CHAPTER 3 – CALIFORNIA'S MITIGATION FRAMEWORK: GOALS, OBJECTIVES, STRATEGIES, AND PRIORITIES

CHAPTER CONTENT

About Chapter 3

This chapter sets forth the vision, mission, goals, and objectives of the 2018 State Hazard Mitigation Plan (SHMP) and discusses a general strategic framework for mitigation, including specific strategies and actions needed for effective implementation, and overall state mitigation priorities.

This chapter also touches on the state's mitigation capabilities and action program, which are further detailed in *Chapter 10*.

3.1 CREATING A STRATEGIC FRAMEWORK FOR MITIGATION

The content of the 2018 SHMP is governed by rules drawn from the Disaster Mitigation Act of 2000 (DMA 2000). Strategic planning elements such as the vision, mission, goals, objectives, and action statements included in the 2018 SHMP represent a direction-setting framework that considers both short-term and long-term outcomes.

The strategic framework for California's comprehensive mitigation program consists of a combination of actions taken by multiple stakeholders over time, including:

- Legislative mandates for state and local agencies to undertake mitigation
- Governor's executive orders requiring state agencies to work with each other and the private sector on mitigation
- Voter approvals of mitigation bond funding
- Updating of single-hazard risk assessments
- Structural and non-structural mitigation actions taken by state agencies
- Regional agency coordination

Since the adoption of the 2013 SHMP, the state's comprehensive mitigation program was strengthened significantly by legislation such as Senate Bill (SB) 379 (2015) which requires cities and counties to include climate adaptation and resiliency strategies in the safety elements of their general plans upon the next revision of their housing elements beginning January 1, 2017.

A three-bill package (SB 1168, Assembly Bill [AB] 1739, and SB 1319 [2014]), known as the Sustainable Groundwater Management Act of 2014, provides for local management of groundwater supplies with the goal of achieving sustainable management of groundwater basins through development and implementation of groundwater sustainability plans (GSPs) by local agencies within 20 years.

During preparation of the 2018 SHMP, the California Governor's Office of Emergency Services (Cal OES) further formalized the state's comprehensive mitigation program through other means described in this document.

A sustained effort is being made to build on this comprehensive framework by examining and clarifying the SHMP's vision, mission, goals, objectives, strategies, priorities, and action programs. Challenges continue to include systematically measuring and tracking mitigation progress, expanding public and private sector mitigation communications and knowledge sharing, integrating land use mitigation with other types of mitigation on a statewide basis, and assessing mitigation projects (completed prior to a disaster) after the event to establish a record of the effectiveness.

3.2 VISION AND MISSION

As noted in *Chapter 1: Introduction*, the vision of the 2018 SHMP is a safe and resilient California through hazard mitigation. The mission of the 2018 SHMP is to integrate current laws and programs into a comprehensive, multi-hazard mitigation system that will guide the state in significantly reducing potential casualties and damage as well as physical, social, economic, and environmental disruption from natural and human-caused disasters.

3.3 2018 SHMP GOALS AND OBJECTIVES

The updated goals of the 2018 SHMP are to:

1. *Significantly reduce life loss and injuries.*
2. *Minimize damage to structures and property, and minimize interruption of essential services and activities.*
3. *Protect the environment.*
4. *Promote community resilience through integration of hazard mitigation with public policy and standard business practices.*

As part of the 2018 SHMP update process, the 2013 SHMP goals were evaluated by the Goals and Objectives Strategic Working Group and determined to be effective as previously written, with the exception of Goal 4, which was slightly modified to add the phrase "community resilience."

Most 2018 objectives have been modified from the 2013 SHMP version. Generally, the 2018 objectives either 1) contain original language from a 2013 SHMP objective, 2) contain modified language from a 2013 SHMP objective, or 3) are a new objective. A parenthetical note after each objective indicates whether the language is unchanged, modified, or new. Modifications range from simple addition or deletion of words to complex new combinations of phrases. Modified objectives accompany their original 2013 SHMP goal unless otherwise stated in the parenthetical note.

The aim of the Working Group's modifications to the 2013 SHMP objectives was to clarify or expand on their intent, or, in a few cases, to shift them to a more applicable goal.

As used here, the term "goal" refers to an end toward which effort is directed. An objective is a direction for action intended to partially or fully meet that end.

Because of the vast scale of the undertaking of this statewide multi-hazard mitigation planning framework, it is difficult to express an objective in definitive and specific terms. Within this planning context, each SHMP objective is intended to generally describe the framework of actions that can help fulfill the stated goal over time.

Also, it is important to note that fulfillment of each goal depends on upon successful execution of all objectives working in concert. Thus, the numbering of the objectives under each goal does *not indicate their relative importance or applicability*. The objectives are interrelated rather than linear in their relationship, and therefore, no hierarchy or ranking of objectives is implied from their sequencing as presented following each goal.

The sections below detail each of the four hazard mitigation goals and their related groups of objectives.

3.3.1 REDUCING LIFE LOSS AND INJURIES

California is the most populous state in the country with nearly 40 million residents (as of 2018) and has the third largest land area. The sheer number and broad distribution of people make hazard mitigation and emergency management a challenge. *Chapter 4: Profiling California's Setting* identifies growth patterns and assesses variations in risk exposure for all 58 counties.

Flooding has historically been heavy in urbanizing portions of the Central Valley, as well as in Southern California where extensive development has contributed to high volumes of local storm water runoff. Devastating wildfires have been experienced in wildland-urban interface (WUI) areas in the mountainous regions of many counties.

Between 1950 and 2017, California's population more than tripled and the number of disasters grew steadily. It is noteworthy, that the number of deaths did not increase proportionately in relation to population growth (see *Chapter 4, Section 4.2.1*). This can be attributed in part to expanded and sustained mitigation efforts.

As explained in detail in Chapter 4, California's population is concentrated in areas where hazard risk exposure tends to be high. For example, large earthquakes have occurred in both the San Francisco Bay Area and Southern California. Thus, the need for sustained, coordinated hazard mitigation efforts is significant.

California's continues to maintain a strong commitment to minimizing life loss and casualties. Between 2013 and 2018, most fatalities were a result of wildfire/WUI. Until 2017, the fatalities from fires were fewer than six per year. In 2017 alone, there were 67 fatalities due to wildfires. There was only one fatality resulting from an earthquake event between 2013 and May 2018.

There remains a need to more accurately estimate actual life loss, injuries, and property losses avoided through mitigation strategy.

Goal 1: Significantly reduce life loss and injuries.

This goal remains the same as in the 2010 and 2013 SHMPs, with the intended result of reducing potential casualties from disasters through long-term changes that make places and buildings within communities safer through mitigation investments and actions.

The corresponding objectives were substantially revised by the Goals and Objectives Strategic Working Group. As noted above, changes are described in the parenthetical note at the end of each objective.

Objective 1: Improve understanding within all governmental levels, the private sector, and individuals, of the locations, potential and cumulative impacts, and linkages among threats, hazards, risks, and vulnerability; as well as measures needed to protect human life, health, and safety, including those of vulnerable populations. (*Modified*)

Objective 2: Ensure that hazard mitigation measures and allocation of mitigation funds are protective of the state's low-income, underserved, linguistically isolated, minority, access and functional needs, and other highly vulnerable populations so that hazards do not have a disproportionately negative impact on those populations, and improve coordination with those populations to ensure that hazard, risks, and preparedness options are well understood. (*New*)

Objective 3: At all levels of government, promote enforcement of relevant mandates that significantly prevent and reduce life loss and injuries and provide guidance for enabling implementation. (*Modified*)

Objective 4: Encourage the incorporation of mitigation measures into changes in the built environment especially in areas at substantial hazard risk, and strengthen community resilience under present and anticipated future conditions. (*Modified*)

Objective 5: Research, develop, and promote adoption of cost-effective building, land use, and development laws, regulations, and ordinances that exceed current minimum levels needed for life safety and that anticipate future conditions. (*Modified*)

3.3.2 MINIMIZING PHYSICAL DAMAGE AND SERVICE INTERRUPTIONS

Strengthening of laws, regulations, and ordinances applicable to construction of new buildings and facilities and retrofitting of existing buildings and facilities (for government, business, or residence) is critical to protection of property as well as life. Such efforts are also critical to the reduction of massive physical, social, and economic disruption that accompanies disasters.

