

STATE OF CALIFORNIA
Budget Change Proposal - Cover Sheet
 DF-46 (REV 10/20)

Fiscal Year 2023-24	Business Unit 0690	Department Office of Emergency Services	Priority No.
Budget Request Name 0690-020-BCP-2023-GB		Program 0395 - Public Safety Communications	Subprogram 9-1-1 Emergency Communications Branch

Budget Request Description

Next Generation 9-1-1 and the California Public Safety Microwave Network

Budget Request Summary

The Office of Emergency Services requests \$137,644,000 (\$19,495,000 state operations and \$118,149,000 local assistance) in 2023-24, \$132,780,000 (\$12,100,000 state operations and \$120,680,000 local assistance) in 2024-25, and \$91,440,000 (\$6,195,000 state operations and \$85,245,000 local assistance) ongoing State Emergency Telephone Number Account to support the completion of the California Public Safety Microwave Network buildout, completion of the Next Generation 9-1-1 system, and the ongoing maintenance and support of these systems.

Requires Legislation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Code Section(s) to be Added/Amended/Repealed	
Does this BCP contain information technology (IT) components? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes, departmental Chief Information Officer must sign.</i>	Department CIO	Date

For IT requests, specify the project number, the most recent project approval document (FSR, SPR, S1BA, S2AA, S3SD, S4PRA), and the approval date.

Project No. Project Approval Document:
Approval Date:

If proposal affects another department, does other department concur with proposal? Yes No
Attach comments of affected department, signed, and dated by the department director or designee.

Prepared By Budget Office	Date 8/26/2022	Reviewed By	Date
Department Director	Date	Agency Secretary	Date

Department of Finance Use Only

Additional Review: Capital Outlay ITCU FSCU OSAE Dept. of Technology

PPBA Stephen Benson	Date submitted to the Legislature 1/10/2023
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A. Budget Request Summary

The Office of Emergency Services (Cal OES) requests \$137,644,000 (\$19,495,000 state operations and \$118,149,000 local assistance) in 2023-24, \$132,780,000 (\$12,100,000 state operations and \$120,680,000 local assistance) in 2024-25, and \$91,440,000 (\$6,195,000 state operations and \$85,245,000 local assistance) ongoing State Emergency Telephone Number Account (SETNA) to support the completion of the California Public Safety Microwave Network buildout, completion of the Next Generation 9-1-1 system, and the ongoing maintenance and support of these systems.

B. Background/History

Cal OES began two large scale initiatives in 2018-19 using SETNA funding. One initiative to implement the Next Generation 9-1-1 system and the other to upgrade California Public Safety Microwave Network. Both efforts were to be completed by 2022-23, however, a year deferral resulting from a lack of funding availability in the initial year of funding and further impacted by supply chain issues caused by the COVID-19 pandemic and resource limitations due to wildfires and the drought has pushed the completion date of these initiatives to 2023-24.

Next Generation 9-1-1 (NG 9-1-1)

Government Code (GC) Section 53121 requires Cal OES to implement and operate NG 9-1-1. The effort to transition the nation's largest 9-1-1 network from a legacy, analog 9-1-1 system to an Internet Protocol (IP) based NG 9-1-1 technology has already achieved many significant milestones that include the following:

- NG 9-1-1 core system services of four NG 9-1-1 service providers that support an annual call volume of 27 million 9-1-1 calls
- NG 9-1-1 core system service validation and testing
- Completion of Cal OES's NG 9-1-1 Lab which supports testing and validation prior to system deployment
- Completion of 449 Public Safety Answering Point (PSAP) boundary files and 58 county Geographical Information System (GIS) boundaries needed for NG 9-1-1 call routing
- Connectivity to over 100 telecommunication service providers
- NG 9-1-1 equipment and circuit installation at 429 of 449 PSAPs
- Transition of all 449 PSAPs from legacy Text-to-9-1-1 to NG 9-1-1 Text-to-9-1-1
- Completion of Emergency Services network with over 4,000 endpoints
- Successful implementation of National Emergency Number Association (NENA) i3 NG 9-1-1 deployment, with geospatial routing and location via SIP i3 using multiple vendor technologies have been integrated
- Implementation of Private Key Infrastructure (PKI) that implements PSAP Credentialing Agency certificates for cyber security
- Successful NG 9-1-1 go live at 5 of 449 PSAPs as of July 2022
- Successful NG 9-1-1 demark testing at 100 of 449 PSAPs as of July 2022

