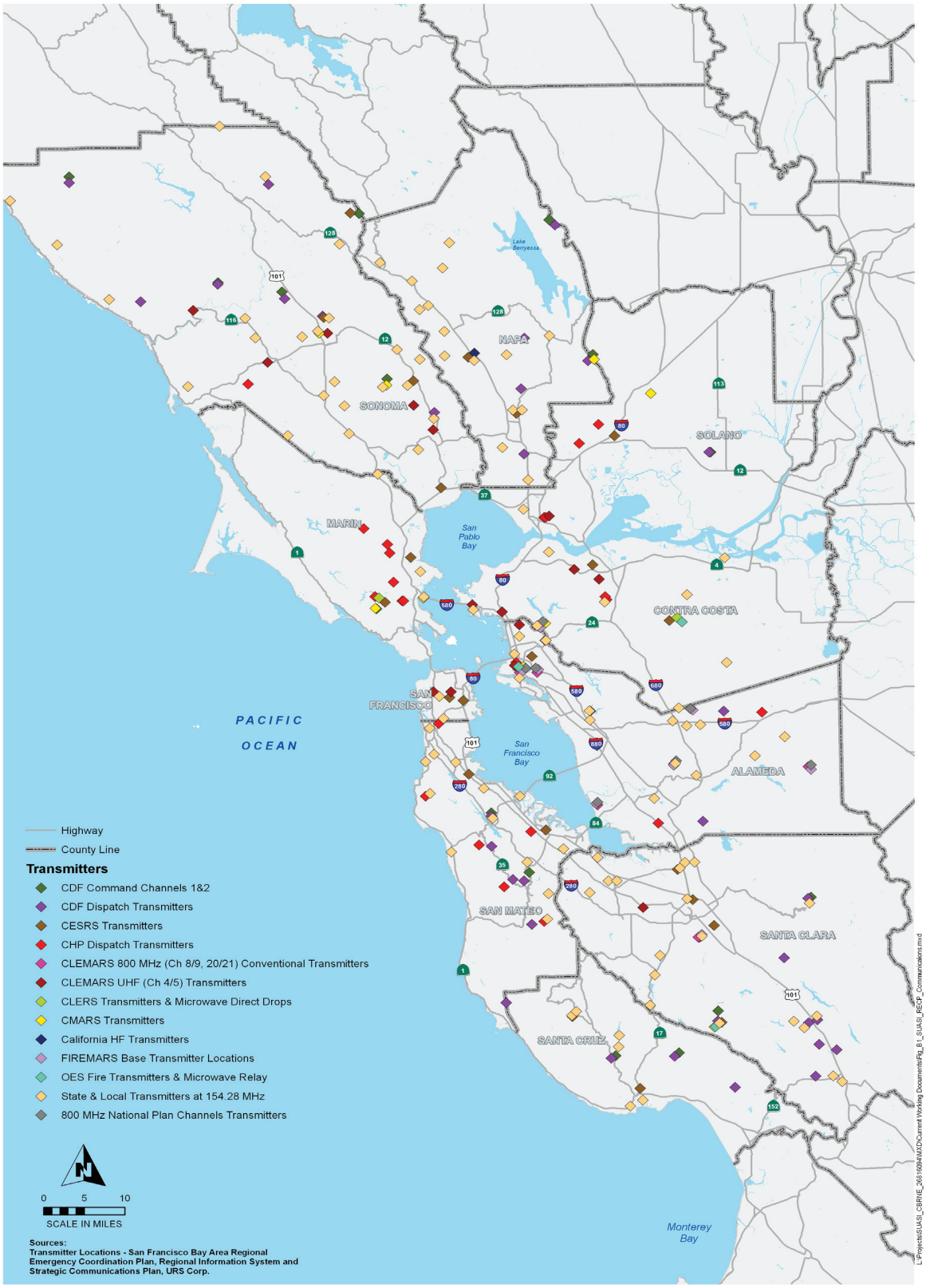

Figure B-1
Communications Facilities

OFFICE OF EMERGENCY SERVICES HIGH FREQUENCY

The High Frequency (HF) systems are fixed and mobile omni-directional and directional simplex radio systems maintained at the REOCs and the SOC. OES maintains and licenses the HF Radio with authorization from the National Communications System (NCS) and the FCC. The HF Radio uses a variety of modes including single side band modulation on various services and radio nets. Those services and networks are:

- the Shared Resources High Frequency Radio Program (SHARES).
- FEMA National Radio System (FNARS).
- Military Affiliate Radio System (MARS).
- State Communications – nationally known as SECURE, State Emergency Capability Using Radio Effectively (STACOM).
- California Emergency Services Net – Amateur Radio Service (CESN). The radio frequencies are located in each radio services manuals and plans. Figure B-1 shows the locations of OES system facilities.

Center	Upper Sideband
2.326	2.3274
2.419	2.4204
2.422	2.4234
2.804	2.8054
2.812	2.8134
5.140	5.1414
5.195	5.1964
7.480	7.4814
7.802	7.8034
7.805	7.8064

CALFIRE STATEWIDE LMR REPEATER SYSTEM

The CalFire system is a statewide LMR repeater system in the VHF-Hi band. The CalFire system is licensed and maintained by DGS and operated by CalFire. The operational unit channels are repeated within the respective areas of responsibility with some reuse. Command Channels 1 and 2 are unique system pairs repeated statewide, and the remaining command channels are copies of operational unit repeater pairs. The tactical channels are licensed for mobile use only out of the operational unit channels, except for tactical Channels 1 and 2, which are unique system channels. In operation, this allows CalFire to use the local operational unit pair for dispatch and travel communications. Command and tactical Channels 1 and 2 are available for all CalFire incidents. Individual CalFire command channel repeaters are accessed through CTCSS tones. Additional command repeater pairs and tactical channels could be assigned to the incident from operational unit

pairs that are not assigned to adjacent operational units. Figures F-7 and F-8 illustrate the CalFire dispatch transmitters and the command channels, respectively.

Operational Units

Name	Inputs	Outputs	CTCSS	
MMU	159.390	151.460	123	
MMU	159.375	151.400	103.5	
BDU (West)	159.390	151.445	146.2	
BDU (East)	159.315	151.325	146.2	
BDU	159.405	151.250		
LNU (West)	159.390	151.460	136.5	(Bay Area)
LNU (East)	159.315	151.340	136.5	(Bay Area)
BEU	159.405	151.250	156.7	
NEU	159.360	151.325	131.8	
CZU	159.285	151.370	167.9	(Bay Area)
SCU	159.345	151.445	156.7	(Bay Area)
MVU	159.225	151.190	131.8	
TCU	159.450	151.175	136.5	
SKU	159.360	151.325	156.7	
SHU	159.270	151.160	136.5	
TGU	159.285	151.370	146.2	
LMU	159.405	151.250	146.2	
HUU	159.405	151.250	110.9	
BTU	159.375	151.400	110.9	
AEU	159.225	151.190	146.2	
MEU	159.270	151.385	110.9	
TUU	159.225	151.190	110.9	
SLU	159.315	151.325	136.5	

