



CESRS

CALIFORNIA EMERGENCY SERVICES RADIO SYSTEM



**Operations Response Division
Telecommunications Branch
3650 Schriever Avenue
Mather, CA 95655**

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California Governor's Office of Emergency Services

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OVERVIEW

The California Emergency Services Radio System (CESRS) serves as an emergency communications system for the California Governor's Office of Emergency Services (Cal OES) and county emergency services organizations.

Statewide communications are provided through a number of microwave interconnected mountaintop relays. Cal OES has base stations at its headquarters in Mather, Mutual-Aid Region 5 Alternate REOC and Los Alamitos, Southern Region EOC.

SYSTEM MANAGEMENT

CESRS operates under appropriate FCC Rules and Regulations and is administered by the State of California through Cal OES. The California Statewide Interoperability Executive Committee (CalSIEC) exercises general supervision and disciplinary control.

ELIGIBILITY

Cal OES is the primary agency to operate CESRS.

Local government (county) emergency services offices are the primary eligible agencies authorized to use CESRS, provided that the proper license authorizations have been obtained. Local governments are authorized to:

- Purchase base station equipment to operate on the frequency, provided the county complies with the system agreement and equipment specifications as detailed in this plan.
- Operate mobiles and/or handhelds, provided these units are assigned to the office directly responsible for the day-to-day administration of the county's emergency services.

Cal OES may extend CESRS frequencies to other agencies on a case by case basis. For more information, please contact the Cal OES Telecommunications Duty Officer (TDO) at 916-845-8911 or warning.center@oes.ca.gov.

AUTHORIZATION PROCEDURES FOR STATE DESIGNATED AND NON-FEDERAL NATIONAL INTEROPERABILITY CHANNELS

The state of California is the designated authorized licensee of all state designate mutual-aid and non-Federal National Interoperability Channels. In order to operate on these frequencies, the licensee (*State of California*) must designate you as a unit of their system, in accordance with FCC rule 90.421. Agencies that desire to program these channels must request authorization from Cal OES Telecommunications Branch. ¹In cases where use is necessary for the imminent protection of human life and property, authority to transmit is automatic and will be temporary until the emergency has ended.

The following procedures are divided into two general uses: Mobiles Only and Fixed Sites. "Mobiles Only" refers to agencies requesting to program only handheld and/or vehicular mounted radios. Procedures listed under "Fixed Sites" are for agencies seeking to operate/modify radio fixed stations.

State Frequency Coordination and Licensing

The Public Safety Communications (PSC) Branch of the Logistics Division of Cal OES is responsible for ensuring all state communication systems and licenses comply with federal regulations. This includes ensuring license requests to program Interoperability channels comply with the technical and operational policies of the California Statewide Interoperability Executive Committee (CalSIEC).

A license request to operate a fixed radio site using mutual-aid and/or interoperability frequencies must be accompanied with an endorsement from CalSIEC. Once obtained, the state license will be modified to include you as an authorized licensee.

Licensing Fees

Charges are levied on all applicant organizations when seeking a new frequency or making a license change, system modification, or any other technical change which requires an official FCC license modification or transaction to take place.

The PSC Branch frequency coordination contract charges are \$100 and up, per frequency, per location. There is also a flat rate charge of 2 hours of engineering at \$145/hr to process the application package and any necessary supporting documentation that may be needed.

¹ *Safety of Life* provision under FCC rules 90.417(a)

For more details on the fee structure and process, please visit the Public Safety Communications (PSC) Branch website or contact the Frequency Coordination and Licensing Unit at (916) 657-6153.

<http://www.caloes.ca.gov/cal-oes-divisions/public-safety-communications>

MOBILES ONLY (CAR-TO-CAR OR DIRECT ONLY)

1	Draft a “Letter of Intent” (LOI) on your agency letterhead <i>The letter should contain general information on the requested channels, proposed site(s) and area of operations. If the system is to serve more than a single political entity, provide additional details such as a list of all individuals responsible for the project.</i>
2	Complete the State of California Radio Frequency Usage Form (TDe-400) <i>This form is required by PSC and requires the requesting agency to provide technical details</i>
3	Sign Memorandum of Understanding (MOU) <i>State designate mutual-aid plans require requesting agencies to sign associated MOU. Non-federal National Interoperability Channels only require a TDe-400.</i>
4	Send the LOI and completed form(s) via postal mail or email to: California Governor’s Office of Emergency Services Attn: Telecommunications Branch 3650 Schriever Avenue Mather, CA 95655 Email: tdo@caloes.ca.gov
5	Program Radios You may program channels into radios but may not transmit until final FCC authorization is received. Contact the PSC FCC Unit at (916) 657-6153 for a status on FCC authorization.