California Public Safety Microwave Network (CAPSNET)

CAPSNET has been in service for more than 50 years spanning the entire State of California with over 300 locations. Managed and maintained by Cal OES' Public Safety Communications (PSC), the statewide microwave network enables greater communication coverage for first responders given the vast topology of California.

Prior to 2018, CAPSNET was in desperate need of a major upgrade. The system lacked redundancy and scarce replacement parts for aging equipment created vulnerability for a catastrophic failure. During the 2018-19 budget cycle, PSC sought to address these issues by proposing to use SETNA funds to advance CAPSNET with newer digital technologies allowing for greater capabilities, much needed redundancy, resiliency, as well as provide the capacity needed to provide a backup wireless network for the state's 9-1-1 PSAPs. An upgraded public safety microwave network with Multiprotocol Label Switching, (MPLS) technology has the following benefits:

- Reduces the risk of system failure due to a lack of available parts or monitoring equipment
- Provides a current-generation, supportable platform with improved monitoring capabilities and one-type of equipment to be purchased and supported
- Provides improved survivability through fast re-routing of traffic due to an outage at a site
- Provides enhanced capabilities that will support current projects that public safety clients (California Highway Patrol, CAL FIRE, Department of Transportation) are in the process of rolling out, as well as future projects
- Provides the wireless technology and capacity necessary to support the state NG 9-1-1 PSAPs for backup connectivity

The original CAPSNET proposal was approved and funded with 17 positions and \$78,290,000 in SETNA funding spanning five-years. Since this time PSC has:

- Upgraded CAPSNET infrastructure to MPLS at 146 of 297 telecommunications facilities throughout the State of California
- Conducted site surveys and microwave path analysis at 207 sites
- Provided backhaul for the California Radio Interoperable System (CRIS), the California Earthquake Early Warning System, and NG 9-1-1 transport
- Established primary and secondary IT core data centers
- Migrated antiquated analog voice traffic to new MPLS technology along the 395-corridor covering from Lake Tahoe to Bishop CA
- Determined the need for on-going positions and funding is needed to support, manage, maintain, refresh the new CAPSNET MPLS infrastructure, and establish connectivity to the PSAPs. Due to the complexity of and the increased use of the network beyond what was envisioned in the original BCP, permanent support will be needed to ensure on-going NG 9-1-1 and CAPSNET Services

This program benefits the Access and Functional Needs community, to include the Deaf and Hard of Hearing community by providing access to 9-1-1 services through a variety to multi-media capabilities including Text to 9-1-1, Real-Time Text, and video interface with Public Safety Answering Points. In addition, 9-1-1 services provide access to emergency services for all demographic groups regardless of economic standing or culture/ethnicity. The services provided by this program are available to all areas of the state, urban and rural/frontier with each area of the state receiving state of the art technology.

C. State Level Consideration

Cal OES' mission is to protect lives and property, build capabilities, and support communities for a resilient California. This proposal is consistent with the Cal OES Strategic Plan:

Vision

The leader in emergency management and homeland security through dedicated service to all. We will realize our vision by building towards a safer and more resilient California, leveraging effective partnerships, developing our workforce, enhancing our technology, and maintaining a culture of continuous improvement.

Goals

Goal 6: Strengthen capabilities in public safety communication services and technology enhancements.

Strategy

Provide communities and first responders with state-of-the-art technology for 9-1-1 that is reliable, resilient, and able to support the needs for all California.

