California OES Telecommunications

State of California
Governor's Office of Emergency Services

Administrative Regions with
Mutual Aid Regions

Coastal Region	Mutual Aid Region II
Southern Region	Mutual Aid Region I & VI
Inland Region	Mutual Aid Region III, IV & V

- **California is 156,000 sq mi**

- **34 Million People**

- **58 Counties or Operational Areas**

- **3 OES Admin Regions**

- **6 MA Regions**

Program Coordination
&
Equipment Management

- Regional Coordination
- ACS Coordination
- OASIS Program
- SMARTS Program
- Interoperability Program
- Campus Infrastructure
- Cellular Phone Admin
- Vehicle Install Coordination

- Mobile Microwave Relay
- Caches: Cellular Phone
  HT Radio, Sat Phone
- Port/Mobile Repeaters
- Communications Vehicles
- Interoperability Switch Systems
- Direction Finding

Regional Coordination

- **Three Region Communication Coordinators**
- **Grant Programs Technical Assistance**
  - **What's HOT! What's NOT!**
- **Technical Assistance to 58 Counties**
- **Coordinate with sister agencies**
- **Available for Field Deployments**
- **Coordinate OES Radio Systems w/DGS-TD**
- **CESRS, CLERS, OES FIRE NET SMARS, CALCORD, CLEMARS ITAC, FIREMARS**

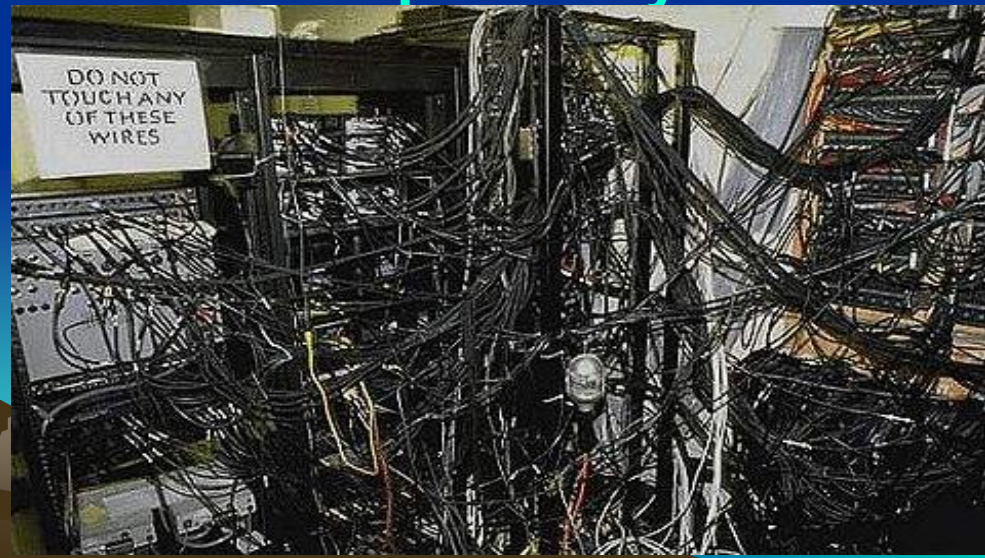# Interoperability Programs

- **SMARS Administration:**
  CLEMARS, CALCORD, CLERS, CESRS, OES FIRE NET
- **PSRSPC** – **Public Safety Radio Strategic Planning Committee**
- **CALSIEC** – **Calif Statewide Interoperability Executive Com.**

  New Public Safety Spectrum
  Narrow Banding Directives
  Local, Regional, Statewide

DO NOT TOUCH ANY OF THESE WIRES

CESRS

CALIFORNIA EMERGENCY SERVICES RADIO SYSTEM

- **25 MICROWAVE LINKED MOUNTAIN-TOP REPEATERS {3 Not Linked}**
- **Hi-Band VHF**
- **153.755mHz Output 154.980mHz Input**
- **6 Tone Controls**
- **Agency Primary Radio**