Transportation routes, utilities, government facilities, and hospitals are essential to the state's ability to provide assistance to the people of California. Protection of property also includes preservation of vital records, valuable operational data, historical information, and other non-structural assets. SHMP stakeholders have encouraged the incorporation of mitigation activities into business and government operations plans.

Regulations and ordinances help communities design and construct new facilities or alter existing facilities to resist the forces of nature and ensure safety. The state's land use laws support this effort by helping to keep buildings and development out of the most hazardous areas through local land use planning. It is essential that mitigation planning be incorporated into all land use planning activities at local and state levels.

Setting priorities for retrofitting of vital infrastructure and lifelines (on the basis of both overall risk and the role of facilities in post-disaster response and recovery) can result in better protection of important buildings and informational records—as well as building occupants—from disaster losses, thus facilitating faster recovery.

It is important to minimize the dislocations of residents of a community affected by a disaster event. Retaining residents close to their place of home and work is a vital aspect of strengthening community resilience. By minimizing damage to the built environment and essential services, rapid resumption of functionality and commerce can occur, which will reduce the chances that residents and businesses will leave the area affected by a disaster.

The state has a responsibility to assess vulnerability of state-owned facilities and infrastructure. Local government can also take a similar approach to evaluate vulnerability of its community's vital infrastructure.

Goal 2: Minimize damage to structures and property, and minimize interruption of essential services and activities.

This goal remains the same as in the 2013 SHMP. It includes structures as an important aspect of both life safety and property damage and reflects the desired outcome of minimizing interruption of essential services and facilities (e.g., transportation, communication, power, gas, water, wastewater, emergency responders) as well as normal day-to-day activities following a disaster event.

The corresponding objectives were substantially revised by the Goals and Objectives Strategic Working Group. As noted above, changes are described in the parenthetical note at the end of each objective.

Objective 1: Encourage new development to occur in locations that avoid or minimize exposure to current and future hazards. (*Modified*)

Objective 2: Encourage adaptive property modifications or protection measures as well as relocation options for all built environments, including structures, infrastructure, and lifelines, located in current, and projected future hazard areas. (*Modified*)

Objective 3: Encourage the incorporation of mitigation measures into system-wide repairs, major alterations, new development, and redevelopment practices, especially in areas subject to substantial current and future anticipated hazard risk. *(Modified, moved from 2013 SHMP Goal 1)*

Objective 4: Reduce repetitive property losses due to flood, fire, and earthquake by updating land use, design, and construction policies. *(Unchanged 2013 SHMP language)*

Objective 5: Establish and maintain partnerships among all levels of government, private sector, community groups, and institutions of higher learning that improve and implement methods to protect property, lifelines, and essential services. (*Modified*)

Objective 6: Support the protection/redundancy of vital records, the strengthening or replacement of buildings and infrastructure, and the protection/redundancy of lifelines to minimize post-disaster disruption and to facilitate short-term recovery and strengthen long-term recovery. (*Modified*)

3.3.3 PROTECTING THE ENVIRONMENT

Californians place a strong emphasis on the quality of the natural environment. It is one of the reasons why people live in California and why government and private sector organizations strive to protect and conserve natural resources.

In addition to destroying the human-made environment, natural disasters can also adversely affect the natural environment. For example, dead and diseased trees create unhealthy forests and provide fuel for wildfires that damage or eliminate habitat necessary for survival of plants and wildlife. Flooding can adversely affect water quality in rivers and streams that support fisheries and can also damage critical spawning habitat. Structures collapsing in an earthquake can cause widespread water and air pollution, similar to that experienced following the New York terrorist attacks and the Northridge Earthquake. Geologic hazards can result in landslides that can block streams and prevent fish migration. If not disposed of properly, debris from natural disasters can pollute the water, damage the land, and diminish air quality.

Since adoption of the 2013 SHMP, greater understanding has been gained about the scientific finding that human-induced global warming from greenhouse gas emissions is creating climate change impacts leading to increased frequencies and magnitudes of natural disasters. Starting with Assembly Bill (AB) 32 in 2006, and more recently with Senate Bill (SB) 32 in 2016, the State of California has pursued a vigorous policy encouraging the reduction of greenhouse gas emissions, especially carbon dioxide (CO_2) into the atmosphere. The state is also promoting various climate change adaptation efforts including California's Fourth Climate Change Assessment, the State Adaptation Clearinghouse, Safeguarding California, the 2018 update to the Climate Adaptation Strategy (CAS), and adaptation legislation such as SB 379 and SB 246 (see *Section 4.3.6.2* for more information on these bills).

Goal 3: Protect the environment.

This goal remains the same as in the 2010 and 2013 SHMPs. The corresponding objectives were substantially revised by the Goals and Objectives Strategic Working Group. As noted above, changes are described in the parenthetical note at the end of each objective.

Objective 1: Provide guidance to all levels of government about mitigation planning and project compliance with the California Environmental Quality Act (CEQA) and all other applicable environmental laws, and facilitate alignment of federal and state regulations across agencies to strengthen mitigation, response, and recovery efforts. *(Modified)*

Objective 2: Encourage hazard mitigation measures that promote and enhance nature-based solutions, natural processes, and ecosystem benefits while minimizing adverse impacts to the environment. *(Modified)*

Objective 3: Encourage mitigation planning programs at all levels of government to protect the environment and promote enforcement of sustainable mitigation actions. *(Modified)*

Objective 4: Coordinate and implement integrated and adaptive hazard mitigation, and watershed and habitat protection strategies, through public and private partnerships. *(Modified)*

Objective 5*:* Coordinate hazard mitigation planning with state and federal programs designed to minimize the release and movement of toxic and hazardous substances in the environment. *(Unchanged 2013 SHMP language)*

3.3.4 PROMOTING INTEGRATED MITIGATION POLICY

Historically, the state and its communities have tended to implement hazard mitigation policies and measures in an ad hoc fashion. New mitigation policies, programs, and projects are often developed in response to the latest disaster. As the population of the state has continued to grow and move into areas more susceptible to natural and human-caused hazards, developing and maintaining a comprehensive hazard mitigation system is becoming more of an imperative. Planning, cross-sector communication, and public outreach are tools for increasing awareness and integration.

State and local multi-hazard mitigation planning efforts and projects represent significant steps that can broaden the general understanding of the importance of mitigation. California laws requiring local general plan safety elements guiding safer land use have proven useful in reducing disaster losses (and all elements of a general plan, whether mandatory or optional, must be consistent with one another). It will take time to document successful compliance with evolving hazard mitigation planning processes. The state has had success with education through programs addressing the three primary natural hazards: wildfire, flood, and earthquakes. Cal OES, the California Seismic Safety Commission, the California Geological Survey, the California Department of Forestry and Fire Protection (CAL FIRE), the Department of Water Resources, and the Department of Education support special programs in schools and communities to raise hazard awareness.

Similarly, many California businesses have begun to pursue hazard mitigation as a standard practice to minimize long-term losses and costs by avoiding business interruption and potential loss of skilled employees. Major companies go beyond insurance to systematically pursue risk management activities such as investments in new facility expansions designed to reduce the impacts of natural hazards. Risk management activities also extend into preparedness to safeguard the health, security, and well-being of employees during disaster incidents.

Goal 4: Promote community resilience through integration of hazard mitigation with public policy and standard business practices.

This goal has been modified from the 2013 SHMP version to support promotion of community resilience and integration of mitigation into policy and practice. The restructuring of this sentence implies that community resilience can result from hazard mitigation actions. It further emphasizes the need for hazard mitigation efforts to be grounded in policy and practice, so in a sense those efforts become a way of life.