Fixed Sites

State designated Interoperability frequencies are a limited resource that is shared across the state. Therefore, fixed sites that transmit on these frequencies have the potential to cause harmful interference if not properly coordinated.

Agencies seeking to program and transmit from fixed sites will need to be coordinated and receive support of neighboring jurisdictions. Furthermore, the applicant will need an endorsement from the California Statewide Interoperability Executive Committee (CalSIEC) before the PSC files the license request with the FCC. Requests that diverge from National or Statewide policy on the proper use of Interoperable frequencies will not be endorsed.

PSCO licensing fees do apply to these requests. Contact the PSC frequency coordination and FCC licensing unit (916) 657-6153 to determine the associated costs.

1	Draft a Letter of Intent (LOI) on your agency letterhead The letter should contain general information on the requested channels, proposed site(s) and area of operations. If the system is to serve more than a single political entity, provide additional details such as a list of all individuals responsible for the project.
2	Fill out a FCC 601 license request form and attachments D and H The full text of the 601 and additional required schedules may be downloaded from the CalSIEC website at http://rimsinland.oes.ca.gov/calsiec.nsf or directly from the FCC at http://www.fcc.gov/formpage.html . We strongly suggest you review the entire form 601 and schedules D and H before filling out the forms in the application package.
3	Send the LOI and completed form(s) via postal mail or email to: California Emergency Management Agency Attn: California Interoperability Coordinator's Office 3650 Schriever Avenue Mather, CA 95655 Email: Interop@caloes.ca.gov
4	Develop a proposal package The proposal package should include coverage plots, applicable frequencies and channels, and other supporting documents. Supporting documents include Standard Operating Procedures, letters of recommendations or endorsements from neighboring jurisdictions, and/or concurrence from regional frequency coordination groups. The CICO and Cal OES TDO are available to assist with the coordination process

5

Submit proposal package for CalSIEC Planning Area review

Proposal packages must be reviewed by a CalSIEC Planning Area prior to CalSIEC endorsement. Each Planning Area governance body meets on a quarterly basis. It is recommended that you contact the Planning Area chair and arrange to have your proposal package reviewed by the committee. System proposals must be in compliance with State and Federal guidelines for Mutual-Aid and Interoperability Channels.

(table below lists the counties in each Planning Area)

Northern Planning Area	Capital/Bay Planning Area	Central Planning Area	Southern Planning Area
Butte	Amador	Fresno	Kern*
Colusa	Alameda	Kern*	Imperial
Del Norte	Alpine	Kings	Inyo
Glenn	Calaveras	Madera	Los Angeles
Humboldt	Contra Costa	Mariposa	Mono
Lake	El Dorado	Merced	Orange
Lassen	Marin	Tulare	Riverside
Mendocino	Monterey		San Bernardino
Modoc	Napa		San Diego
Nevada	Placer		San Luis Obispo
Plumas	Sacramento		Santa Barbara
Shasta	San Benito		Ventura
Sierra	San Francisco		
Siskiyou	San Joaquin		
Sutter	San Mateo		
Tehama	Santa Clara		
Trinity	Santa Cruz		
Yuba	Solano		
	Sonoma		
	Stanislaus		
	Tuolumne		
	Yolo		

**Because it encompasses both sides of the mountain range that separates the Central Valley and Southern California, Kern participates in both Central and Southern Planning Areas.*

Contact the California Interoperability Coordinator's Office or the Cal OES Telecommunications Branch for assistance with contacting the CalSIEC Planning Areas. More information can also be found on the Cal OES website at <http://www.caloes.ca.gov/cal-oes-divisions/public-safety-communications/telecommunications-governance-services-branch/california-interoperable-communications>