D. Justification

The efforts to transition the State of California's 9-1-1 network to NG 9-1-1 and the CAPSNET upgrade must continue for Cal OES to perform its mission. The collective outcomes of these efforts will position the state to support its communities and first responders with state-of-the-art technology that is reliable, secure, and resilient. While efforts to-date have been successful, there have been some challenges that have impacted the project timelines:

- The lack of revenue to support the first year of project activities put the projects one year behind.
- Severe California wildfires from 2019 to 2021 covering a vast amount of terrain impeded access to remote communications facilities preventing CAPSNET site survey work and installations at multiple sites as well as NG 9-1-1 equipment at various PSAPs.
- The global pandemic from 2020 to 2021, shut down production of network technology required for the CAPSNET project. The pandemic also hindered the installation of equipment at each PSAP while travel limitations impacted the ability to support the onsite work effort of the NG 9-1-1 service providers. Additionally, PSC and contracted personnel alike had to adjust and adapt to a work environment that accommodated public health protocols.
- Supply chain and computer chip shortages which began during the pandemic continue today. The technology required to upgrade CAPSNET to MPLS and deploy IP-based NG 9-1-1 system rely on computer chips that have been in short supply across the globe. This circumstance has impacted the progress of the CAPSNET upgrade and the NG 9-1-1 transition.
- A NG 9-1-1 deployment of this scale and scope has never been attempted. While California has been leading the way, many of the lessons learned were based on first time deployments of the NG 9-1-1 technology that required the collaboration and expertise of leading experts from every major technology company.

Originally, 17 positions were provided along with five-year limited-term funding for the build out of the NG 9-1-1 and CAPSNET. While we need an additional year to finalize the completion of these initiatives, permanent funding is needed to ensure the ongoing CAPSNET support of MPLS technology. This ongoing effort requires certain skillsets and expertise in digital MPLS network design, configuration, testing, maintenance, and cybersecurity. It is necessary to secure the previously provided positions permanently for the implementation of wireless backhaul connectivity to the state's PSAPs.

A summary of the job functions and responsibilities to be met by the permanently funded positions are below:

- **Operational Network Security** – Establishing and administering operational network cybersecurity policies; implement controls, standards, and security protocols; review software architecture; monitor and access security controls; investigate security threats and implement solutions.
- **Operational Network Technical Support** – Develop technical support procedures and provide support; network monitoring and issue resolution during incidents; research and resolve more complex operational network issues and engage with vendors/manufacturers as needed; respond in real time to incidents that require additional knowledge and expertise to resolve an incident or provide a work around; assemble and prepare equipment (service aggregation routers, switch, firewall, terminal server) and all cabling; insert configuration files, test and troubleshoot digital equipment and prepare for installation.
- **Operational Network Design** – Engineer and provision all MPLS circuit requests; create detailed circuit designs; design, manage, and plan for network capacity with other CAPSNET staff; maintain and update all circuit records and ensure traffic flow from customer site or remote site to endpoint; create and test network configuration in a lab environment in preparation to implementation; prepare drawings and document MPLS equipment.

PSC will not be staffed nor budgeted to design, configure, test, maintain or secure the network from cyber threats or to deliver backup wireless connectivity to state's PSAPs absent permanent funding.

In addition to permanent staffing resources, digital equipment requires agreements to be renewed annually to cover the cost of annual licenses of security software, software maintenance agreements, and equipment replacement to support the lifecycle costs of CAPSNET.

E. Outcomes and Accountability

Implementing NG 9-1-1 is essential to ensure emergency calls are quickly and accurately delivered to the PSAPs. NG 9-1-1 supports integrated Text-to-9-1-1, increased location accuracy for wireless calls, improves 9-1-1 reliability, integrates new technology, and enables the ability to transfer 9-1-1 calls to any PSAP in California.

CAPSNET is vital communications infrastructure for public safety. It is critical to linking first responders to dispatch centers. Completing the CAPSNET upgrade will ensure first responders and dispatchers have a robust, reliable network with connectivity every day and during disasters.

This BCP will ensure PSC can complete the transition to NG 9-1-1 and the CAPSNET upgrade and will provide the authority needed to continue the maintenance of these critical systems. These efforts will position the state to support its communities and first responders with state-of-the-art technology that is reliable, resilient, and able to support the needs of California.