Command Channels

Name	Inputs	Outputs
CMD 1	159.300	151.355
CMD 2	159.330	151.265
CMD 3	159.345	151.340
CMD 4	159.375	151.400
CMD 5	159.285	151.370
CMD 6	159.360	151.250
CMD 7	159.390	151.460
CMD 8	159.345	151.445
CMD 9	159.450	151.175
CMD 10	159.225	151.190

Tactical Channels

Name	Freq	Base/Mobile	CTCSS
TAC 1	151.145	(Mobile only)	None
TAC 2	151.160	(Mobile only)	None
TAC 3	151.175	(Mobile only)	None

Name	Freq	Base/Mobile	CTCSS
TAC 4	151.190	(Mobile only)	None
TAC 5	151.250	(Mobile only)	None
TAC 6	151.325	(Mobile only)	None
TAC 7	151.340	(Mobile only)	None
TAC 8	151.370	(Mobile only)	None
TAC 9	151.385	(Mobile only)	None
TAC 10	151.400	(Mobile only)	None
TAC 11	151.445	(Mobile only)	None
TAC 12	151.460	(Mobile only)	None
TAC 13	151.475	(Mobile only)	None
TAC 14	159.225	(Mobile only)	None
TAC 15	159.270	(Mobile only)	None
TAC 16	159.285	(Mobile only)	None
TAC 17	159.315	(Mobile only)	None
TAC 18	159.345	(Mobile only)	None
TAC 19	159.360	(Mobile only)	None
TAC 20	159.375	(Mobile only)	None
TAC 21	159.390	(Mobile only)	None
TAC 22	159.405	(Mobile only)	None
TAC 23	159.450	(Mobile only)	None

CHP STATEWIDE LMR REPEATER SYSTEM)

CHP system is a statewide LMR repeater system in the VHF-Lo band. The CHP system is licensed and maintained by DGS. Division and office unit channels are repeated within the respective areas of responsibility, with some frequency reuse among the mobile frequencies. CHP also maintains six tactical simplex channels and assigns CTCSS tones among the eight divisions.

Channel	Base	Mobile
Tac-1	44.86	44.86
Tac-2	45.94	45.94
Tac-3	44.94	44.94
Tac-4	45.02	45.02
Tac-5	45.06	45.06
Tac-6	39.92	39.92
Border Tac	39.92	42.64
Amber	42.08	42.82
Amber-2	42.08	42.76
Aqua	42.62	42.84
Beige-1	39.88	42.08
Black	42.46	42.70
Blue	42.34	42.18
Blue-1	39.14	42.18
Bronze	42.12	42.40
Brown	42.50	42.82

Channel	Base	Mobile
Copper	42.60	42.74
Copper-1	39.26	42.74
Emerald	42.88	42.20
Gold	42.12	42.20
Gold-1	39.60	42.20
Grape	42.42	42.66
Gray	42.48	42.68
Gray-1	39.72	42.68
Green	42.54	42.24
Green-1	39.36	42.24
Ivory	45.02	45.02
Maroon	42.92	42.74
Maroon-1	42.92	42.64
Orange	42.88	42.66
Orange-1	39.40	42.66
Pink	42.44	42.76
Purple	42.40	42.16
Purple-1	39.44	42.16
Red	42.44	42.28
Ruby	42.50	42.28
Silver	42.08	42.28
Tan	42.42	42.84
Tan-1	39.80	42.84
Teal	42.36	42.78
Turquoise	42.60	42.02
Turquoise-1	39.68	42.02
Violet	42.16	42.64
White	42.56	42.72
Yellow	42.52	42.30

CALIFORNIA DEPARTMENT OF FISH AND GAME REGIONAL LMR REPEATER SYSTEMS

The California Department of Fish and Game system consists of two regional LMR repeater systems in the VHF-Hi band. The system is licensed and maintained by DGS. CTCSS tones differ among the transmission sites.

Name	Inputs	Outputs
Regions 1/3	159.435	151.415
Regions 2/4/5/6	159.420	151.430

CALIFORNIA DEPARTMENT OF PARKS AND RECREATION CONVENTIONAL DIGITAL LMR REPEATER SYSTEM

The California Department of Parks and Recreation system is a conventional digital LMR repeater system in 800 MHz and NPSPAC bands. Repeater pairs are assigned to specific parks and recreation areas.

Name	Inputs	Outputs	Digital-Coded Squelch
GREEN	810.4875	855.4875	115
ORANGE	810.7125	855.7125	115
BLUE	810.7375	855.7375	115
RED	810.9625	855.9625	115
VIOLET	811.1250	856.1250	115
BROWN	811.9375	856.9375	115
PINK	812.1250	857.1250	115
GOLD	812.9375	857.9375	115
LIGHT GREEN	813.1250	858.1250	115
BRONZE	813.2625	858.2625	115
GRAY	813.9375	858.9375	115
LIGHT BLUE	814.1250	859.1250	115
WHITE	814.9375	859.9375	115
COPPER	821.4625	866.4625	115
SAND	821.5625	866.5625	115
SLATE	822.4625	867.4625	115
YELLOW	822.5625	867.5625	115
AQUA	823.4625	868.4625	115
BONE	823.5375	868.5375	115
JADE	823.5625	868.5625	115

CALIFORNIA DEPARTMENT OF TRANSPORTATION TRUNKED LMR SYSTEM

The California Department of Transportation (Caltrans) maintains several trunked LMR systems in the 800 MHz band associated with its twelve districts. Caltrans District 4, which includes the Bay Area, is split into two systems: North Bay and South Bay. The District 4 systems are not P25 compliant. Caltrans also maintains a statewide conventional LMR repeater system with channels for operations and maintenance. The Caltrans system is licensed and maintained by DGS.

BAY AREA RAPID TRANSIT REGIONAL TRUNKED LMR SIMULCAST SYSTEM

The Bay Area Rapid Transit (BART) system is a regional trunked LMR simulcast system in the NPSPAC band. The BART system is not P25-compliant.

PUBLIC SWITCHED TELEPHONE NETWORK

PSTN is a land-line system consisting of copper and fiber-optic networks that provides day-to-day telephone, fax, and Internet service. These devices are connected through patches to the local Phone Branch Exchange (PBX). The PBX is connected to a main exchange that is connected with other main exchanges, international exchanges, and mobile-switched telephone offices that connect to cell phone towers. Exchange offices have backup generators to supply the power

to simple devices: fax machines, office PBXs, and internet routers and modems require additional electricity. Damage or destruction of local, mobile, or main exchanges or the trunk lines between them will disrupt communications. Land line communications volume is limited by the number of calls that PBX routers can handle at any one time. Priority access is available through the NCS with Government Emergency Telecommunications Service (GETS). Priority access through mobile phone PBXs is available with the Wireless Priority Service (WPS). Both GETS and WPS are available for public safety agencies through the NCS.

RESPONSE INFORMATION MANAGEMENT SYSTEM

The Response Information Management System (RIMS) is a web-based resource ordering and situation reporting tool managed by OES. It has functional forms that can be used for resource ordering, dispatching, and tracking. RIMS operates via the Internet, but can operate OASIS via internet reachback connectivity.

AUXILIARY COMMUNICATIONS SYSTEM

The Auxiliary Communications System (ACS) is a system of volunteer amateur radio operators organized to supplement communications for government agencies in disaster situations. In some jurisdictions, this system is referred to as Radio Amateur Civil Emergency Services (RACES) or Amateur Radio Emergency Service (ARES)/RACES.