6	Forward the CalSIEC Planning Area endorsement letter to the California Interoperability Coordinators Office
7	<p>CalSIEC Formal Review</p> <p>Following the CalSIEC Planning Area endorsement, the CICO will forward the package to the CalSIEC Standing committees for review.</p> <p>Following the review, the application will go to the CalSIEC for final endorsement.</p> <p>The CalSIEC endorsement letter will be forwarded to the PSCO FCC unit for administrative processing.</p>
8	<p>Program Radios/Equipment</p> <p>Requestors may program channels into radios but may not transmit until final FCC authorization is received.</p> <p>Contact the PSC FCC Unit at (916) 657-6153 for a status on FCC authorization.</p>

OPERATIONAL STANDARDS

PERMISSIBLE COMMUNICATIONS

CESRS channels are for official use only.

All communications on CESRS are in accordance with Part 90, Subpart B of FCC Regulations (Public Safety Radio Pool). Unofficial communications on CESRS are prohibited and may result in revocation of licensee authorization.

CHANNEL IDENTIFIERS

Only the Standard California Channel Identifiers are used for CESRS. It is strictly prohibited to assign a local identifier to a mutual aid channel.

MONITOR FIRST

Personnel must monitor the CESRS channel prior to transmitting to minimize the possibility of interference with communications in-progress.

IDENTIFICATION

Mobile Units

1. Mobile units identify the unit or station they wish to contact and identify themselves by using their agency-assigned unit designator. These are not shortened and include the entire set of letters and/or numbers.

For example:

“Fremont Engine 51, this is Cal Fire Battalion 1614.”

2. During interagency operations, mobile units identify their agency in addition to their agency-assigned unit designator. For example:

“CHP 58-501C, this is Sacramento 6 Paul 20.”

Base Stations

Base stations identify themselves by using their agency name along with any other usual identifier. Base stations must use the FCC call sign shown on their CESRS license at least once every 30 minutes or at the end of a contact.

CHANNEL USE PRIORITIES

CESRS use is governed by a system of priorities that must be respected at all times. When a higher priority use is required, all lower priority traffic yields the frequency immediately.²

- **Priority 1:** Disaster and extreme emergency operations for mutual aid and interagency communications
- **Priority 2:** Emergency or urgent operations involving imminent safety of life or protection of property
- **Priority 3:** Special event control activities, such as a planned event involving the participation of two or more agencies
- **Priority 4:** Drills, tests and exercises
- **Priority 5:** Single agency secondary communications

² Please note that the 2011 update of the CESRS plan changed the original numbering of the Priorities from 1, 2, 3, 3A, 4 to Priorities 1 through 5.

Notification of Priority Traffic (Priority 1, 2, 3, 4)

- Plain language must be used when “clearing” a CESRS channel for use in high priority situations.
- Agencies inform other area user agencies when they are involved in high priority usage of CESRS channels by phone or email.
- Notify the California State Warning Center (CSWC) of high priority usage via phone (916-845-8911) or email (warning.center@oes.ca.gov).
- If two or more agencies in close proximity request a similar priority level clearance for simultaneous operations, contact the Cal OES TDO (916-845-8911 or warning.center@oes.ca.gov) for guidance.

Emergency Management Agency Staff Secondary Communications (Priority 5)

In the absence of Priority 1, 2, 3, and 4 situations, CESRS channels may be used for day-to-day communications of administrative nature for local emergency services offices. There are specific limitations relative to such use:

- Before using the channel for secondary communications, agencies should first monitor the channel to ensure that no higher-priority communications are being conducted on CESRS.
- The use conforms to the operational standards outlined in this plan (identification, call signs, plain language, etc.)
- Agencies must immediately vacate the channel if it needs to be used for a Priority 1, 2, 3, or 4 situations.
- For sustained secondary communications, contact the Cal OES TDO (916) 845-8911 or warning.center@oes.ca.gov.

MESSAGE PRECEDENCE

Message Precedence is a classification system that establishes the priority of message content while a channel is in use – i.e., it helps determine which message has precedence over another on a channel. It is used for both verbal and written message traffic. The order of precedence of messages is:

1. **New Incident:** Messages pertaining to a new incident. Once the new incident is addressed, it no longer has precedence unless it has a higher priority.
2. **Emergency:** Messages involving the imminent safety of life or protection of property, including messages to request supplies, materials or instructions vital to relief of emergency operations.
3. **Priority:** Messages that are official and time-bound, but are not covered in the emergency category. Priority messages may include notice of deaths or injury in a disaster area.
4. **Welfare:** Messages involving the health and welfare of an individual in a disaster area.