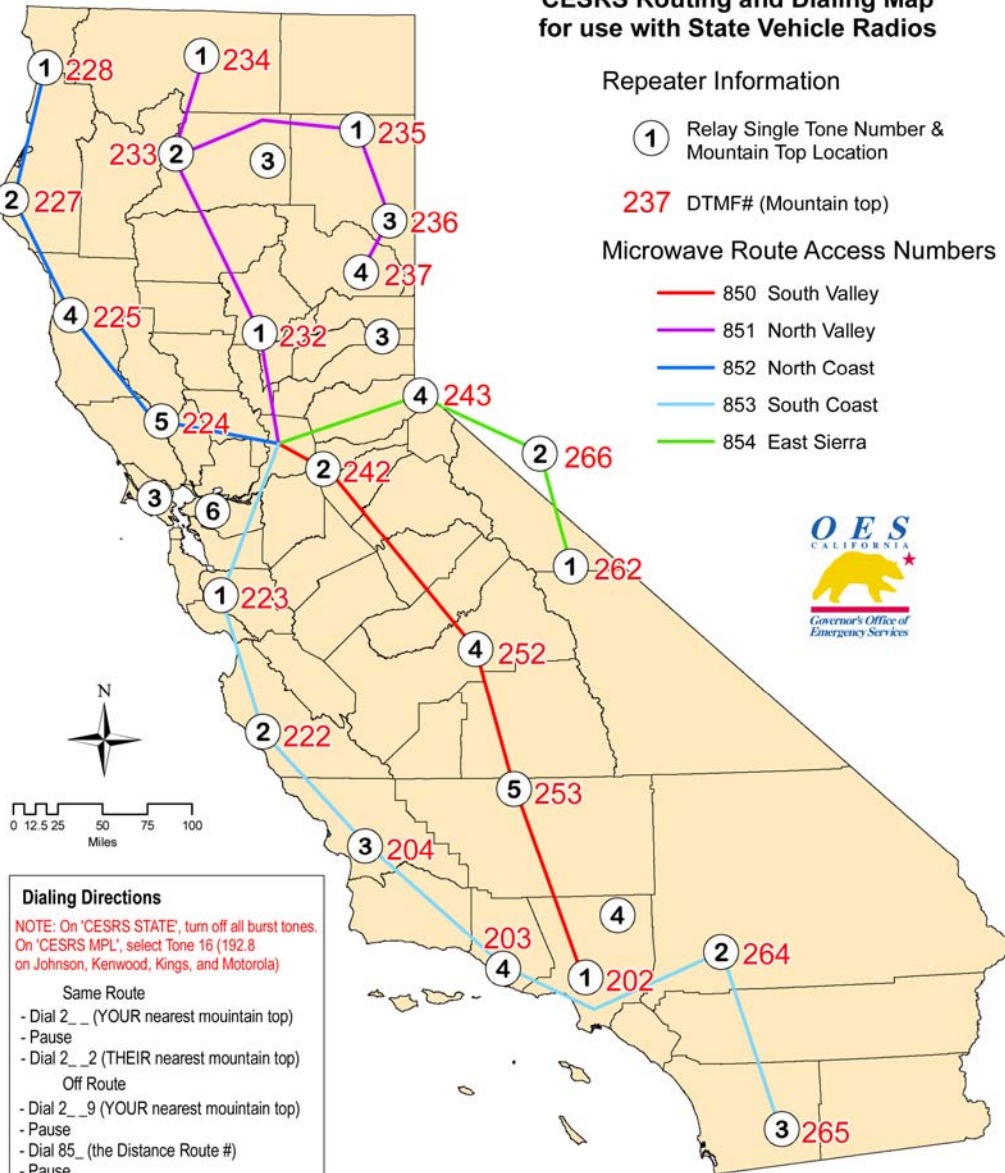## CESRS Routing and Dialing Map for use with State Vehicle Radios

Repeater Information

(1) Relay Single Tone Number & Mountain Top Location

237 DTMF# (Mountain top)

Microwave Route Access Numbers

———	850	South Valley
———	851	North Valley
———	852	North Coast
———	853	South Coast
———	854	East Sierra

Map repeater locations:
- (1) 228
- (1) 234
- (2) 233
- (1) 235
- (3)
- (2) 227
- (3) 236
- (4) 237
- (4) 225
- (1) 232
- (3)
- (5) 224
- (4) 243
- (3)
- (6)
- (2) 242
- (2) 266
- (1) 223
- (1) 262
- (4) 252
- (2) 222
- (5) 253
- (3) 204
- (4)
- (2) 264
- (4) 203
- (1) 202
- (3) 265

O E S CALIFORNIA
Governor's Office of Emergency Services

Dialing Directions

NOTE: On 'CESRS STATE', turn off all burst tones. On 'CESRS MPL', select Tone 16 (192.8 on Johnson, Kenwood, Kings, and Motorola)