Details of the network frequencies utilized by ACS in California are listed Appendix E.

NATIONAL WARNING ALERT SYSTEM/CALIFORNIA WARNING ALERT SYSTEM (NAWAS/CALWAS)

The National Warning Alert System (NAWAS), of which the California Warning Alert System (CALWAS) is part, is a dedicated, nationwide, party line telephone warning system that operates 24 hours/day. It is used for the dissemination of warning and other emergency information from Federal and state warning points to county warning points. In California, it is controlled by the OES State Warning Center. The NAWAS has major terminals at the SOC and REOCs. The system consists of what is effectively telephone party line serving more than 2,200 entities, and is more than a normal telephone system. The phone instruments are designed to provide protection for lightening strikes so they may be used during storms. The interconnecting lines are provided some protection and avoid local telephone switches, ensuring they are available even when the local system is down or overloaded. The drawback to this system is it relies on human intervention to transmit and receive warning information over the system. CALWAS is a subset of NAWAS for the State of California. CALWAS connects OES in Sacramento to the EOCs of the 58 counties.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

The National Weather Service (NWS), a component of National Oceanic and Atmospheric Administration (NOAA), provides weather service advisory notifications through a collection of national and regional centers, and more than 120 local weather forecast offices. NWS broadcasts weather warnings, watches, forecasts, and other hazard information 24 hours a day through the NOAA Weather Radio (NWR). The NWR system is region-based, with multiple weather forecast offices linked to fixed repeaters in the VHF-Hi band. California is in the NWS Western Region.

Office	Base	Location	Power
Sacramento	162.550	Sacramento	330W
Sacramento	162.425	Contra Costa County	100W
San Francisco Bay Area	162.550	Monterey	300W
San Francisco Bay Area	162.450	Monterey Marine	300W
San Francisco Bay Area	162.500	Big Rock Ridge	100W
San Francisco Bay Area	162.400	Pise Mountain	330W

BAY AREA OPERATIONAL AREAS

Marin County

The Marin Operational Area primary LMR system is a trunked system in the UHF-TV band. This system is owned and operated by the Sheriff's Department and is P25 compliant. Several local police and fire agencies operate on conventional VHF-Lo systems, but are moving to the Sheriff's system. Emergency Medical Services (EMS) are provided by American Medical Response operating on a conventional VHF-Hi Band system.

Sonoma County

The Sonoma Operational Area primary LMR system is a conventional UHF band system owned and operated by the Sheriff's Department. Multiple-city systems operate conventionally, with police and fire generally aligned with UHF and VHF-Hi systems, respectively.

Napa County

The Napa Operational Area primary LMR system is a conventional VHF-Hi band system. Napa County also maintains a countywide conventional system for public works. Local agencies generally maintain VHF-Hi conventional systems.

Solano County

The Solano Operational Area has two conventional countywide VHF-Hi systems for the Sheriff's Department and Fire/EMS. Local systems are conventional in the VHF-Hi and UHF-TV bands except for Vacaville, which maintains a non-P25 trunked system in the NPSPAC band.

Contra Costa County

The Contra Costa Operational Area has two conventional countywide VHF-Hi systems for the Sheriff's Department and Fire/EMS. Most local fire agencies contract space on the Fire/EMS system, and most local police departments have indigenous conventional UHF systems. Several cities have combined with the City of Richmond public safety system operating a non-P25 trunked system in the NPSPAC band.

Alameda County

The Alameda Operational Area has four non-P25 trunked systems in the NPSPAC band. The countywide system includes the Sheriff's Department, consolidated fire, and several cities. The Oakland system includes all Oakland public safety groups and the City of Piedmont. The cities of Livermore and Pleasanton Police and the Livermore Pleasanton Fire Protection district operate a non-P25 trunked system in the 800 MHz band. The University of California, Berkeley, also has an analog trunked, non-P25 system.

Santa Clara County

The Santa Clara Operational Area has three primary conventional LMR systems for Fire (VHF-Hi), Sheriff (VHF-Hi), and EMS (800 MHz). Local governments within Santa Clara County maintain conventional systems in every mobile public safety band, with the exception of the City of Santa Clara's non-P25 compliant trunked system in the NPSPAC band.

Santa Cruz County

The Santa Cruz Operational Area has two primary conventional LMR systems in the VHF-Hi band for Fire/EMS and for the Sheriff's Department. Local governments within Santa Cruz County primarily operate in the VHF-Hi band.

San Mateo County

The San Mateo Operational Area primary LMR system is a UHF/VHF 300 system with one common channel for law enforcement and three additional channels, one per city. San Mateo County also maintains satellite phones and has two mobile communications units with satellite links and radio caches. San Mateo County also relies on Ham radio systems.

City and County of San Francisco

The primary LMR system in the San Francisco Operational Area is a non-P25 compliant, trunked, 8-site simulcast system using channels in the 800 MHz with conventional NPSPAC Mutual Aid channels. This system serves the departments for fire, police, sheriff, EMS, and administrative services. The San Francisco Operational Area also maintains mobile satellite radios that connect directly to the State Warning Center, Metropolitan Transportation Commission, San Francisco International Airport, and many City and County of San Francisco department operations centers.

The contact details of the key Bay Area local-regional agency communications representatives are presented in Appendix G.

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Appendix C | RECP Communications Subsidiary Plan

Channel Plans

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Appendix C – Channel Plans

INTERAGENCY LAW ENFORCEMENT PLAN CHANNELS

The National Telecommunications and Information Administration (NTIA) Interagency Law Enforcement plan channels are available on a shared basis to all Federal Government law enforcement agencies for multi-agency operations. Non-Federal Government law enforcement agencies may use these channels in cooperation with a Federal agency. Channels "LE A" and "LE B" are designated as calling channels.

Channel	Base	Mobile	CTCSS
LE A	(simplex)	167.0875	167.9
LE 1	167.0875	162.0875	167.9
LE 2	167.2500	162.2625	167.9
LE 3	167.7500	162.8375	167.9
LE 4	168.1125	163.2875	167.9
LE 5	168.4625	163.4250	167.9
LE 6	(simplex)	167.2500	167.9
LE 7	(simplex)	167.7500	167.9
LE 8	(simplex)	168.1125	167.9
LE 9	(simplex)	168.4625	167.9
LE B	(simplex)	414.0375	167.9
LE 10	409.9875	418.9875	167.9
LE 11	410.1875	419.1875	167.9
LE 12	410.6125	419.6125	167.9
LE 13	(simplex)	414.0625	167.9
LE 14	(simplex)	414.3125	167.9
LE 15	(simplex)	414.3375	167.9
LE 16	(simplex)	409.9875	167.9
LE 17	(simplex)	410.1875	167.9
LE 18	(simplex)	410.6125	167.9

NTIA INCIDENT RESPONSE OPERATIONS PLAN CHANNELS

The Incident Response Operations plan channels are available on a shared basis to all Federal Government agencies for incident response operations. Non-Federal Government agencies may use these channels in cooperation with a Federal agency. Channels "NC 1" and "NC 2" are designated as calling channels. Except for the calling channels, non-Federal agencies may or may not implement tones in accordance with their particular implementation of the Incident Response Operations Plan channels.