5. Routine: Messages pertaining to routine operations.

PLAIN LANGUAGE

Plain Language, according to NIMS, is the use of common terms and definitions that can be understood by individuals from all responder disciplines.

All communications on CESRS are in plain language. Radio codes, acronyms, and abbreviations are to be avoided as they may cause confusion between agencies and disciplines, and could jeopardize emergency responder safety.

VOICE PRIVACY

The use of any CESRS channel for transmission of encoded, encrypted, digital, or scrambled messages is prohibited. However, under special circumstances, a one-time waiver may be granted to allow for encryption. All inquiries and requests for waivers should be addressed to the Cal OES TDO (916-845-8911 or TDO@caloes.ca.gov)

INTEROPERABILITY OPERATION

In the event of a public safety Priority 1 or 2 emergency, and in keeping with appropriate FCC Rules, CESRS may be *temporarily* cross-banded through automatic or manual equipment with another channel. A cross-band or use of a gateway switch must be discontinued when the operation requiring its use is finished. Refer to Cal OES's Statewide Gateway Units Standard Operating Procedure for more information on gateway procedures.

SUPERVISORY RESPONSIBILITY

Each agency manager and supervisor bears the responsibility for the compliance of operations on CESRS to the CESRS Plan. Violations are reported to Cal OES who works with each agency's executives to correct reported problems. See Appendix E for the complaint procedure.

TECHNICAL STANDARDS AND PROCEDURES

Statewide communications are provided through a number of microwave interconnected VHF mobile relays that are strategically located at selected mountaintop sites throughout the State. The State Microwave System is divided into five routes running from the microwave switching center in Sacramento. Since all mountaintop repeaters (mobile relays) operate on the same frequencies, a single base station may have access to more than one mountaintop site; therefore, the relays are designed to respond to a particular

single-tone code selected by the operator of the base station to prevent dual keying. Most of these mobile relays can be interconnected to the State Microwave System by using a touchtone type encoder, providing statewide communications. A station equipped with a touchtone encoder may gain access to the microwave system through a VHF mobile relay and exit through a distant VHF mobile relay which is part of CESRS. Below is a technical reference table of the CESRS mountaintop sites.

VHF High Band					
ID	Rx Freq	CTCSS	Tx Freq	CTCSS	Notes
CESRS	153.7550 N	192.8	154.9800 N	Multiple (see table below)	Mountaintop mobile relays. Mode: Analog
CESRS D	153.7550 N	None	153.7550 N	None	Direct communications. Equipment: Allowed for mobiles (installed semi-permanently in a vehicle) and portables (handhelds). Base stations are NOT authorized. Power: 110 Watts maximum output. Mode: Analog

- Equipment (base stations and mobile units) must be in compliance with the standards established by the State to ensure compatibility with the System.
- Each radio must be able of transmitting in direct and repeat mode.
- CESRS uses the continuous tone-coded squelch system (CTCSS) method of operation. When a receiver operates in this mode, only stations which transmit using the same CTCSS tone will be heard. The transmitter must be equipped with multiple CTCSS tones in order to operate statewide. The operator must be able to select multiple CTCSS tones from their operating position.
- In order to talk statewide or to neighboring regions and jurisdictions, radios require a dual-tone multi-frequency (DTMF) encoder, to interconnect the mobile relays to the microwave system at the point of entry and point of exit.