Same Route
- Dial 2_ _ (YOUR nearest mouintain top)
- Pause
- Dial 2_ _2 (THEIR nearest mountain top)

Off Route
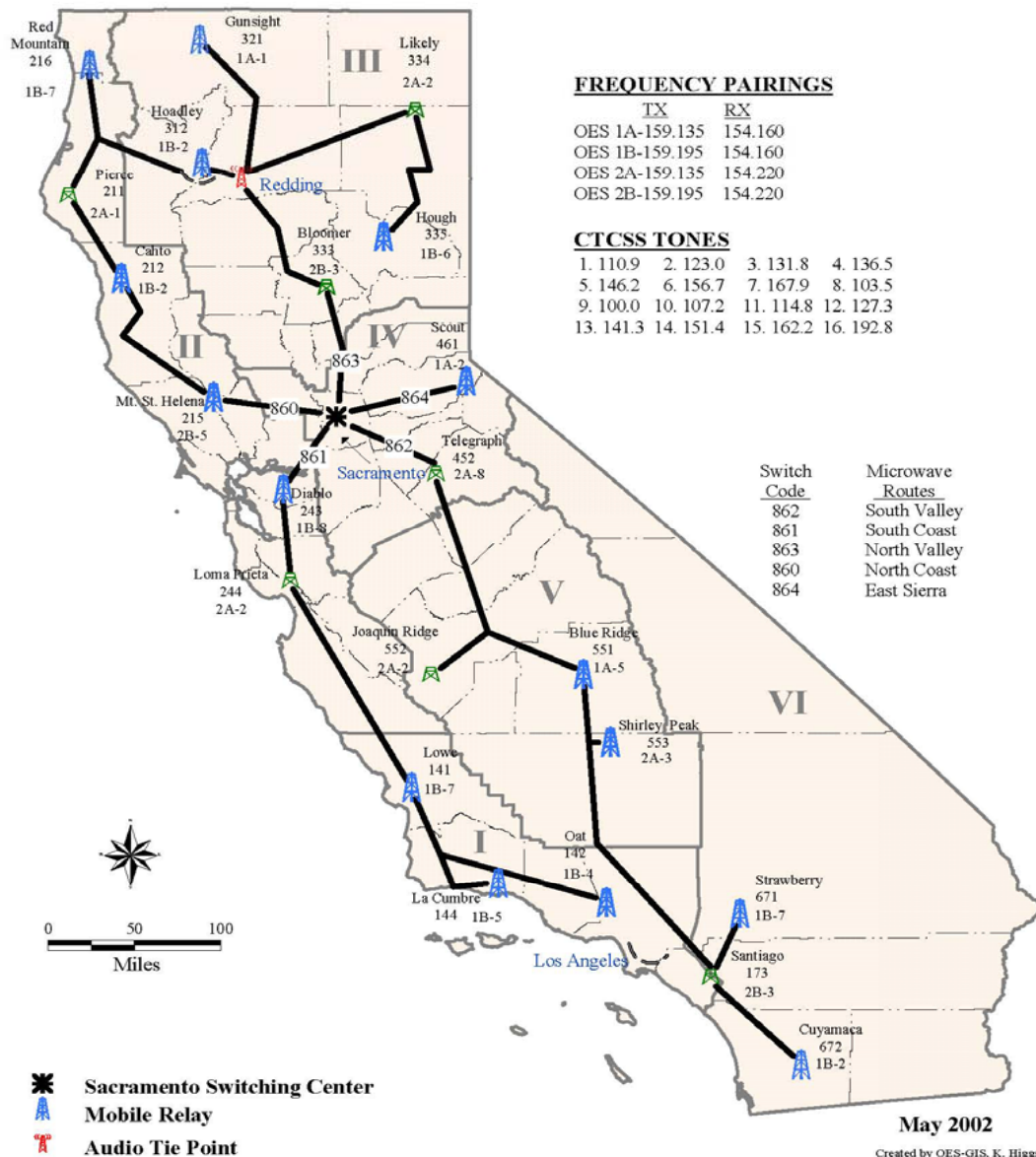- Dial 2_ _9 (YOUR nearest mouintain top)
- Pause
- Dial 85_ (the Distance Route #)
- Pause
- Dial 2_ _2 (THEIR nearest mountain top)