Channel	Base	Mobile	CTCSS
NC 1	169.9375	164.7125	None
IR 1	170.0125	165.2500	Optional
IR 2	170.4125	165.9625	Optional

Channel	Base	Mobile	CTCSS
IR 3	170.6875	166.5750	Optional
IR 4	173.0375	167.3250	Optional
IR 5	(simplex)	169.5375	Optional
IR 6	(simplex)	170.0125	Optional
IR 7	(simplex)	170.4125	Optional
IR 8	(simplex)	170.6875	Optional
IR 9	(simplex)	173.0375	Optional
NC 2	410.2375	419.2375	None
IR 10	410.4375	419.4375	Optional
IR 11	410.6375	419.6375	Optional
IR 12	410.8375	419.8375	Optional
IR 13	(simplex)	413.1875	Optional
IR 14	(simplex)	413.2125	Optional
IR 15	(simplex)	410.2375	Optional
IR 16	(simplex)	410.4375	Optional
IR 17	(simplex)	410.6375	Optional
IR 18	(simplex)	410.8375	Optional

800 MHZ NATIONAL PLAN INTEROPERABILITY CHANNELS

The National Plan Channels are a set of channels in the National Public Safety Planning Advisory Committee band that are available for licensing by city, county, and state agencies, but must be initially coordinated by the Governor's Office of Emergency Services (OES). The channels include a calling channel repeater pair, for hailing, and four tactical channel pairs. They are intended for multi-agency operations.

Short Names for National Channels

Some radios, in particular earlier models sold by EF Johnson and Motorola, offer a programming feature that automatically adds the Zone designator at the beginning of the displayed name. For these models, that is a radiowide feature meaning if it is enabled it is applied to all channels. Some agencies require this feature for their operational channels. Its implementation leaves a maximum of five characters for the remainder of the name. At the request of agencies from across the U.S., NPSTC approved the following five character names for use only in this specific situation:

Full name	Abbreviated name
8CALL90	CAL90
8TAC91	TAC91
8TAC92	TAC92
8TAC93	TAC93
8TAC94	TAC94

800 MHz. Interoperability Channels: Nomenclature for California Statewide Channels

The following two tables present the California overlay for NPSTC Channel Naming conventions. There are both legacy California mutual aid channels that do not appear in any national plans and national plan frequencies that California has chosen to use modified names to supersede the NPSTC names.

Prior to Rebanding					
"Existing"	Rx FREQ	Rx CTCSS	Tx FREQ	Tx CTCSS	Emission
I-CALL	866.0125	156.7	821.0125	156.7	W
n/a	866.0125	156.7	Simplex	156.7	W
I-TAC 1	866.5125	156.7	821.5125	156.7	W
n/a	866.5125	156.7	Simplex	156.7	W
I-TAC 2	867.0125	156.7	822.0125	156.7	W
n/a	867.0125	156.7	Simplex	156.7	W
I-TAC 3	867.5125	156.7	822.5125	156.7	W
n/a	867.5125	156.7	Simplex	156.7	W
I-TAC 4	868.0125	156.7	823.0125	156.7	W
n/a	868.0125	156.7	Simplex	156.7	W
FIREMARS	868.9875	none	823.9875	156.7	W
n/a	868.9875	none	Simplex	156.7	W
FIREMARS2	866.9125	none	821.9125	156.7	W
n/a	866.9125	none	Simplex	156.7	W
CLEMARS 9	868.5125	none	823.5125	156.7	W
CLEMARS 8	868.5125	none	Simplex	156.7	W
CLEMARS 21	866.2000	none	821.2000	156.7	W
CLEMARS 20	866.2000	none	Simplex	156.7	W

Post-Rebanding					
"Future"	Rx FREQ	Rx CTCSS	Tx FREQ	Tx CTCSS	Emission
8CALL90	851.0125	156.7	806.0125	156.7	W
8CALL90D	851.0125	156.7	Simplex	156.7	W
8TAC91	851.5125	156.7	806.5125	156.7	W
8TAC91D	851.5125	156.7	Simplex	156.7	W
8TAC92	852.0125	156.7	807.0125	156.7	W
8TAC92D	852.0125	156.7	Simplex	156.7	W
8TAC93	852.5125	156.7	807.5125	156.7	W
8TAC93D	852.5125	156.7	Simplex	156.7	W
8TAC94	853.0125	156.7	808.0125	156.7	W
8TAC94D	853.0125	156.7	Simplex	156.7	W
FMARS3	853.9875	none	808.9875	156.7	W
FMARS3D	853.9875	none	Simplex	156.7	W
FMARS4	851.9125	none	806.9125	156.7	W
FMARS4D	851.9125	none	Simplex	156.7	W
CLEM11	853.5125	none	808.5125	156.7	W
CLEM11D	853.5125	none	Simplex	156.7	W
CLEM12	851.2000	none	806.2000	156.7	W
CLEM12D	851.2000	none	Simplex	156.7	W

CALIFORNIA ON-SCENE EMERGENCY COORDINATION RADIO SYSTEM

The California On-Scene Emergency Coordination Radio System (CALCORD) is a simplex frequency licensed by the State of California in the VHF-Hi band. OES has licensed 156.075 for mobiles and portables within the state, and a maximum Effective Radiated Power of 110 watts. All jurisdictions may receive authorization to transmit with approval by OES. CALCORD is intended for use as an on-scene coordination channel with secondary use for mutual aid.

CALIFORNIA LAW ENFORCEMENT MUTUAL AID RADIO SYSTEM

The California Law Enforcement Mutual Aid Radio System (CLEMARS) is a set of frequencies that are licensed and owned by the state, but for use by county and local governments. They are intended to be used as mutual aid channels, but may be operated for day-to-day use provided that mutual aid use is given priority. CLEMARS channels that are authorized for use in the San Francisco Bay Area are listed below. CLEMARS 3 is also the National Law Enforcement Mutual Aid Channel. Base-Mobile pairs listed are OES “GOLD” channel configurations, and the pairs may be licensed in reverse (Rx/Tx). Channels that are listed with CTCSS of 156.7 may be licensed with other standard tones provided the radio is capable of toning at 156.7.

Name	Base	Mobile	CTCSS
CLEMARS 1	(simplex-BMP)	154.920	Optional
CLEMARS 2	(simplex-P)	154.935	Optional
CLEMARS 3	(simplex-BMP)	155.475	None
CLEMARS 4	(simplex-BMP)	460.025	Optional
CLEMARS 5	460.025	465.025	Optional
CLEMARS 6	(simplex-BMP)	39.46	156.7
CLEMARS 7	39.46	45.86	156.7
CLEMARS 8	(simplex-RBMP)	868.5125	156.7
CLEMARS 9	868.5125	823.5125	156.7
CLEMARS 20	(simplex-RBMP)	866.2000	156.7
CLEMARS 21	866.2000	821.2000	156.7

FIRE MUTUAL AID RADIO SYSTEM

The Fire Mutual Aid Radio System (FIREMARS) is a set of frequencies that are licensed, owned, and operated by the state, county, and local governments, but initially coordinated by OES. They are intended for use as mutual aid channels, but may be operated for day-to-day use provided that mutual aid use is given priority. FIREMARS channels are listed below.