The outcomes of this program will be presented to the 9-1-1 Advisory Board and to the Regional Task Force groups that have been established to ensure the program meets the operational needs of the communities served by the 9-1-1 system. In Addition, Cal OES performs Fiscal and Operational reviews of all Public Safety Answering Points that use the 9-1-1 system to ensure that call answer times and service delivery is equitable throughout California.

F. Analysis of All Feasible Alternatives

Alternative 1: Approve the proposed multi-year and on-going SETNA funding to support the ongoing operational needs of NG 9-1-1 and CAPSNET which includes the following:

- 1) Complete the transition to NG 9-1-1
- 2) Complete the CAPSNET upgrade
- 3) On-going funding for positions to support, manage, maintain, and refresh the new CAPSNET infrastructure.
- 4) On-going SETNA authority to support NG 9-1-1 and CAPSNET services.

PROS:

- Allows PSC to complete the NG 9-1-1 transition
- Allows PSC to fully deploy the digital equipment build out
- Provides and retains staffing to secure, maintain, and modify CAPSNET digital technology
- One ubiquitous redundant network
- Continues the existing SETNA surcharge, maintains support for local agencies
- Maintains the existing position authority to complete the buildout efforts

CONS:

- Extends current SETNA surcharge from the 2018-19 baseline

Alternative 2: Deny the request

PROS:

- No additional SETNA expenditures

CONS:

- Halts the forward progress of NG 9-1-1 and puts lives at risk
- Denies ability to continue funding the positions needed to complete the transition and ongoing functionality
- Puts the public at risk when first responders' communication systems are not functioning properly
- Leaves CAPSNET in a prolonged state of mixed technology between legacy analog and new digital MPLS
- Would not address CAPSNET antiquated patchwork of radios and monitoring and control equipment that are at increasing risk of failure
- Does not support future customer needs in some regions
- Fast re-routing of traffic when a site has an outage will be limited to sites that have digital technology present
- No broadband/high speed data application capability in some areas
- Security risk of unsupported equipment

G. Implementation Plan

The CAPSNET Upgrade and the transition to NG 9-1-1 will be completed in 2023-24. During 2023-24 and 2024-25 legacy 9-1-1 services will be terminated after each Public Safety Answering Point is fully transitioned to NG 9-1-1 and the services have been validated. In 2024-25 and following years, the authority and positions will be used to maintain the system, complete CAPSNET connectivity to the PSAPs, support lifecycle replacement, and provide cyber security for the systems.

H. Supplemental Information

No supplemental information.

I. Recommendation

Alternative 1: Approve \$137,644,000 (\$19,495,000 state operations and \$118,149,000 local assistance) in 2023-24, \$132,780,000 (\$12,100,000 state operations and \$120,680,000 local assistance) in 2024-25, and \$91,440,000 (\$6,195,000 state operations and \$85,245,000 local assistance) ongoing State Emergency Telephone Number Account (SETNA) to support the completion of the California Public Safety Microwave Network buildout, completion of the Next Generation 9-1-1 system, and the ongoing maintenance and support of these systems.

BCP Fiscal Detail Sheet

BCP Title: Next Generation 9-1-1 and the California Public Safety Microwave Network

BR Name: 0690-020-BCP-2023-GB

Budget Request Summary

Operating Expenses and Equipment

Operating Expenses and Equipment	FY23 Current Year	FY23 Budget Year	FY23 BY+1	FY23 BY+2	FY23 BY+3	FY23 BY+4
539X - Other	0	137,644	132,780	91,440	91,440	91,440
Total Operating Expenses and Equipment	\$0	\$137,644	\$132,780	\$91,440	\$91,440	\$91,440

Total Budget Request

Total Budget Request	FY23 Current Year	FY23 Budget Year	FY23 BY+1	FY23 BY+2	FY23 BY+3	FY23 BY+4
Total Budget Request	\$0	\$137,644	\$132,780	\$91,440	\$91,440	\$91,440