ESSENTIAL INTEROPERABILITY GUIDELINES CHECKLIST

- ✓ **OBEY PRIORITIES:** When a higher priority use is required, all lower priority traffic yields the frequency immediately
- ✓ **USE PLAIN LANGUAGE AT ALL TIMES**
- ✓ **IDENTIFY WITH FULL AGENCY UNIT DESIGNATOR AND FCC CALL-SIGNS (BASE STATIONS AND MOBILES)**
- ✓ **MONITOR THE CHANNEL PRIOR TO TRANSMITTING**
- ✓ **USE APPROPRIATE CODED SQUELCH**
- ✓ **USE THE CHANNEL'S STANDARD ID:** Program the standard California channel ID into your radio's display.
- ✓ **DO NOT SCRAMBLE OR ENCRYPT MESSAGES.**
- ✓ **DO NOT PERMANENTLY OR SEMI-PERMANENTLY LINK MUTUAL AID CHANNELS TO EACH OTHER OR TO LOCAL AGENCY CHANNELS.**

Respect the policies and procedures set forth in each interoperability system's plan to ensure the interoperability channels are available for use in emergency situations.

APPENDIX A: COMPLAINT PROCEDURE

Report all operations on mutual aid channels that are detrimental to first responder safety or to the management of an incident, that fails to follow the procedures outlined in this mutual aid plan, which causes interference to other users, or that violates FCC Regulations 90.20 and 90.405.

To report flagrant violations that endanger first responder safety, immediately contact the TDO via the California State Warning Center (CSWC) (Telephone: 916-845-8911).

To report interference issues from outside sources and other misuses of mutual aid channels:

To report interference issues from outside sources and other misuses of CESRS:

1. Attempt to identify the offending station.
2. Contact the chief executive of that department.
3. If the problem persists, contact the Cal OES TDO via the CSWC (916-845-8911 or warning.center@oes.ca.gov) and relay:
 - The date and time of the problem
 - The circumstances regarding the interference or misuse
 - Information detailing how the misuse interfered with operations or safety
 - Information (identification, call signs, etc.) that would help locate the offending agency.
4. Keep audio logging tapes, tape cassettes, or digital files recording the misuse to send to Cal OES. On receipt of a complaint, Cal OES will conduct an investigation. If requested, Cal OES will return the tape after its investigation

APPENDIX B: ACRONYM LIST

AES: Advanced Encryption Standard

ANSI: American National Standards Institute

CALCORD: California On-Scene Emergency Coordination System

Cal OES: California Governor's Office of Emergency Services

CalSIEC: California Statewide Interoperability Executive Committee

CICO: California Interoperability Coordinator's Office

CLERS: California Emergency Services Radio System

CSWC: California State Warning Center

CTCSS: Continuous Tone-Coded Squelch System

DCS: Digital Coded Squelch

DES: Data Encryption Standard

DVP: Digital voice privacy

FCC: Federal Communications Commission

NAC: Network Access Code

NPSTC: National Public Safety Telecommunications Council

PSC: Public Safety Communications Branch – Logistics Division, Cal OES

TComm: Telecommunications Branch – Operations Response Division, Cal OES

TDO: Telecommunications Duty Officer

APPENDIX C: CESRS REPEATER FREQUENCIES TABLE

Site #	Transmitter		Receiver		Location
	Freq	CTCSS	Freq	CTCSS	
1	153.755	(16) 192.8	154.980	(6) 156.7	MT. DIABLO
2	153.755	(16) 192.8	154.980	(1) 110.9	MT. LUKENS
3	153.755	(16) 192.8	154.980	(2) 123.0	MT. ZION
4	153.755	(16) 192.8	154.980	(4) 136.5	BLACK MTN
5	153.755	(16) 192.8	154.980	(1) 110.9	ANTELOPE PEAK
6	153.755	(16) 192.8	154.980	(3) 131.8	HATCHET MTN
7	153.755	(16) 192.8	154.980	(4) 136.5	HOUGH MTN
8	153.755	(16) 192.8	154.980	(1) 110.9	LIKELY MTN
9	153.755	(16) 192.8	154.980	(3) 131.8	SHAFFER
10	153.755	(16) 192.8	154.980	(1) 110.9	BLOOMER
11	153.755	(16) 192.8	154.980	(3) 131.8	BOREAL RIDGE
12	153.755	(16) 192.8	154.980	(5) 146.2	ROUND MTN
13	153.755	(16) 192.8	154.980	(4) 136.5	MT HAUSER
14	153.755	(16) 192.8	154.980	(1) 110.9	LOMA PRIETA
15	153.755	(16) 192.8	154.980	(2) 123.0	FREMONT PK.
16	153.755	(16) 192.8	154.980	(3) 131.8	MT. LOWE
17	153.755	(16) 192.8	154.980	(4) 136.5	RED MTN (Ventura)
18	153.755	(16) 192.8	154.980	(3) 131.8	CUYAMACA
19	153.755	(16) 192.8	154.980	(2) 123.0	STRAWBERRY PK
20	153.755	(16) 192.8	154.980	(3) 131.8	MT TAMALPAIS
21	153.755	(16) 192.8	154.980	(5) 146.2	MT. ST. HELENA
22	153.755	(16) 192.8	154.980	(4) 136.5	LAUGHLIN RIDGE
23	153.755	(16) 192.8	154.980	(2) 123.0	MT. PIERCE
24	153.755	(16) 192.8	154.980	(1) 110.9	RED MTN (Del Norte)
25	153.755	(16) 192.8	154.980	(4) 136.5	SCOUT PK
26	153.755	(16) 192.8	154.980	(2) 123.0	PINE GROVE