Name	Inputs	Outputs	CTCSS
FIREMARS	823.9875	868.9875	156.7
FIREMARS D	868.9875	156.7	
FIREMARS 2	821.9125	866.9125	156.7
FIREMARS 2D	866.9125	156.7	

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Appendix D | RECP Communications Subsidiary Plan

Emergency Operations Centers
Tactical Call Signs

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Appendix D – Emergency Operations Centers Tactical Call Signs

Emergency Operations Center	Call Sign
Governor's Office of Emergency Services (OES) State Operations Center	"California"
OES Coastal Region	"Coastal"
OES Inland Region	"Inland"
OES Southern Region	"Southern"
OES Mutual Aid Locations/Designators (may vary)	
Redding	"State OES Redding"
Fresno	"State OES Fresno"
Operations Control Center (OCC)	"OCC Riverside"
Fire Regional Coordinators Example: Fire Region II	"OES Fire Region (Number)" Example: "OES Fire Region Two"
Law Regional Coordinators Example: Law Region 1	"Law Region (Number)" Example: "Law Region One"
Federal Emergency Management Agency (FEMA) Regions Example: FEMA Region 9	"FEMA Region (Number)" Example: "FEMA Region Nine"
U.S. Geological Survey (USGS)	"USGS"
National Aeronautics and Space Administration (NASA), Ames Research Center	"NASA Ames"
AT&T (Various Sites)	"AT&T EOC (Location)"
National Interagency Fire Center, Boise	"Fire Center Boise"
Verizon	"Verizon Thousand Oaks"
California Department of Transportation (Caltrans) Headquarters	"Caltrans Headquarters"
Caltrans Districts	"Caltrans (Location or District #)"
California Department of Public Health	"Department of Public Health (Location)"
Emergency Medical Services Authority (EMSA)	"EMSA (Location)"
Teale Data Center	"Teale Data Center"
U.S. Public Health Service	"U.S. Public Health (Location)"

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Appendix E | RECP Communications Subsidiary Plan

Auxiliary Communications Service Network Frequencies

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Appendix E – Auxiliary Communications Service Network Frequencies

Auxiliary Communications Service (ACS) Communications Center networks are established according to need depending upon the situation. Activity can occur from the Governor's Office of Emergency Services (OES) State Operations Center (SOC) or from one or more of the Regional Emergency Operations Centers.

Level A nets are established from the SOC Communications Center if, and as, needed to link the State Warning Center or the SOC to the Federal Emergency Management Agency (FEMA) and/or adjoining states.

Level B nets are established to or by OES Regional Emergency Operations Centers (REOCs) as appropriate.

For communications in California, Operational Area communications are to the REOC serving their area, and not to the SOC in Sacramento. This is the required structure for information and mutual aid under the Standardized Emergency Management System and in the Response Information Management System.

Any level of activity may include the use or monitoring of amateur radio service frequencies, as well as government frequencies. REOC frequencies usually will be on VHF or UHF due to the short paths of communications. On occasion, HF may be used when conditions are appropriate. If the state ACS activates operations on the amateur frequencies at the OES ACS Communications Center in Sacramento, it is primarily for REOC coordination and information. Depending on the situation, it may use or monitor the following:[5]

- AMATEUR RADIO frequencies using tactical call "California" with the Federal Communications Commission call sign "W6SIG" (or "K0OES")
- 7230 KHz LSB – Primary Daytime Amateur Radio Frequency
- 3992 KHz LSB – Primary Nighttime Amateur Radio Frequency
- 1987 KHz LSB – Alternate Nighttime Amateur Radio Frequency.

When propagation and band conditions warrant:

- 5348 (5346.5) or 5368 (5366.5) KHz USB Alternate Amateur Radio Frequency
- Maximum 50 Watts PEP – General and higher class license[6]

[5] California Emergency Services Net uses these frequencies for tests and exercises that support Operational Areas and the REOC. In emergencies, Operational Area stations that normally log in weekly with California will divert to the REOC. For REOC to Operational Area Emergency Operations Center frequencies, refer to the respective REOC ACS frequency plan or resource directory.
[6] In accordance with 47 CFR Section 97.

During an emergency, exercise, or drill, the REOC may use the primary amateur frequencies for Level B purposes (with OES Headquarters), then move their Operational Area stations to a separate sub-net (Level 1) that may be HF, VHF, UHF, or microwave, depending on the circumstances.

The use of these channels is not guaranteed, as all amateur service frequencies are shared. They may be occupied and require use of an alternate frequency, such as 10 KHz + or – off the stated frequency, with the exception of 5348 and 5368 KHz, which are specific HF channels. Again, use of the amateur frequencies is not guaranteed, as other channels may be better for current needs.

The ACS operates under the authority of a Communications Coordinator or Communications Unit Leader on authorized frequencies, state government, citizens, amateur, and interoperability channels.

Frequency planning and coordination is the responsibility of the Senior Telecommunications Coordinator and is delegated to OES Communications Coordinators and ACS executive staff.

Appendix F | RECP Communications Subsidiary Plan

Communications Background

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Appendix F – Communications Background

The range of electromagnetic energy that propagates throughout the universe is referred to as spectrum. This radiating energy is measured in cycles per second (frequency) or Hertz (Hz), and ranges from sub-audible emissions (0 to 10,000 Hz [10 kHz]) to gamma-rays and background cosmic radiation from stars and cosmic events (1029 Hz). The radio spectrum is defined as the range from 3 kHz to 300 GHz, and encompasses the effective range that electromagnetic energy can be used in radio communications.

The radio spectrum is further divided into characteristic blocks of frequencies (bands) as determined by the properties of the radio waves. The regulation of the radio spectrum in the United States is split between two branches. The Federal Communications Commission (FCC) reports to Congress and regulates the radio frequencies that are assigned for non-Federal use. The National Telecommunications and Information Administration (NTIA) is a Department of Commerce agency that regulates the frequencies that are assigned to the Federal Government. Both agencies segregate bands by function; each with its own rules for use.

The frequency bands that non-Federal public safety agencies may use for mobile communications are part of the FCC's Private Land Mobile Radio Services. This includes bands that are exclusively allocated to public safety agencies (such as 700 MHz and National Public Safety Planning Advisory Committee bands), and bands that are shared from an Industrial/Business pool (such as VHF, UHF, and 800 MHz).

State, county, and local governments in California have procured Land Mobile Radio (LMR) systems in accordance with their respective needs. Each agency selected one of eleven non-Federal public safety bands, based on the band's rules, propagation characteristics, and spectrum availability. Each agency also selected technology applications (for example trunking, Continuous Tone-Coded Squelch System (CTCSS), and digital) from one of a handful of LMR providers. These selections are generally suited to meet the agency's day-to-day needs.

This has led to a patchwork of communication systems in the Bay Area, each with different governances, different technologies, and different bands. In a regional event, the challenge is one of getting different systems to operate with each other. The LMR systems that supported agency daily operations must now support a multi-agency, multi-discipline Incident Command System at the incident site, and a resource ordering and dispatching system to bring necessary assets to the incident site when required.