Fund Summary

Fund Source

Fund Source	FY23 Current Year	FY23 Budget Year	FY23 BY+1	FY23 BY+2	FY23 BY+3	FY23 BY+4
State Operations - 0022 - State Emergency Telephone Number Account	0	19,495	12,100	6,195	6,195	6,195
Total State Operations Expenditures	\$0	\$19,495	\$12,100	\$6,195	\$6,195	\$6,195
Local Assistance - 0022 - State Emergency Telephone Number Account	0	118,149	120,680	85,245	85,245	85,245
Total Local Assistance Expenditures	\$0	\$118,149	\$120,680	\$85,245	\$85,245	\$85,245
Total All Funds	\$0	\$137,644	\$132,780	\$91,440	\$91,440	\$91,440

Program Summary

Program Funding

Program Funding	FY23 Current Year	FY23 Budget Year	FY23 BY+1	FY23 BY+2	FY23 BY+3	FY23 BY+4
0395 - Public Safety Communications	0	137,644	132,780	91,440	91,440	91,440
Total All Programs	\$0	\$137,644	\$132,780	\$91,440	\$91,440	\$91,440

Personal Services Details

Positions

Positions	FY23 Current Year	FY23 Budget Year	FY23 BY+1	FY23 BY+2	FY23 BY+3	FY23 BY+4
3613 - Electrical Engr (Eff. 07-01-2023)	0.0	1.0	1.0	1.0	1.0	1.0
1402 - Info Tech Spec I (Eff. 07-01-2023)	0.0	3.0	3.0	3.0	3.0	3.0
1414 - Info Tech Spec II (Eff. 07-01-2023)	0.0	3.0	3.0	3.0	3.0	3.0
1415 - Info Tech Spec III (Eff. 07-01-2023)	0.0	1.0	1.0	1.0	1.0	1.0
3640 - Assoc Tele Engr (Eff. 07-01-2023)	0.0	1.0	1.0	1.0	1.0	1.0
6910 - Senior Tele Tech (Eff. 07-01-2023)	0.0	7.0	7.0	7.0	7.0	7.0
1406 - Info Tech Mgr II (Eff. 07-01-2023)	0.0	1.0	1.0	1.0	1.0	1.0
OT00 - Overtime	0.0	0.0	0.0	0.0	0.0	0.0
Total Positions	0.0	17.0	17.0	17.0	17.0	17.0

Salaries and Wages

Salaries and Wages	FY23 Current Year	FY23 Budget Year	FY23 BY+1	FY23 BY+2	FY23 BY+3	FY23 BY+4
3613 - Electrical Engr (Eff. 07-01-2023)	0	85	85	85	85	85
1402 - Info Tech Spec I (Eff. 07-01-2023)	0	274	274	274	274	274
1414 - Info Tech Spec II (Eff. 07-01-2023)	0	324	324	324	324	324
1415 - Info Tech Spec III (Eff. 07-01-2023)	0	119	119	119	119	119
3640 - Assoc Tele Engr (Eff. 07-01-2023)	0	118	118	118	118	118
6910 - Senior Tele Tech (Eff. 07-01-2023)	0	648	648	648	648	648
1406 - Info Tech Mgr II (Eff. 07-01-2023)	0	135	135	135	135	135
OT00 - Overtime	0	166	166	166	166	166
Total Salaries and Wages	\$0	\$1,869	\$1,869	\$1,869	\$1,869	\$1,869

Staff Benefits

Staff Benefits	FY23 Current Year	FY23 Budget Year	FY23 BY+1	FY23 BY+2	FY23 BY+3	FY23 BY+4
5150350 - Health Insurance	0	222	222	222	222	222
5150450 - Medicare Taxation	0	27	27	27	27	27
5150500 - OASDI	0	116	116	116	116	116
5150630 - Retirement - Public Employees - Miscellaneous	0	488	488	488	488	488
5150900 - Staff Benefits - Other	0	150	150	150	150	150
Total Staff Benefits	\$0	\$1,003	\$1,003	\$1,003	\$1,003	\$1,003

Total Personal Services

Total Personal Services	FY23 Current Year	FY23 Budget Year	FY23 BY+1	FY23 BY+2	FY23 BY+3	FY23 BY+4
Total Personal Services	\$0	\$2,872	\$2,872	\$2,872	\$2,872	\$2,872