27	153.755	(16) 192.8	154.980	(1) 110.9	SHERWIN SUMMIT
28	153.755	(16) 192.8	154.980	(13) 141.3	PACHECO PK
29	153.755	(16) 192.8	154.980	(12) 127.3	SODA CREEK RIDGE
30	153.755	(16) 192.8	154.980	(14) 151.4	CAHTO PK
31	153.755	(16) 192.8	154.980	(15) 162.2	TELEGRAPH HILL

APPENDIX D: CESRS MICROWAVE ROUTES TABLE

Microwave Routes with Access Codes	Site Location	County	CTSS Tone	DTMF Dial In	DTMF Dial Out
South Valley - 850	Mt. Zion	Amador	2	242	2422
	Telegraph Hill +	Tuolumne	15*	N/A	N/A
	Black Mt.	Fresno	4	252	2522
	Round Mt.	Kern	5	253	2532
	Mt. Lukins	Los Angeles	1	202	2022
	Mt. Hauser	Los Angeles	4	N/A	N/A
South Coast - 853	Loma Prieta Peak	Santa Clara	1	223	2232
	Pacheco Peak +	San Benito	13*	N/A	N/A
	Williams Hill	Monterey	2	222	2222
	Mt. Lowe	San Luis Obispo	3	204	2042
	Red Mt.	Ventura	4	203	2032

South Coast - 853	Strawberry Peak	San Bernardino	2	264	2642
	Cuyamaca Peak	San Diego	3	265	2653
North Valley - 851	Bloomer Mt.	Butte	1	232	2322
	Sugarloaf Mt.	Shasta	2	233	2332
	Antelope Mt.	Siskiyou	1	234	2342
	Soda Creek Ridge +	Siskiyou	12*	N/A	N/A
	Hatchet Mt.	Shasta	3*	N/A	N/A
	Likely Mt.	Lassen	1	235	2352
	Shaffer Mt.	Lassen	3	236	2362
	Hough Mt.	Plumas	4	237	2372
	Boreal Ridge	Nevada	3*	N/A	N/A
North Coast - 852	Mt. St. Helena	Sonoma	5	224	2242
	Mt. Tamalpais	Marin	3*	N/A	N/A
	Mt. Diablo	Contra Costa	6*	N/A	N/A
	Laughlin Ridge	Mendocino	4	225	2252
	Cahto Peak +	Mendocino	14*	N/A	N/A
	Mt. Pierce	Humboldt	2	227	2272
	Red Mt.	Del Norte	1	228	2282

East Sierra - 854	Scout Peak	El Dorado	4	243	2432
	Pine Grove	Lyon (Nevada)	2	266	2662
	Sherwin Summit	Mono	1	262	2622

* Independent, and not on the microwave circuit. Use CTSS Tone only. DTMF will not work.

+ These sites have been provided by CalFIRE.

Base/Mobile/Portable Radio CTSS Standard Transmit Tones (in Hz): Tone 1 – 110.9, Tone 2 – 123.0, Tone 3 – 131.8, Tone 4 – 136.5, Tone 5 – 146.2, Tone 6 – 156.7, Tone 12 – 127.3, Tone 13 – 141.3, Tone 14 – 151.4 and Tone 15 – 162.2. And, all Receive tone6 – 192.8.

APPENDIX E: CESRS ROUTING AND DIALING MAP