The corresponding objectives were substantially revised by the Goals and Objectives Strategic Working Group. As noted above, changes are described in the parenthetical note at the end of each objective.

Objective 1: Create incentives for community resilience through preparation, adoption, and implementation of multi-hazard mitigation plans and projects at all governmental levels. *(New)*

Objective 2: Acknowledge, incorporate, and integrate recognized data on climate change impacts on hazards, risks, and vulnerabilities available from credible scientific sources into state, local, tribal, and private sector mitigation plans, strategies, and actions. *(New)*

Objective 3: Promote, coordinate, and implement hazard mitigation plans and projects that are consistent with and supportive of climate action and adaptation goals, policies, and programs at all governmental levels. *(Modified, moved from 2013 SHMP Goal 3)*

Objective 4: Improve the quality and effectiveness of regional, local, and tribal hazard mitigation plans through effective training and guidance that strengthens linkages between these plans, local general plan

elements, local coastal programs, other local plan initiatives, related land use controls, and the SHMP. *(Modified)*

Objective 5: Engage a broad range of stakeholders, from different sectors and community groups, in hazard mitigation planning processes to improve cross sector-coordination, and emphasize engagement with underserved or vulnerable populations and other underrepresented groups, to ensure that social equity and environmental justice issues are integrated into hazard mitigation planning. *(New)*

Objective 6: Actively promote coordinated hazard mitigation planning and action, disaster preparedness, response, and recovery programs among governmental jurisdictions at all levels, as well as in the private sector, to create resilient communities. (*Modified*)

Objective 7: Develop and share updated information about threats, hazards, vulnerabilities, risks, and mitigation strategies with public and private agencies and groups and build on FEMA's "Whole Community" concept. *(Modified, moved from 2013 SHMP Goal 1)*

Objective 8: Create financial and regulatory incentives to motivate stakeholders, such as homeowners, private sector businesses, and non-profit community organizations, to mitigate and avoid hazards, and encourage new development to avoid hazardous locations and employ enhanced design requirements. (*Modified*)

For an overview of implementation of mitigation goals and objectives see *Appendix C, Multi-Agency Mitigation Action Matrix*.

3.4 TYPES OF STATE MITIGATION STRATEGIES

Strategies for mitigating hazards can be viewed from two perspectives. One is to view mitigation strategies as either direct or indirect. The other is to view them as either mandatory or voluntary.

3.4.1 DIRECT VS. INDIRECT STRATEGIES

Direct strategies are those directly protecting life, property, and the environment, such as physical measures to improve survivability of structures, and design of structures during initial development or through a retrofit process to resist destructive forces. Examples include:

- Bolting walls to foundations to better withstand earthquakes
- Elevating houses to reduce impacts of flooding
- Using asphalt and clay tile roofing to reduce ignition from windblown embers

Indirect mitigation strategies are those that do not make physical changes but facilitate direct mitigation actions by others. They include education, public information, community outreach, and safety campaigns that motivate self-help action.

3.4.2 MANDATORY VS. VOLUNTARY STRATEGIES

A more straightforward perspective is represented by viewing mitigation strategies as either mandatory or voluntary. Mandatory strategies bear two types of cost: the direct cost of implementation and the cost of enforcement. To justify a mandatory strategy, the cost of implementation should be less than the cost of potential losses avoided. The additional cost of public enforcement is necessary to ensure uniform compliance and requires staffing and budgets.

Examples of Mandatory Strategies

Mandatory strategies include statutes and ordinances stimulating uniform mitigation action. Examples of mandatory strategies include:

- *State mandates.*
- *Local and tribal regulations and ordinances linked to an identified hazard.* Examples include fire prevention building codes that require specific roof materials or brush clearance specifications that are required and enforced by a jurisdiction.
- *Restrictions on property use*. These limit or avoid development on hazardous land. Examples include restrictions on building across active faults, on landslide areas, or in floodways.

The essential outcome of mandatory mitigation is general compliance with zoning ordinances or building codes for new development or alterations to existing buildings. Because codes, regulations, ordinances, and their reflected standards are upgraded over time, older facilities in compliance with regulations at the time of construction may no longer be considered reliably safe. Property owners, builders, investors, and other stakeholders cannot choose whether or not to comply.

Examples of Voluntary Strategies

Voluntary strategies are mitigation actions that individuals, businesses, and local and tribal governments choose to take with the intent of reducing future disaster losses to homes and facilities. Examples of voluntary mitigation actions might include retrofitting existing business facilities or investing in improved building designs for new facilities. Strategies encouraging individuals, businesses, and local and tribal governments to take voluntary mitigation actions might include:

- *Publications of advisory plans and technical manuals.* An example might be the "How To" Guides published by the Federal Emergency Management Agency (FEMA) to assist local and tribal governments in Local Hazard Mitigation Plan (LHMP) preparation.
- *Education and awareness programs.* These are intended to persuade people to voluntarily change their behavior to reduce chances of loss and can either have targeted or general audiences.
- *Research and development.* These are efforts supported by either public or private funding that improve knowledge of hazards, vulnerabilities, and mitigation.
- *Construction of protective measures.* These are usually tax-supported and keep destructive forces away from communities or structures. Examples include levees, drainage channels, and firebreaks.

Frequency of disaster loss intervals can be a motivating factor for voluntary mitigation. Property and business owners are more likely to invest in mitigation for frequently recurring disasters such as intermittent flooding or wildland-urban interface (WUI) fire than mitigation for more damaging but infrequently occurring disasters such as earthquakes. Earthquakes provide a less imminent reminder of the value of mitigation, leading stakeholders to postpone mitigation investments in hopes that such disasters will not happen in their lifetime or ownership tenure.

Evaluating Mandatory and Voluntary Strategies

Evaluation of mandatory and voluntary strategies is needed to determine their relative effectiveness over time. Evidence to date suggests that outcomes of discretionary mitigation strategies are less certain. Cost can be a deterrent when revenue sources are insufficient or when the potential loss reduction benefit is not recognized by stakeholders making mitigation decisions.

Need for Combined Approach

Ultimately, a combination of mandatory and voluntary mitigation strategies is needed to bring about substantial changes in physical environments to reduce future disaster losses. This theme is demonstrated throughout the rest of this SHMP in relation to the legal, policy, and institutional framework identified in *Annex 1*, the funding sources identified in *Annex 2*, and the criteria emphasized in *Chapter 10*.

3.5 OVERVIEW OF STRATEGIES FOR IMPLEMENTING STATE-LOCAL MITIGATION CAPABILITIES

The 2018 SHMP includes vision, mission, goals, and objectives statements within a broader strategic framework that identifies the basis for setting mitigation priorities and using state, local, and tribal capabilities to achieve outcomes that are consistent.

The 2018 SHMP maintains and provides for continued progress with the following revised and updated strategies that build on key strategies for hazard mitigation action established by the 2007, 2010, and 2013 SHMPs:

1. Support legislative efforts that formalize California's comprehensive mitigation program
2. Strengthen inter-agency coordination actions, including state, regional, tribal, and local linkages
3. Broaden public and private sector mitigation linkages
4. Assist local and tribal governments in implementing land use guidance and best practices for reducing vulnerability within high hazard zones. *(new in the 2018 SHMP)*
5. Incorporate climate change into local, tribal, regional, and statewide hazard profiles, risk assessments, and mitigation plans *(new in the 2018 SHMP)*
6. Enhance collaboration on the development and sharing of data systems and Geographic Information Systems (GIS) modeling
7. Support and coordinate monitoring of progress on state goals and objectives
8. Establish a mitigation registry for communicating progress
9. Expand mitigation project loss avoidance tracking through the State Mitigation Assessment Review Team (SMART) system

Mutually Reinforcing Strategies

These strategies define the intent of the State Hazard Mitigation Team (SHMT) to support implementation of the SHMP goals and objectives by defining specific areas where SHMT members can facilitate action by their agency or organization.