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Appendix G | RECP Communications Subsidiary Plan

Bay Area Communications Short List

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Appendix G – Bay Area Communications Short List

Location	Name	Phone Number	Email
Marin County	Tim Charlberg	(415) 499-7313	tcharlberg@co.marin.ca.us
Sonoma County	Dennis Smiley	(707) 565-2411	dsmiley@sonoma-county.org
Napa County	Eric Parks	(707) 299-1300	eparks@co.napa.ca.us
Solano County	Ross Cardno	(707) 784-6340	rcardno@solanocounty.com
Contra Costa County	Steve Overacker	(925) 957-7701	sover@doit.cccounty.us
Alameda County	Randall Hagar	(510) 208-9789	randall.hagar@acgov.org
City of Oakland	Cherelyn Garcia	(510) 238-4709	cpgarcia@oakland.net.com
Santa Clara County	George Washburn	(408) 263-6412	recp@georgewashburn.com
City of San Jose	Sue Sakai-McClure	(408) 277-4444	sue.sakai-mcclure@sanjoseca.gov
Santa Cruz County	Mike Del Fava	(831) 454-2025	mike.delfava@co.santa-cruz.ca.us
Mutual Aid Region II	George Lowry	(916) 845-8608	george.lowry@oes.ca.gov
San Mateo County	Bill O'Callahan	(650) 363-4790	wocallahan@co.sanmateo.ca.us
City and County of San Francisco	Jim Goebel	(415) 558-3856	Ecd.goebel@sfgov.org

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Appendix H | RECP Communications Subsidiary Plan

Bay Area Travel Communication Channel Requests

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Appendix H – Bay Area Travel Communication Channel Requests

County	VHF-Lo	VHF-Hi	UHF	800 MHz
Marin	CHP Violet +131.8	CLEMARS 1		
Sonoma	CHP Emerald +131.8	CDF LNU West		
Napa	39.90 +123.0	Base153.980 +131.8 Mobile158.880 +131.8 (South) +127.3 (North)	Base/453.350 +131.8 Mobile/458.350 +131.8(South) +127.3(North)	
Solano	CHP Turquoise +131.8	Base 155.490 +1B Mobile 158.790		
Contra Costa	CHP Maroon +131.8	CDF SCU		
Alameda	CHP Aqua +131.8	CDF SCU		
Santa Clara	CHP Ruby +131.8	CDF SCU		
Santa Cruz	CHP Green +167.9	CLEMARS 1		
San Mateo	CHP Amber +131.8	CDF CZU		
San Francisco	CHP Pink +131.8	CLEMARS 1		CLEMARS 20/21

Frequencies in bold have been pre-coordinated with respective frequency owners.

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Appendix I | RECP Communications Subsidiary Plan

Communications Transition Methods

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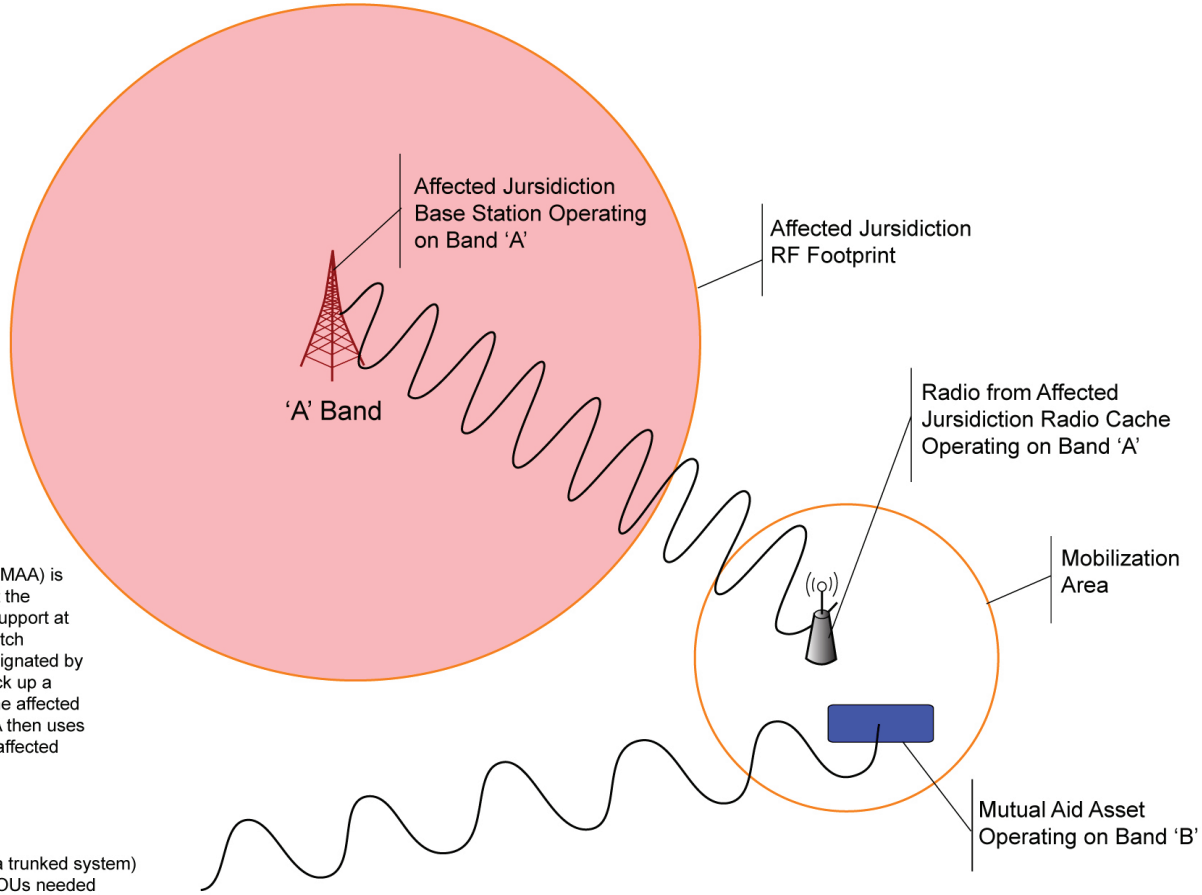
Appendix I – Communications Transition Methods