Dial *8888 to shut down the system

N

0 12.5 25   50   75   100
Miles

Southern Region GIS, October 27, 1998 Updated December 6, 2004
Chaos\E:\Data\ADMIN\OES\CESRS_routing.mxd

OES FIRE NET

OFFICE OF EMERGENCY SERVICES
FIRE & RESCUE RADIO NETWORK
MT. TOP REPEATERS - MICROWAVE CIRCUIT

FREQUENCY PAIRINGS

	TX	RX
OES 1A	159.135	154.160
OES 1B	159.195	154.160
OES 2A	159.135	154.220
OES 2B	159.195	154.220

CTCSS TONES

1. 110.9	2. 123.0	3. 131.8	4. 136.5
5. 146.2	6. 156.7	7. 167.9	8. 103.5
9. 100.0	10. 107.2	11. 114.8	12. 127.3
13. 141.3	14. 151.4	15. 162.2	16. 192.8

Switch Code	Microwave Routes
862	South Valley
861	South Coast
863	North Valley
860	North Coast
864	East Sierra

Red Mountain 216 1B-7
Gunsight 321 1A-1
Likely 334 2A-2
III
Hoadley 312 1B-2
Redding
Picrec 211 2A-1
Bloomer 333 2B-3
Hough 335 1B-6
Canto 212 1B-2
II
IV
Scout 461 1A-2
863
Mt. St. Helena 215 2B-5
860
864
861
862
Telegraph 452 2A-8
Sacramento
Diablo 243 1B-8
Loma Prieta 244 2A-2
Joaquin Ridge 552 2A-2
Blue Ridge 551 1A-5
V
VI
Shirley Peak 553 2A-3
Lowe 141 1B-7
Oat 142 1B-4
I
Strawberry 671 1B-7
La Cumbre 144 1B-5
Los Angeles
Santiago 173 2B-3
Cuyamaca 672 1B-2

0   50   100
Miles

✳ Sacramento Switching Center
▲ Mobile Relay
☗ Audio Tie Point

May 2002

Created by OES-GIS, K. Higgs
May 1998, Modified May 2002
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- ➢ **22 Repeaters**
- ➢ **VHF-Hi**
- ➢ **154.160 (1A&B) Output**
- ➢ **154.220 (2A&B) Output**
- ➢ **16 CTCSS Tones**

CLERS

CALIFORNIA LAW ENFORCEMENT RADIO SYSTEM

- **Also known as the "Law Net"**
- **22 Microwave Linked Mountain top repeaters**
- **VHF-Hi & UHF**
- **Mainly used for EAS**
- **Complicated Dialing**

ACS
Auxiliary Communications Services

- **Regional Coordination for Local Assistance**
- **OES's own unit of 80 Volunteers {RCU}**
- **Amateur Radio**
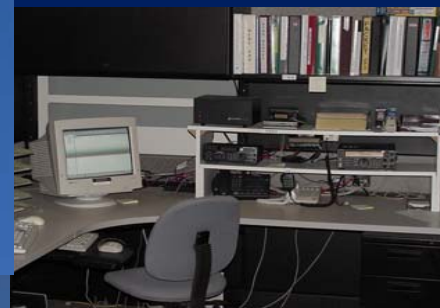- **Ready Personnel Resource to deploy mobile & portable assets**

HF Radio Programs
SHARES / FNARS / STACOM / AMATEUR

- **SHAred RESources High Frequency (HF) Radio Program**
- **FEMA National Radio System**
- **State Communications**
- **MARS & CAP**
- **Amateur Radio**
- **"PARALLEL PRIMARIES"**

OASIS

Operational Area Satellite Information System

- **Mature Program Using VoIP**
- **Provides telephone and limited data service**
- **2 Redundant Major Hub Sites**
- **70 Remote Sites**
  - **58 Operational Area Emergency Ops Centers**
  - **4 OES Locations**
  - **8 State Agency Sites**
- **8 Mobile Units**
- **Permanent Satellite Band Width**

EPI
Emergency Public Information Program

- **EAS - Emergency Alert System**
- **EDIS - Emergency Digital Information Service**
- **Coordinate with EPI Program Management**
- **Operate Governor's EAS Studio**

SMARTS
Satellite Mutual-Aid Radio-Telephone System

- **Single Line Telephone to / from the Public Switched Telephone Network (PSTN)**

- **Single Line Telephone outside of PSTN**
  - **Inside the Mobile Satellite Ventures network**
  - **Not subject to Central Office or Long Distance failures**