These strategies are overlapping and cross-cutting through various levels of government and other sectors. Like the SHMP goals and objectives, mitigation actions may meet the intent of more than one strategy simultaneously. Note that the numbering of the 2018 SHMP strategies has been slightly reorganized to better group similar strategies. As with the SHMP objectives, because the strategies are viewed as interrelated, there is no hierarchy or ranking of strategies implied from their numbering as presented.

Along with specific mitigation actions identified in *Chapters 6 through 9*, mitigation progress descriptions included in the *Appendix C: Multi-Agency Mitigation Action Matrix* document implementation of these strategies through the many mitigation actions and specific activities occurring around the state as of early 2018. *Appendix C* also links these actions back to the SHMP goals and objectives and identifies agency collaboration.

The following is a progress description for the nine strategies for action.

3.6 CALIFORNIA STATE STRATEGY 1: SUPPORT LEGISLATIVE EFFORTS THAT FORMALIZE CALIFORNIA'S COMPREHENSIVE MITIGATION PROGRAM

The framework for California's comprehensive mitigation program consists of a combination of legislative and administrative initiatives and actions taken by multiple stakeholders over time. These include:

- Executive orders requiring state agencies to work with each other and with the private sector on mitigation
- Legislative mandates directing state and local agencies and tribal governments to plan and undertake mitigation
- Voter approvals of major mitigation funding through bond elections
- Ongoing updating of risk assessments through all hazard mitigation plans
- Structural and non-structural mitigation actions taken by state agencies and commissions

- Regional agency coordination

California's hazard mitigation laws, regulations, and administrative actions are, in turn, founded in California legislative actions that provide the basic authorities underlying a wide array of state, local, and tribal hazard mitigation policies and actions. The scope of California legislative actions over the past decade has broadened significantly to reflect a more comprehensive mitigation approach, encompassing an increasingly wide variety of activities and impacts. Broad themes emerging through this legislation include flood and fire hazard mitigation, climate change impacts, groundwater management, and environmental justice.

SHMT members carry out roles enabling them both to receive guidance from and provide guidance to lawmakers or executive level agency leaders regarding California's legislative initiatives. During such interactions, SHMT members can educate others on the need for increased and coordinated hazard mitigation efforts that take into account potential future conditions. Particularly, such input ensures awareness of and collaboration with related hazard mitigation projects and local and tribal hazard mitigation planning.

Examples of legislative initiatives enacted by the state legislature enhancing local hazard mitigation capabilities and actions during the past decade include:

- Assembly Bill 2140 (2006) coordinating Local Hazard Mitigation Plans (LHMPs) with local general plans
- Assembly Bill 162 (2007) requiring local general plan elements, including land use, housing, conservation, and safety, to address areas subject to flooding as identified by FEMA flood zone maps
- Senate Bill 5 (2007) requiring local land use decisions consistent with the Central Valley Flood Protection Plan
- Senate Bill 1278 (2012) requiring local governments in the Central Valley to amend general plans in accordance with the Central Valley Flood Protection Plan
- Assembly Bill 1241 (2012) requiring the safety element of the general plan to address the risk of fire in State Responsibility Areas (SRAs) and Very High Fire Hazard Severity Zones (VHFHSZs) as identified by CAL FIRE, upon the next required revision of the general plan housing element
- Senate Bill 1168, Assembly 1739, and Senate Bill 1319 (2014), also collectively known as the Sustainable Groundwater Management Act, establishing a new structure for managing California's groundwater resources at a local level by local agencies, and requiring the formation of locally controlled groundwater sustainability agencies (GSAs) in the state's high- and medium-priority groundwater basins
- Senate Bill 379 (2015) requiring safety elements to include climate change assessments and strategies or allowing for jurisdictions to include relevant climate change information into their Local Hazard Mitigation Plan (LHMP) and then adopt the LHMP into the safety element of their general plan
- Senate Bill 246 (2015) establishing the Integrated Climate Adaptation and Resiliency Program (ICARP) to coordinate regional and local efforts with state climate adaptation strategies to adapt to the impacts of climate change
- Senate Bill 1000 (2016) adding an environmental justice element, or related goals, policies, and objectives integrated in other elements, identifying disadvantaged communities within the area covered by the general plan, if the city or county has a disadvantaged community as defined

Further descriptions of these bills are included below and in *Chapters 6 through 9*.

Flood Hazard Legislation

A critically important legislative theme that emerged during the past decade dealt with flood hazard mitigation at multiple geographic levels. Legislation was adopted that set standards for all cities and counties within the state through strengthening of flood mitigation provisions in general plans, while simultaneously specifying flood mitigation requirements for specific areas of the Central Valley.

For example, AB 162 (2007) not only required local general plan land use, housing, conservation, and safety elements to address areas subject to flooding identified by federal and state flood zone maps, but also included flood mitigation provisions for cities and counties in a specific area within the boundaries of the Sacramento-San Joaquin Drainage District. These provisions were included in conjunction with related provisions in companion bill SB 5

(2007), which sought to address problems of flooding in the Central Valley by directing the California Department of Water Resources (DWR) and the Central Valley Flood Protection Board to prepare and adopt a Central Valley Flood Protection Plan (CVFPP). The purpose of the CVFPP was to improve flood management in areas receiving flood protection from existing facilities constructed under the State Plan of Flood Control.

SB 5 (2007) mandated that cities and counties within the boundaries of the Central Valley Flood Protection District amend their general plans and zoning to be consistent with the CVFPP prepared by the Central Valley Flood Protection Board, and to deny subdivisions within flood hazard zones where flood protection is not provided or planned. Another bill, AB 70, provided generally that following the failure of a state flood control project, a city or county may be required to assume a fair and reasonable share of the increased flood liability caused by its unreasonable approval of developments.

Progress Summary 3.A: Regional Flood Management Planning

Progress as of 2018: Following the Central Valley Flood Protection Board adoption of the 2012 Central Valley Flood Protection Plan (CVFPP), the California Department of Water Resources (DWR) launched and funded a regionally led effort to help local agencies develop comprehensive plans that describe local flood management priorities, challenges, and potential funding mechanisms, and define site-specific improvement needs.

Six Regional Flood Management Plans (RFMPs) were completed for regions in the Central Valley by 2015 and subsequently reviewed by DWR in support of the development of the 2017 update of the CVFPP. Each RFMP addressed operations, maintenance, repair, rehabilitation, and replacement (OMRR&R), infrastructure performance, emergency management, governance, environmental compliance, regional priorities, and funding.

Together, the six RFMPs identified over 500 management actions totaling an approximate cost of $14 billion throughout the Central Valley. Despite being restricted to using existing information without new analyses or investigations, the RFMPs represent the most comprehensive thinking about local flood management challenges and opportunities and illustrate a breadth of potential flood management investments.

For more information, visit: https://www.water.ca.gov/Programs/Flood-Management/Flood-Planning-and-Studies/Central-Valley-Flood-Protection-Plan.

Related Delta Environmental Legislation

In November 2009, California legislation known as the Delta Reform Act was passed to address water supply reliability and Delta ecosystem health. The act, effective February 3, 2010, culminated in the creation of the Delta Stewardship Council (DSC) to achieve the state-mandated coequal goals for the Delta. The DSC's coequal goals are 1) providing a more reliable water supply for the state, and 2) protecting, restoring, and enhancing the Delta ecosystem.

Progress Summary 3.B: The Delta Stewardship Council and the Delta Levees Investment Strategy

Progress as of 2018: To facilitate investments in the levee system while advancing progress toward its coequal goals, the Delta Stewardship Council (DSC) has launched the Delta Levees Investment Strategy (DLIS) to identify funding priorities and assemble a comprehensive investment strategy for the delta levees. The DLIS is being developed in collaboration with state agencies, local reclamation districts, Delta landowners, businesses, and other stakeholders.

For more information on the DSC, visit: http://deltacouncil.ca.gov. For more information on the DLIS, visit: http://deltacouncil.ca.gov/delta-levees-investment-strategy.