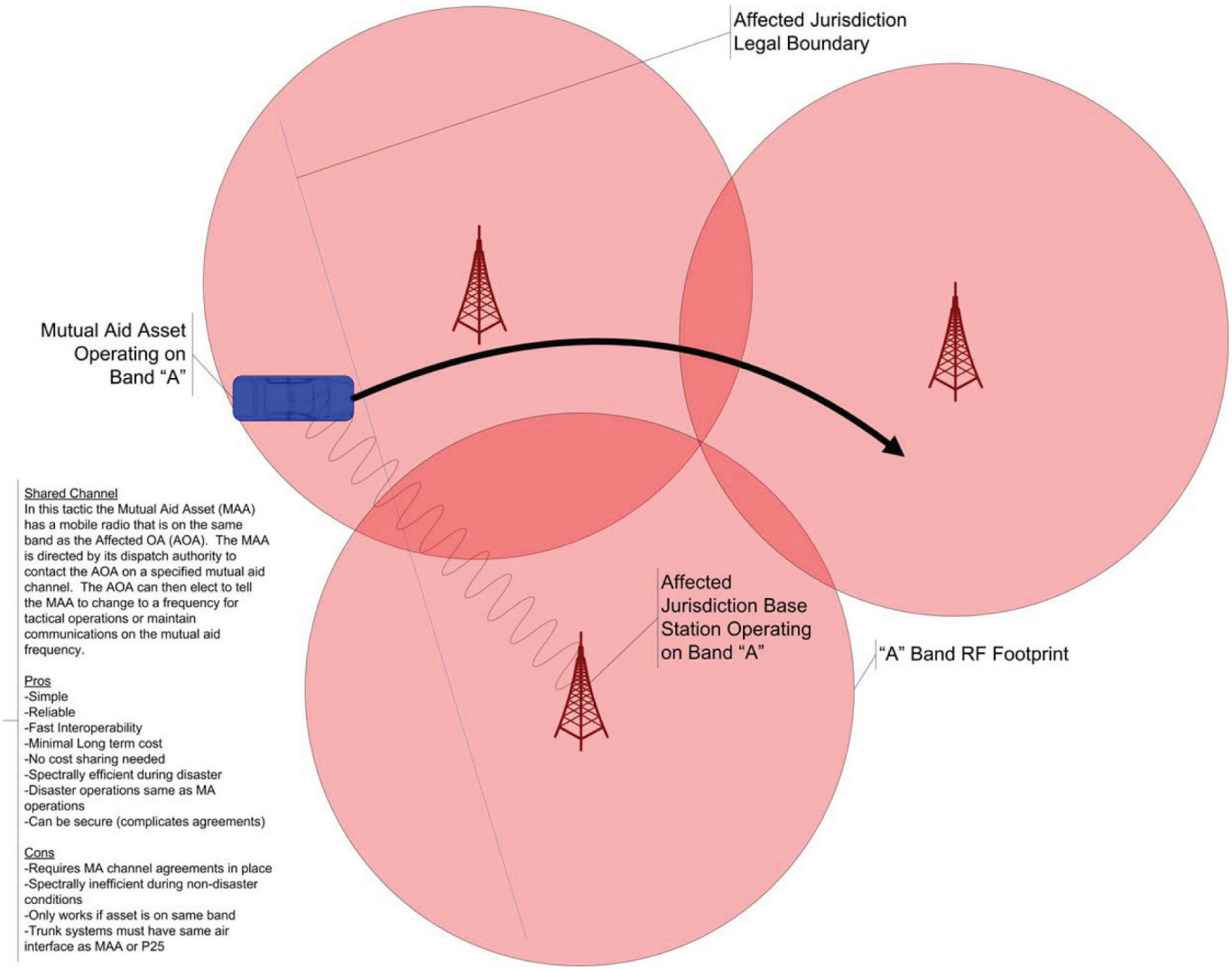


Radio Swap
In this tactic, the Mutual Aid Asset (MAA) is operating on a frequency band that the affected Operational Area cannot support at all.The MAA is directed by its dispatch authority to a mobilization area designated by the affected Operational Area to pick up a mobile radio that is supported by the affected Operational Area system. The MAA then uses the radio to communicate with the affected Operational Area.

Pros
-Simple
-Reliable
-Spectrally Efficient (especially for a trunked system)
-No Cost sharing agreements or MOUs needed
-Secure

Cons
-Takes time to employ
-Requires training for MAA
-Additional radios are expensive
-Not useful for day-to-day mutual aid
-Logistically intensive (batteries)

Appendix I-1
Communications Transition Methods

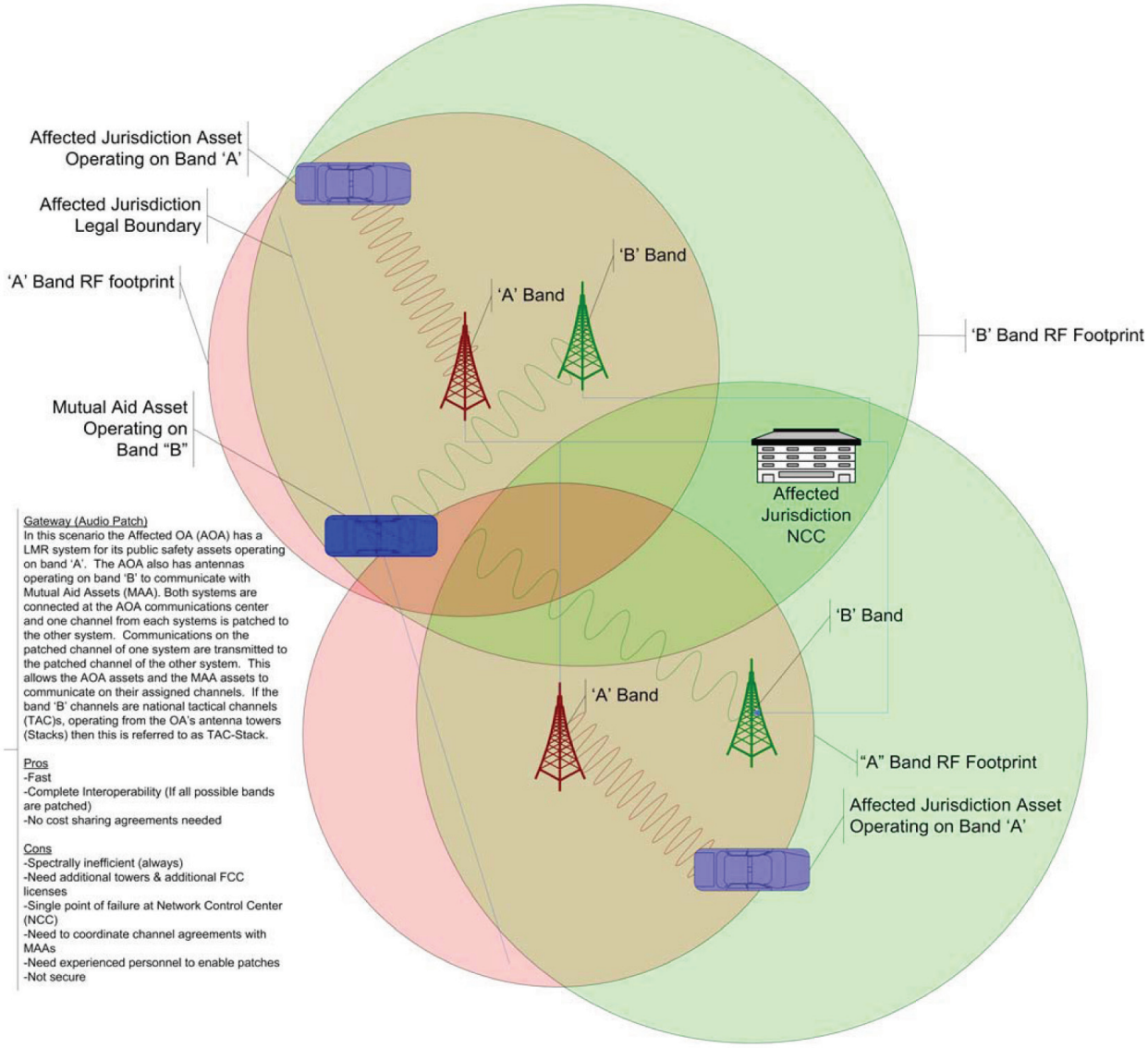


Shared Channel
In this tactic the Mutual Aid Asset (MAA) has a mobile radio that is on the same band as the Affected OA (AOA). The MAA is directed by its dispatch authority to contact the AOA on a specified mutual aid channel. The AOA can then elect to tell the MAA to change to a frequency for tactical operations or maintain communications on the mutual aid frequency.