- **Two-Way radio capability via satellite**
  - **similar to NEXTEL Unit to Unit or Group calling**
  - **Future cross-connect to vehicle radio systems**

- **Data Capable {future expansion}**

- **Program Support for Counties**

Internal Support

- **Campus phone assistance**
- **Videoconferencing**
- **Conference "turtle phone"**
- **Cellular Phone Accounting**
- **Agency-wide Telephone Assistance**
- **TSR's for Trouble w/radio/sat/other**
- **Agency Vehicle Installation Coordination**
- **Fire Engine Radio Coordination**
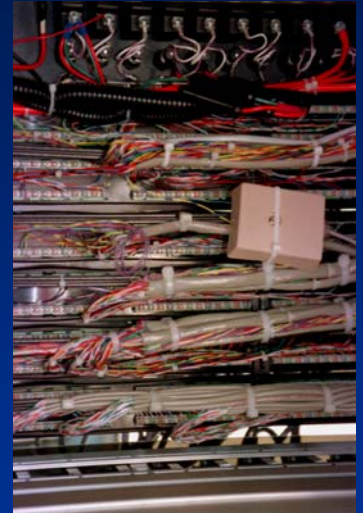
Communications Vehicles

Telecommunications Section
ICS Type 1

- **3 units, Sacramento,**
- **San Francisco, Los Angeles**
- **35' Pneumatic mast**
- **Two generators**
- **Phone switch**
- **Two remote dispatch station**
- **Cross-band repeat**
- **Sixteen Radios operate on 2 - 800 Mhz**
  - **HF (2 - 30 MHz SSB)**
  - **VHF-Lo (30 - 50 MHz)**
  - **VHF-Hi (136 - 174 MHz)**
  - **UHF {ALL} (406 - 512 MHz)**
  - **800 MHz Trunked**
  - **VHF-AM Aircraft**

Communications Vehicles

Telecommunications Section
ICS Type 3

- **Pneumatic Mast on Repeater Van**
- **Portable ACU-1000 Gateway SUV**
- **Five Comm Coordinator Vehicles**

Communications Vehicles
Fire and Rescue Branch
ICS Type 1

- **5260 & 5266 MCU**
  - **35 foot pneumatic mast**
  - **Two Generators**
  - **Phone switch**
  - **Four dispatch positions**
  - **Cross band repeat**
  - **Ten radios operate on 37 – 800 MHz**
    - **VHF-Lo (39 - 47 MHz)**
    - **VHF-Hi (150 - 174 MHz)**
    - **UHF FED (406 - 420 MHz)**
    - **UHF PSB (450 - 470 MHz)**
    - **UHF-T (470 - 512 MHz)**
    - **800 MHz Trunked / Conventional**
    - **VHF AM Aircraft**

Communications Vehicles

Fire and Rescue Branch
ICS Type 2

- **Three Units Statewide**
  - **One dispatch position.**
  - **Telephone access (PSTN or OASIS)**
  - **Currently:**
    - **VHF-Lo (39 - 47 MHz)**
    - **VHF-Hi (150 - 174 MHz)**
    - **UHF PSB (450 - 470 MHz)**

  - **Upgrading to new radio models {Kenwood}**
    - **VHF-Lo (39 - 47 MHz)**
    - **VHF-Hi (150 - 174 MHz)**
    - **UHF FED (406 - 420 MHz)**
    - **UHF PSB (450 - 470 MHz)**
    - **UHF-T (470 - 512 MHz)**
    - **800 MHz Trunked / Conventional**

Communications Vehicles

Law Enforcement Branch
ICS Type-2

- ## Four Units Statewide
  - ### Placed at Region Agency

- ## Three Operator Positions
  - ### VHF-Lo (39 - 47 MHz)
  - ### VHF-Hi (150 - 174 MHz)
  - ### UHF FED (406 - 420 MHz)
  - ### UHF PSB (450 - 470 MHz)
  - ### UHF-T (470 - 512 MHz)
  - ### 800 MHz Trunked / Conventional
  - ### Adding encryption to some radios

Hand Held Radio Caches

- **Fire & Rescue Branch**
  - **6 VHF Caches with assignees around State**
- **Law Enforcement Branch**
  - **Sacramento - 4 VHF Kits, 1 UHF Kit**
  - **Oakland - VHF and UHF**
  - **Fresno - VHF and UHF**
  - **Los Alamitos - VHF and UHF**
  - **15 encrypted kits VHF-Hi, UHF Med & Hi**
- **Telecommunications Section**
  - **1 VHF kit**
  - **8 800 MHz kits (two encrypted)**