Fire Hazard Legislation

An example of recent legislation addressing fire hazard is Senate Bill (SB) 1241 (2012), which requires certain actions by local governments in State Responsibility Areas (SRAs) and Very High Fire Hazard Severity Zones (VHFHSZs). For more information about SB 1241 (2012), see *Section 3.9* and *Chapter 8, Section 8.1.5.1*.

Climate Change Legislation

Climate change legislation is a major new area of interest brought about by increasing scientific evidence of the cumulative impacts of climate change and public policy focus on implications for natural hazard mitigation. Climate change was first noted as a concern for hazard mitigation in the 2007 SHMP. Subsequently, the 2010 and 2013 SHMPs elaborated on emerging climate change science related to hazards. However, specific strategies for mitigating hazards exacerbated by climate change are rapidly emerging on a legislative level.

The Integrated Climate Adaptation and Resiliency Program (ICARP), authorized by SB 246 (2015), is administered by the Governor's Office of Planning and Research (OPR), which has responsibility under SB 246 (2015) to:

- Develop tools and guidance
- Promote and coordinate state agency support for local and regional efforts
- Inform state-led programs to better reflect the goals, efforts, and challenges faced by local and regional agencies
- Coordinate with Cal OES on updates to the State Adaptation Planning Guide
- Create a Technical Advisory Council and Clearinghouse to support the goals of ICARP

Progress Summary 3.C: Ongoing Progress on Integrated Climate Adaptation and Resiliency Program (ICARP)

Progress as of 2018: In 2015, Governor Brown signed Senate Bill 246 (Wieckowski, Public Resources Code 71354), which directs the Governor's Office of Planning and Research (OPR) to form the Integrated Climate Adaptation and Resiliency Program (ICARP). ICARP is designed to develop a cohesive and coordinated response to the impacts of climate change across the state. Through its activities, ICARP will develop holistic strategies to coordinate climate activities at the state, regional and local levels, while advancing social equity.

ICARP has two components: the State Adaptation Clearinghouse and the Technical Advisory Council (TAC). The State Adaptation Clearinghouse is a centralized source of information and resources to assist decision makers at the state, regional, and local levels when planning for and implementing climate adaptation projects to promote resiliency across California.

The TAC brings together local government, practitioners, scientists, and community leaders to help coordinate activities that better prepare California for the impacts of a changing climate. (TAC members bring expertise in the intersection of climate change and the sector-based areas outlined in SB [246 Public Resources Code 71358(b)].) The TAC supports OPR in its goal to facilitate coordination among state, regional and local adaptation, and resiliency efforts, with a focus on opportunities to support local implementation actions that improve the quality of life for present and future generations. *(Adapted from OPR website retrieved January 2018.)*

The TAC adopted an adaptation vision and principles document in September 2017 and is now working to develop a series of public sector adaptation actions and metrics. ICARP TAC action items/goals for 2018 include:

- *Launch the Adaptation Clearinghouse*: The Adaptation Clearinghouse is a searchable database of adaptation and resilience resources that have been organized by climate impact, topic, and region. OPR began conducting beta testing on the Clearinghouse in early 2018, with a full public launch of the site planned for later 2018. The Clearinghouse is considered an evolving resource and will be updated regularly by OPR, providing practitioners across the state with the most up-to-date adaptation and resiliency resources. Please email ICARP@opr.ca.gov with information on any resources that should be included in the clearinghouse.

- *Finalize the Adaptation Vision Framework*: The ICARP Technical Advisory Council is continuing its effort to develop an Adaptation Vision Framework. The Vision Framework is intended to serve as a blueprint for climate adaptation and resiliency efforts in California by articulating a clear vision of the future we want, the principles that will guide how we get there, and the public sector actions that need to be taken. The Council finalized and adopted a Vision Statement and Guiding Principles in September 2017 (available here: http://opr.ca.gov/planning/icarp/tac/) and is continuing efforts to identify ambitious, yet achievable public sector implementation actions. OPR and the TAC are working to finalize this Vision Framework, including a 2018 Baseline Report on existing adaptation efforts, in late 2018.
- *Release an Adaptation Financing Framework*: OPR, with guidance from the ICARP TAC, is developing an Adaptation Financing Framework for public release in late 2018. At the direction of the ICARP TAC, financing and funding barriers are significant impediments to both planning and implementation of adaptation actions in California. One of the key challenges faced by local government practitioners is a lack of capacity to leverage the existing landscape of funding and financing mechanisms to achieve adaptation and resiliency outcomes. The Financing Framework report—intended for a local government audience—will include a typology of different funding and financing mechanisms, including definitions, and a general overview of stakeholder roles and functions across private, public, and private/public stakeholders.

For more information regarding ICARP and the TAC, visit: http://opr.ca.gov/planning/icarp/tac/.

Sustainable Groundwater Management Legislation

A new area of concern emerging in the past half-decade in conjunction with severe drought conditions is the issue of groundwater management. Historically, groundwater has been managed largely by private sector interests in accordance with California water laws dating back many decades to the prior century. However, with the substantial depletion of groundwater resources in many areas, an urgent need for better public policy and management has emerged.

The Sustainable Groundwater Management Act of 2014 (SB 1168, AB 1739, and SB 1319) empowers local agencies to adopt groundwater management plans that are tailored to the resources and needs of their communities. Good groundwater management will provide a buffer against drought and climate change, and contribute to reliable water supplies regardless of weather patterns. For a more in-depth discussion of the Sustainable Groundwater Management Act, see *Chapter 9, Section 9.1.5* or go to: https://www.water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management.

3.7 CALIFORNIA STATE STRATEGY 2: STRENGTHEN INTER-AGENCY COORDINATION ACTIONS, INCLUDING STATE, REGIONAL, TRIBAL, AND LOCAL LINKAGES

Coordination among state, tribal, and federal agencies is essential both for preparing the SHMP and implementing it successfully. Equally important are the mechanisms that support state, regional, tribal, and local collaboration related to integration of hazard mitigation with other issues of concern.

California embraces both "horizontal and vertical" integration of mitigation actions—that is, coordination between state agencies and at various levels of government. The following discussion presents examples of ongoing and new coordination actions by the state.

Federal-State Coordination

Partnerships between state and federal agencies focused on specific hazards have been a long-standing tradition in California. For example, the California Geological Survey and the U.S. Geological Survey (USGS) have joined forces to develop joint research projects and planning guidance to address earthquake, tsunami, liquefaction, and landslide hazards. The California Department of Water Resources (DWR) partners with the U.S. Army Corps of Engineers (USACE) to design and implement flood control projects. An example of an effective state-federal coordination effort is the partnering of CAL FIRE and the U.S. Forest Service, who work together, with local fire agencies, to address

wildfire hazards in California. This has recently been exemplified by the assembly of close to 8,000 fire personnel to combat the December 2017 Thomas Fire in Ventura and Santa Barbara Counties.

In addition, federal-state coordination is facilitated through various formal and informal ad hoc consultation processes, including catastrophic event preparedness planning that has examined the role of mitigation in easing response and recovery requirements, as well as federal-state coordination related to emerging mitigation issues involving tsunamis, levee failure, flood hazards, and extensive fires in wildland-urban interface (WUI) areas.

A critical federal-state coordination effort is filling the hazardous materials response capability gaps in California. In 1951, the federal government established a program to match state and local funds for the purchase of fire and rescue apparatus and equipment. The Governor's Fire Advisory Committee recommended that the state purchase 100 fire engines through this program. These engines were assigned to local firefighting agencies throughout the state under the auspices of the Fire Advisory Committee. Presently, the fleet of Cal OES Type I and Type III fire engines has grown to 129, with more on the way. Cal OES also maintains search and rescue trailers and swift water rescue. Additionally, Cal OES supports the readiness and operations of California's eight State/National Urban Search and Rescue (US&R) Task Forces and plays a coordinating and support role in the state's system of 12 Regional US&R Task Forces.