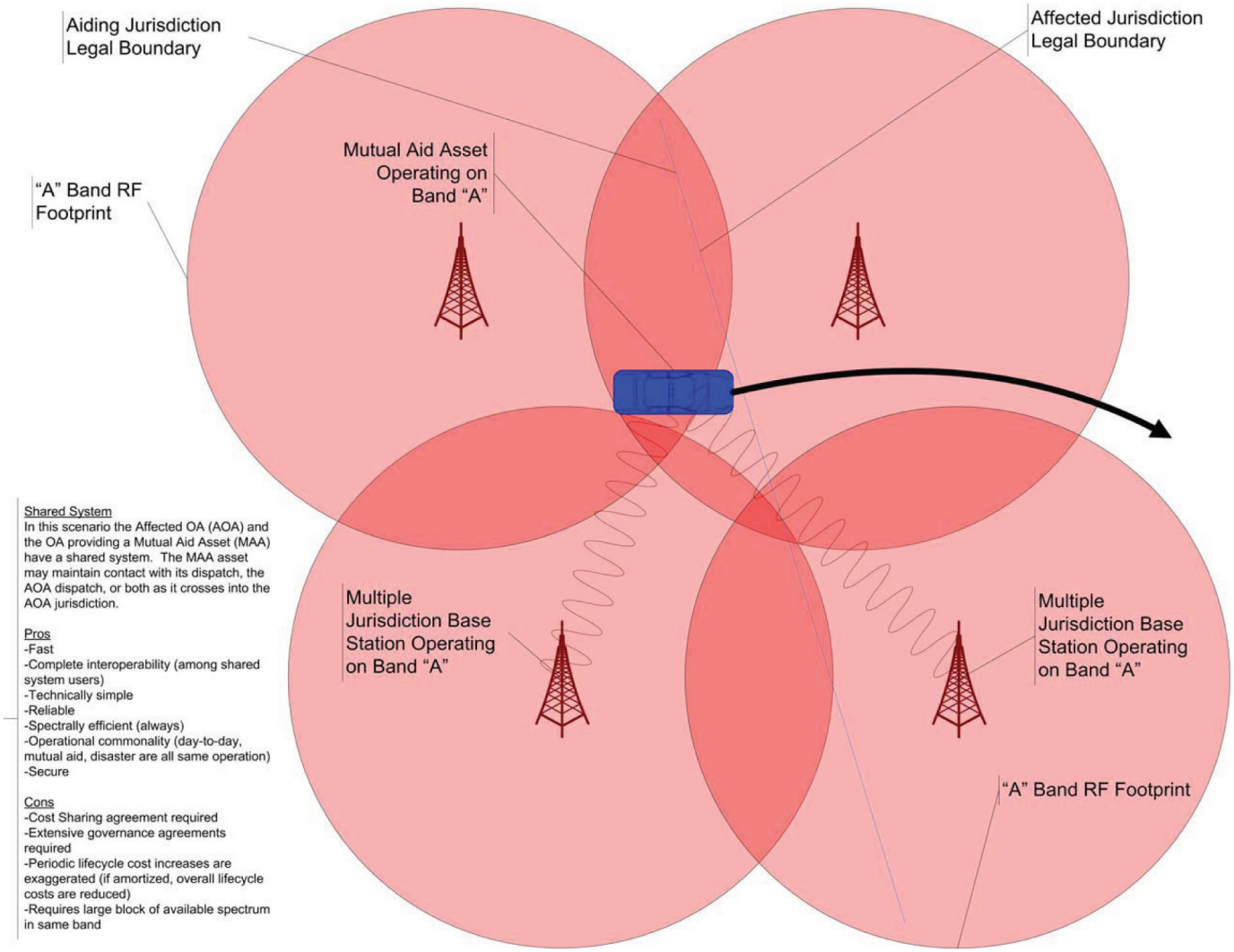
Pros
-Simple
-Reliable
-Fast Interoperability
-Minimal Long term cost
-No cost sharing needed
-Spectrally efficient during disaster
-Disaster operations same as MA operations
-Can be secure (complicates agreements)

Cons
-Requires MA channel agreements in place
-Spectrally inefficient during non-disaster conditions
-Only works if asset is on same band
-Trunk systems must have same air interface as MAA or P25

Appendix I-2
Communications Transition Method: Radio Cache



Appendix I-3
Communications Transition Method:
Shared Channel (Mutual Aid Channel)



Shared System
In this scenario the Affected OA (AOA) and the OA providing a Mutual Aid Asset (MAA) have a shared system. The MAA asset may maintain contact with its dispatch, the AOA dispatch, or both as it crosses into the AOA jurisdiction.

Pros
-Fast
-Complete interoperability (among shared system users)
-Technically simple
-Reliable
-Spectrally efficient (always)
-Operational commonality (day-to-day, mutual aid, disaster are all same operation)
-Secure

Cons
-Cost Sharing agreement required
-Extensive governance agreements required
-Periodic lifecycle cost increases are exaggerated (if amortized, overall lifecycle costs are reduced)
-Requires large block of available spectrum in same band

Appendix I-4
Communications Transition Method:
Gateway (Audio Patch)

Appendix J | RECP Communications Subsidiary Plan

Regional Emergency Operations Center Radio System

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Appendix J – Regional Emergency Operations Center Radio Systems

The Regional Emergency Operations Center (REOC) for the Governor's Office of Emergency Services (OES) Coastal Region is authorized to transmit on the following channels. The actual licensed center frequencies are in bold.

Channel	Base	Mobile	Effective Radiated Power
CESRS	**153.755**	154.980	100
EDIS	**37.02**	100	
EDIS	**37.38**		100
OES Fire 1A	**154.160**	159.135	100
OES Fire 1B	**154.160**	159.195	100
OES Fire 2A	**154.220**	159.135	100
OES Fire 2B	**154.220**	159.195	100
White Fire 1	**154.280**		100
CDF CMD-1	**151.355**	159.300	100
CLEMARS 1	**154.920**		100
CLEMARS 3	**155.475**		100
CLEMARS 4	**460.025**	465.025	100
CLERS (17)	458.875		100[7]
CHP Blue	**42.34**	**42.18**	100[8]
EMS MA	**155.340**		100[9]
CALTRANS	**47.1**		100[10]

The REOC for the Coastal Region also maintains a high-frequency radio that is authorized to transmit on the following frequencies.

Center	Upper Sideband
7.480	**7.4814**
7.802	**7.8034**
5.140	**5.1414**
2.419	**2.4204**
2.422	**2.4234**
2.812	**2.8134**
2.804	**2.8054**
2.326	**2.3274**
5.195	**5.1964**
7.805	**7.8064**

[7] Licensed as a control channel; this frequency in combination with a CTCSS of 123.0 Hz will access the California Law Enforcement Radio System repeater at Fremont Peak.
[8] Licensed to transmit on both the base and mobile frequencies
[9] 155.340 is intended for Emergency Medical Services interagency operations.
[10] The California Department of Transportation has moved to an 800 MHz system, but the REOC is still authorized to transmit on the old VHF-Lo frequency.

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