Portable Radio Repeaters

- **Same as Fixed Repeaters {Daniels}**
- **6 - VHF-Hi {Fire Net}**
- **4 - VHF-Hi Digital/Encrypted {Law}**
- **6 - 800 MHz Conventional**
  - Separate Antenna kits
  - Separate Power sources
  - Aligned with Handheld caches

Cellular Phone Caches

{6 phones per kit, 2 kits per cache, 4 caches statewide}

- **NEXTEL Cache**

- **Digital Phones & Blackberry's**
  - **Agency Issued on ATT, Verizon or Nextel Carriers**

Interoperability Gateways

- **Raytheon / JPS ACU-1000 Systems**
- **Two transportable systems**
- **One Mobile Unit**
  - **All Equipped with 6 mobile radios**
  - **Narrow Band**
    - **VHF-Lo (39-48 MHz)**
    - **VHF-Hi (150-174 MHz) x 2 radios**
    - **UHF PSB (450-470 MHz)**
    - **UHF-T (470-512 MHz)**
    - **800 MHz (806-869 MHz)**
  - **Can add two "walk-up" handhelds**
  - **Equipped for telephone interface**
  - **Funding act directs deployment into S.F. Bay Area and L.A. Metropolitan Area**

Interoperability Gateway Vehicles

- **Raytheon / JPS ACU-1000 System**
- **Six F350 4x4 Shelter Vehicles {Law MAR}**
  - **Shelter Equipped with 6 mobile radios**
    - **VHF-Lo (39-48 MHz)**
    - **VHF-Hi (150-174 MHz) x 2 radios**
    - **UHF (450-470 MHz)**
    - **UHF-T (470-490 MHz)**
    - **800 MHz (806-869 MHz)**
  - **MSV SMARTS Interface**
  - **Mobat 3F HF w/portable antenna**
  - **Generator Powered**
  - **Vehicle Equipped w/3 mobile radios**
  - **Designed to leave shelter**

Direction Finding

- **2 Mobile Radio Direction Finding (RDF) Kits**
  - Sacramento and Southern California.
- **VHF Hi-band, UHF, and 800 MHz**
- **OES Teams trained to respond to requests for assistance.**
- **OES participates in the _FED-TECH_ group**
  - Several fixed site systems for monitoring and locating radio signals.

OES TELECOMMUNICATIONS
Reserve Communications Unit

- **{Vacant}**, State Chief Officer   (916) 845-8621

- **Mike Beckstrand, KG6IFV**   (916) 845-8624
  Inland Region Chief Officer

- **Carl Bechtle, N6ZFI**
  Inland MAR III Deputy Chief Officer

- **{Vacant},**
  Inland MAR IV Deputy Chief Officer

- **Guss Keith, KF6ZXO**
  Inland MAR V Deputy Chief Officer

- **Dave Larton, N6JQJ**
  Coastal Region Chief Officer

- **Arnie Lewin, W7BIA**
  Southern Region Chief Officer

OES TELECOMMUNICATIONS

- **Richard Osborne**, Chief .... (916) 845-8604

- **Sam Williams**, Assistant Chief .... (916) 845-8602
  Interoperability Program

- **Jeff Howell**, Assistant Chief .... (916) 845-8615
  OASIS Program

- **Ben Green**, Assistant Chief **{WD8CZP}** .... (916) 845-8603
  ACS Program / SHARES HF Coordinator / HQ Coordinator

- **Bill Pennington**, Assistant Chief **{WA6SLA}** .... (916) 845-8605
  Inland Region / Mobile/Portable Assets

- **George Lowry**, Assistant Chief **{KB5BRT}** .... (916) 845-8608
  Coastal Region

- **John Hudson**, Assistant Chief **{WA6HYQ}** .... (858) 268-5436
  Southern Region

- **Florencio Madargia**, Electronics Specialist **{KG6BCW}** .... (916) 845-8616

- **Helen Holman**, Telecommunications Systems Analyst .... (916) 845-8607

- **Kim Hansen**, Information Systems Analyst .... (916) 845-8608

Additional Information

- http://www.oes.ca.gov
- http://www.edis.ca.gov