Following disaster events, a Joint Field Office (JFO) can be established to strengthen contact between federal (FEMA) and state (Cal OES) emergency services staff assigned to response and recovery efforts. The JFO is a temporary federal multi-agency coordination center established locally to facilitate field-level domestic incident management activities related to mitigation, prevention, preparedness, response, and recovery when agencies are activated. The JFO provides a central location for coordination of federal, state, local, tribal, non-governmental, and private sector organizations with primary responsibility for activities associated with threat response and incident support. The JFO staff focus on providing support to on-scene efforts, incident management and/or disaster response and recovery program implementation, and coordination of broader support operations that may extend beyond the immediate incident site. The JFO does not manage on-scene operations. As an example, after the January 2017 Severe Winter Storms, Flooding, and Mudslides disaster event (FEMA-4301-DR-CA), FEMA and Cal OES worked together to develop a Hazard Mitigation Strategy that addresses the priorities established by the California State Hazard Mitigation Officer (SHMO) and presents joint federal and state hazard mitigation objectives.

The California Silver Jackets Program is another example of an on-going federal-state coordination effort operating in the state, in this case focused on flood mitigation. Headed by the U.S. Army Corp of Engineers (USACE) with support from FEMA, the Silver Jackets Program enables an inter-agency approach to planning and implementing measures to reduce the risks associated with flooding and other natural disasters. USACE formed the program to work with states and other agencies to discuss each state's flood management priorities, build relationships, and improve communication, coordination, collaboration, and cooperation. California's Silver Jackets Program is divided into two regional teams (one in Northern California and one in Southern California), which are coordinated by the California Department of Water Resources (DWR) and also involve local/tribal governments and communities.

The Coastal Zone Management Act, federal legislation enacted in 1972, created a voluntary partnership between the National Oceanic and Atmospheric Administration (NOAA) and the states, and relies on this federal-state partnership to achieve national, state, and local coastal management goals. The California Coastal Management Program, approved by NOAA in 1978, is a combination of federal, state, and local planning and regulatory authorities for controlling the uses of land, air, and water resources along the coast. NOAA and the California Coastal Management Program (which is implemented by California Coastal Commission [CCC], San Francisco Bay, where the San Francisco Bay Conservation and Development Commission [BCDC], and California State Coastal Conservancy [SCC]) partner to address coastal hazards. As part of this implementation partnership, the CCC manages development along the California coast except for BCDC oversees development and is the designated coastal management agency. The third agency, the SCC, purchases, protects, restores, and enhances coastal resources, and provides access to the shore.

The SHMT's Role in Inter-Agency Coordination

At the heart of federal-state coordination is the State Hazard Mitigation Team (SHMT). Comprised of over 300 agencies and related organizations having responsibility for state-mandated hazard mitigation activities, the SHMT has been instrumental in implementation of the 2010 and 2013 SHMPs and parallel development of the 2018 SHMP through contributions of substantial new information about public and private sector hazard mitigation initiatives, programs, and actions.

As summarized in *Chapter 2*, the SHMT met as a whole from December 2016 through the present to provide information regarding new laws, hazard conditions, and mitigation actions taken during the past five years.

Progress Summary 3.D: SHMT Working Group Initiatives

Progress as of 2018: The State Hazard Mitigation Team (SHMT) was strengthened through the ongoing use of strategic working groups. As detailed in the 2013 SHMP, the Cross-Sector Communications and Knowledge-Sharing Working Group examined messaging and communications challenges across public and private sector organizational boundaries; the Mitigation Progress Indicators and Monitoring Strategic Working Group explored methods for enhancing mitigation progress tracking; and the Land Use Mitigation Strategic Working Group formulated recommendations for possible actions that could be implemented through SHMT coordination to strengthen land use mitigation. While these strategic working groups are no longer meeting on a regular basis, many of their recommendations are still considered relevant and actionable.

The Geographic Information Systems Technical Advisory Working Committee (GIS TAWC) continues to meet to facilitate ongoing functionality of MyPlan, an Internet Mapping Tool (IMT) designed to provide local governments convenient single access to GIS hazards mapping otherwise only available on multiple sites.

In 2018, working groups were established to examine and update the SHMP goals and objectives for the 2018 update, to re-evaluate and update strategies, and to inform inputs to updating the model used in the preparation of social vulnerability maps (see *Section 4.4*). These working groups were a collaborative effort between SHMT members from various agencies and sectors that worked together to review and discuss issues related to each working group topic.

State-Local Coordination

Continuing assessment of LHMPs of cities, counties, and special districts has paralleled the SHMT process. Each agency on the SHMT represents a potential link between state and local government. Most state agencies have long-established relationships with emergency managers, city managers, county administrative officers, and other local government officers.

Since adoption of the 2007 SHMP, California has made significant progress in coordination of state and local hazard mitigation planning. Cal OES is interacting with the SHMT and local governments to more closely link hazard mitigation planning definitions, criteria, standards, and best practices between the state and local levels. During preparation of the 2018 SHMP, 261 FEMA-approved LHMPs were reviewed in order to identify ways to assess and further coordinate local and state hazard mitigation planning and improve LHMP quality. Findings regarding the 2017 LHMP review are included in *Chapter 5: California Local Hazard Mitigation Planning*.

Another example of state-local coordination is coordination of hazardous materials response between Cal OES and local jurisdictions. Many local government fire departments and other agencies established Hazardous Materials Response Teams. In 2016, there were 61 "typed" Hazardous Materials Response Teams in California. In order to bolster the state's hazardous materials response capabilities, Cal OES has purchased and equipped 12 Type II Hazardous Materials Response Vehicles and funded Hazardous Materials Specialist training for 17 personnel to staff each of those vehicles. Beginning in May 2018, two Cal OES Type II Hazardous Materials Response Vehicles are being assigned to local government fire departments in each of California's six Mutual Aid Regions.

In 2018, Cal OES and 12 assignee local government fire departments are parties to a contractual agreement permitting the use of the Cal OES Type II Hazardous Materials Response Vehicles for local emergency response, out-of-service Hazardous Materials vehicles, training, exercises, and other needs. In return, the assignee fire departments are required to dispatch the Cal OES Type II Hazardous Materials Response Vehicles anywhere in the state staffed by the required number of hazardous materials-trained personnel as requested through the California Fire and Rescue Mutual Aid System. As of early 2018, this brings the total number of "typed" Hazardous Materials Teams in California to 73.

Regional Coordination and Collaboration

Several regional planning associations operate on a continuous basis in California to address the planning needs of multiple counties. The associations include, the Association of Bay Area Governments (ABAG), the Association of Monterey Bay Area Governments (AMBAG), the Sacramento Area Council of Governments (SACOG), the Southern California Association of Governments (SCAG), and the Tahoe Regional Planning Agency (TRPA). They collaborate with local governments, non-governmental organizations, and the private sector within their geographical area to address common issues of concern, including land use, housing, infrastructure, and economic development.

Along with these traditional planning issues, some regional associations have also taken an interest in developing and implementing programs that address community resilience, hazard mitigation, energy and water efficiency, and climate change.

The Bay Area Regional Energy Network (BayREN), a collaboration of the nine counties that make up the San Francisco Bay Area, is led by the Association of Bay Area Governments (ABAG). BayREN implements effective energy-saving programs on a regional level and draws on the expertise, experience, and proven track record of Bay Area local governments to develop and administer successful climate, resource, and sustainability programs. BayREN is funded by California utility ratepayers under the auspices of the California Public Utilities Commission. One of only two Regional Energy Networks in the state, BayREN represents 20 percent of the state's population.

Planning for the impacts of climate change and building climate resilience in communities are also priorities for the Los Angeles region. For a full understanding of the impacts of climate change and implications for regional planning policies, local governments need a link to the best available scientific tools. Regional AdaptLA: Coastal Impacts Planning in the Los Angeles Region strives to provide this link to local coastal jurisdictions and to develop a community of practice for the Los Angeles region. It is a multi-year project, funded by the state, among a coalition of 11 local municipalities, Los Angeles County, and six supporting organizations. The University of Southern California (USC) Sea Grant provides leadership, technical assistance, training workshops, and webinars. The program advances a regional sea-level rise and coastal impacts planning process and shares critical scientific information to inform planning efforts.

The Western Riverside Council of Governments (WRCOG) has also led regional planning activities, with representatives from 18 cities, county supervisors, water districts, and tribal governments sitting on the WRCOG Executive Committee. The purpose of WRCOG is to unify Western Riverside County to address important issues collectively. WRCOG's efforts include the development of a Subregional Climate Action Plan that provides a road map for Western Riverside County to address climate change at a regional level. Preparation of WRCOG's Subregional Climate Action Plan was funded by a Sustainable Communities Planning Grant through California's Strategic Growth Council.

There are also regional collaboratives in most parts of California that focus on climate adaptation. While many of these collaboratives are connected through the Alliance of Regional Collaboratives for Climate Adaptation (ARCCA), each has its own unique structure. The adaptation collaboratives in each region are organized around non-profit, government agency, academic, and business entities in that region with the interest, capacity, and often regulatory requirement to address adaptation and mitigation at the regional scale.

Other Inter-Agency Coordination Efforts

Executive Order B-30-15 Guidance

Executive Order B-30-15 directed state agencies to integrate climate change into all planning and investment, including accounting for current and future climate conditions in infrastructure investment. OPR was directed to convene a Technical Advisory Group (TAG) to develop guidance to support implementation of the executive order.

The TAG included members from nearly every state agency, local and regional governments, non-governmental and community-based organizations, and the private sector. The TAG met from April 2016 through January 2017 and produced a guidance document called "Planning and Investing for a Resilient California: A Guidebook for State Agencies." This document provides high-level guidance on what future conditions to plan for and how state agencies should approach planning differently in light of a changing climate. The guidance document can be found at: http://opr.ca.gov/planning/icarp/resilient-ca.html.

Best Practices Highlight 3.A: State Water Resources Control Board Commitment to Address Climate Change

In 2017, the State Water Resources Control Board (SWRCB) passed Resolution Number 2017-0012, "Comprehensive Response to Climate Change" that summarizes known climate change impacts and the state's actions to address those impacts. The resolution builds on previous climate change work and requires the SWRCB to take a proactive approach to climate change in all Board actions, with the intent to embed climate change consideration into all SWRCB programs and activities. This is an example of how a state agency is incorporating Executive Order B-30-15 into its actions and activities, and link with other state actions such as Safeguarding California Plan: 2018 Update and the Assembly Bill 32, California Global Warming Solutions Act of 2006.

To review the SWRCB resolution in its entirety, visit: https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2017/rs2017_0012.pdf.

California Silver Jackets Outreach to Local Communities through Watershed University

Watershed University is a free event that provides education and networking opportunities for California professionals in floodplain management, water management, emergency management, and related fields. Led by the California Silver Jackets, this event is a cooperative effort that evolved from the recognition that some communities could not afford the investment of time and money to send floodplain managers and other professionals to conferences. It has since grown to address a variety of timely flood risk reduction topics to professionals worldwide. The California Watershed University enables communities to establish local flood risk awareness events and encourage citizens to take action. See: https://www.water.ca.gov/Programs/Flood-Management/Community-Resources/Watershed-University.

Cyber Threat Prevention and Response

The California Cybersecurity Task Force consists of an inter-agency team headed by Cal OES, which coordinates efforts of the California Department of Technology, Cal OES, the California Military Department, and the California Highway Patrol with those efforts grouped into two sectors, external-facing and internal-facing. For more information about the Task Force, see *Section 9.3.2*.

Well Stimulation and Hydraulic Fracturing Regulation and Oversight

As a result of SB 4 (2013), the following five state agencies are now are involved in coordinated oversight and regulation of well stimulation and hydraulic fracturing activities: Division of Oil, Gas, and Geothermal Resources (DOGGR), Office of Environmental Health Assessment, Department of Toxic Substances Control (DTSC), State Water Resources Control Board (SWRCB), and California Air Resources Board (CARB).

California Environmental Health Tracking Program

The California Environmental Health Tracking Program (CEHTP) is a program of the Public Health Institute, in partnership with the California Department of Public Health. CEHTP is primarily funded by the Centers for Disease

Control and Prevention (CDC) National Environmental Public Health Tracking Program. CEHTP works to make environmental health data and information publicly available through the development of a web-based data query system, state-of-the-art data displays, and innovative web tools and services. CEHTP aims to make these data and information accessible and useful to a variety of stakeholders including communities, governments, academia, and private partners.

3.8 CALIFORNIA STATE STRATEGY 3: BROADEN PUBLIC AND PRIVATE SECTOR MITIGATION LINKAGES

During preparation and implementation of the 2018 SHMP, Cal OES extended its outreach to public and private sector organizations through expansion of State Hazard Mitigation Team (SHMT) membership. While progress has been made in strengthening public and private sector mitigation linkages, further efforts are needed to maintain and strengthen linkages. As of early 2018, Cal OES is in the process of reviewing and updating its SHMT roster with the intent of bringing in more private sector members.

Examples of Public-Private Partnerships in California

An example of an ongoing public-private partnership actively involved in earthquake hazard mitigation activities throughout the state is the Great California ShakeOut. This event began in California in 2008 and is held annually each October. Each year state participation has grown and now also includes participation from federal agencies, including the U.S. Geological Survey (USGS), the American Red Cross, and FEMA. In 2017, over 13,000 individuals representing private sector groups, such as neighborhood groups, faith-based organizations, and media organizations, registered to participate.

The growing threat to cyber security has been met in California through public-private partnership efforts. In 2015, the governor designated Cal OES to lead the California Cybersecurity Integration Center (Cal-CSIC) by Executive Order B-34-15. The Cal-CSIC's primary mission is to reduce the likelihood and severity of cyber incidents that could damage California's economy, its critical infrastructure, or public and private sector computer networks. The Cal-CSIC serves as the central organizing hub of state government's cybersecurity activities and coordinates information sharing with local, state, and federal agencies; tribal governments; utilities and other service providers; academic institutions; and non-governmental organizations. The Cal-CSIC encourages private sector partnerships and hopes to foster a community of information sharing and mutual aid. Part of this effort is the California Cybersecurity Task Force, a statewide partnership comprised of key stakeholders, subject matter experts, and cybersecurity professionals from California's public sector, private industry, academia, and law enforcement.

The State Threat Assessment System (STAS) helps safeguard California communities by serving as a dynamic security nexus comprised of the state, four regional Fusion Centers, and a major urban area Fusion Center. The STAS assists in the detection, prevention, investigation, and response to criminal and terrorist activity, disseminates intelligence, and facilitates communications between state, local, federal, tribal agencies, and private sector partners to help them take action on threats and public safety issues.

Extensive collaboration between public and private sector organizations has been stimulated by the 2012-2017 drought and by the compendium of legislation and funding provided by California's focus on reducing greenhouse gases and improving water and energy efficiency. Details of these efforts are found in the drought, energy, and climate change sections of this plan.

ARCCA Activities

Another form of public-private partnering in the state is facilitated through the Alliance of Regional Collaboratives for Climate Adaptation (ARCCA)'s engagement with its private sector affiliate members. ARCCA and its private sector members have engaged in broader adaptation discourse around enhancing partnership efforts with the insurance, technology, and finance industries.

3.9 CALIFORNIA STATE STRATEGY 4: ASSIST LOCAL AND TRIBAL GOVERNMENTS IN IMPLEMENTING LAND USE GUIDANCE AND BEST PRACTICES FOR REDUCING VULNERABILITY WITHIN HIGH HAZARD ZONES.

The Governor's Office of Planning and Research (OPR) is a comprehensive state planning agency that promotes land use planning linked to hazard identification and analysis. California is among the few states in the country to legislatively mandate land use planning as part of its local general plan process. It is among an even smaller number of states that require that local governments to directly address natural hazards through a specific element: the safety element of the local general plan. Combined with multiple state agency reviews, land use planning functions as a strategic method for hazard reduction.

OPR, through various efforts including preparation of the 2017 General Plan Guidelines and facilitation of the Integrated Climate Adaptation and Resiliency Program (ICARP), supports local governments in identifying and assessing hazards and integrating hazard risks into the general plan.

Various state agencies, as well as local municipalities, can be involved in hazard assessment prior to permitting development. For example, to obtain a hydraulic fracking permit, at a minimum a county planning agency and California Department of Conservation Division of Oil, Gas, & Geothermal Resources (DOGGR) are involved. Depending on the permit location, the Department of Water Resources (DWR) may be involved in relation to aquifer protection, and the Department of Toxic Substances Control (DTSC) can conduct air quality and chemical hazards reviews. This multiple review procedure allows for different types of expertise to be used in order to promote hazard reduction using an "as needed" team effort. This, like the California mutual aid system, provides a means for multiple agencies expertise to be applied in the land use planning process.

A basic premise imbedded in the general plan process is the requirement that all elements of the general plan be internally consistent in their policy statements. This provides the opportunity for the safety element, which addresses hazard mitigation to be integrated with other required elements of the general plan including land use, housing, conservation, open space, and environmental justice.

In addition to the general plan process, as required by the Coastal Act (and overseen by the California Coastal Commission), coastal communities also develop local coastal programs as land use planning documents that, similar to general plans, guide development decisions in the coastal zone and ensure development is safe from coastal hazards. Additionally, the California Coastal Commission Sea-level Rise Policy Guidance from 2015 is meant to assist local governments in understanding how to address sea-level rise.

Smaller communities in California face capacity challenges in fulfilling general plan requirements for hazard mitigation. To address these challenges, additional technical assistance is needed by staff in these jurisdictions.

Safety Element

The safety element establishes policies and programs to protect the community from risks associated with seismic, geologic, flood, and wildland and urban fire hazards, as well as from other concerns such as drought (Government Code Section 65302(g)). SB 379 (2015) requires the safety element to include a climate change vulnerability assessment, measures to address vulnerabilities, and a comprehensive hazard mitigation and emergency response strategy. Jurisdictions can meet the requirements of SB 379 by including the relevant information into their Local Hazard Mitigation Plan (LHMP) and adopting the LHMP into the safety element of their general plan.

The safety element must include mapping of known seismic and other geologic hazards. It must also address evacuation routes, military installations, peak load water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards.

Review by multiple agencies is a distinct feature of safety elements in California. Each city and county must provide a draft of its safety element or amendment of its safety element to the California Geological Survey of the

Department of Conservation prior to adoption, for review to determine if all known seismic and other geologic hazards are addressed. A city or county that contains a State Fire Responsibility Area (SRA) or a Very High Fire Hazard Severity Zone (VHFHSZ) must provide a draft of its safety element or amendment of its safety element to the State Board of Forestry and Fire Protection for review before adoption, and the Board may recommend changes regarding uses of land, policies, or strategies for reducing fire risk.

Assembly Bill 2140: Local Hazard Mitigation Plans and the Safety Element

Assembly Bill (AB) 2140 (2006) provided for post-disaster financial incentives for cities and counties that adopt their Local Hazard Mitigation Plans (LHMPs) as part of general plan safety elements. Among other things, this bill:

1. Authorizes cities and counties to adopt LHMPs prepared under the terms of DMA 2000 as part of their mandated general plan safety elements.
2. Authorizes the legislature to provide to such cities or counties a state share of local costs exceeding 75 percent of total state-eligible post-disaster costs under the California Disaster Assistance Act.
3. Requires Cal OES to give preference for grant fund assistance to jurisdictions that are attempting to prepare an LHMP for the first time.

Implementation of AB 2140 has held out promise of several benefits, including 1) a larger number of jurisdictions preparing LHMPs integrated with general plan safety elements, 2) provision of new opportunities for linking state and local policies related to development in hazard-prone areas, and 3) greater support for local governments seeking to reconcile tensions between development pressure and safe land use planning practices.

Progress Summary 3.E: AB 2140 Implementation

Progress as of 2018: Implementation of Assembly Bill (AB) 2140 provides an opportunity to integrate general community planning with mitigation planning. Since it went into effect in 2007, certain key cities, and counties such as the City and County of San Francisco, Santa Barbara County, and San Luis Obispo County have formally jointly adopted their Local Hazard Mitigation Plans (LHMPs) with the safety elements of their general plans. As of May 2017, 41 jurisdictions with approved LHMPs have integrated their LHMPs with their general plan safety elements or adopted the LHMP as part of their safety elements. Another 82 LHMPs are referenced in those jurisdictions' safety elements. AB 2140 compliance is not permanent but expires when the LHMP expires. When an LHMP is updated and approved by the Federal Emergency Management Agency (FEMA) every five years, it must be re-adopted into the safety element of the jurisdiction's general plan in order to continue to receive the benefits of AB 2140.

Collaborative Effort to Support Local Coastal Planning Alignment

During 2017 and 2018, a multi-agency partnership comprised of NOAA's Office for Coastal Management, USGS, FEMA, California Coastal Commission, the Ocean Protection Council, the Governor's Office of Emergency Services, the Governor's Office of Planning and Research, and the State Coastal Conservancy worked together to develop the Coastal Plan Alignment Compass. The Compass focuses on California coastal communities, which are responsible for developing a suite of local plans that include local coastal programs, local hazard mitigation plans, and general plans. The Compass, released in August 2018, assists local governments to make the case for plan alignment and begin to coordinate plans.

Flood Hazard Mitigation and the General Plan

The successful bond election of 2006 was followed in October 2007 by passage of a major flood legislation package supporting integration of local land use planning with state floodplain mitigation actions. The primary bill was AB 162, which among other things required cities and counties to:

- Employ the land use element to identify and annually review areas subject to flooding identified by floodplain mapping prepared by FEMA or the California Department of Water Resources (DWR)
- In the conservation element, identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for purposes of storm water management

- In the safety element (and other elements that must be consistent with the safety element according to state law), establish a set of comprehensive goals, policies, and objectives for protection of the community from unreasonable risks of flooding
- In any updated housing element, review and identify new flood hazard information that was not available during the previous revision of the safety element.

Fire Hazard Mitigation and the General Plan

Senate Bill 1241 (2012) requires local governments in SRAs and VHFHSZs to:

- Update their general plan safety elements (and all elements of a general plan, whether mandatory or optional, must be consistent with one another) to recognize specific wildfire risks in such areas
- Adopt special findings when approving subdivisions in such areas
- Use wildfire safety guidelines and California Environmental Quality Act (CEQA) initial study wildfire hazards checklist updates issued by the Governor's Office of Planning and Research (OPR)
- Submit their safety elements for review to the State Board of Forestry and Fire Protection and to local agencies that provide fire protection to territory in the city or county

Progress Summary 3.F: SB 1241 Implementation Resources

Progress as of 2018: In May 2015, the Governor's Office of Planning and Research (OPR) issued a Fire Hazard Technical Advisory Planning Guide to assist local jurisdictions in developing effective fire hazard policies for their general plans. This advisory is meant to assist city and county planners in cooperation with fire mitigation, preparedness, and response professionals and Fire Safe Councils in developing sound policies for fire hazard mitigation that can be incorporated into city and county general plans and other related planning documents.

A Handbook for Fire Planning in the General Plan was published by the California Board of Forestry and Fire Protection in May 2014. The intent of this handbook is to:

- Assist the Board of Forestry and Fire Protection, the California Department of Forestry and Fire Protection (CAL FIRE), and contract county fire personnel in understanding local planning and development laws
- Provide information to fire personnel to aid in communicating with local government planners and elected officials
- Provide information to assist in coordinating strategic fire planning efforts across jurisdictional and topical plans
- Provide information to assist fire personnel in reviewing general plans and development projects and in developing appropriate comments
- Provide information about development law in the context of fire and resource protection
- Provide information to help develop comprehensive, cohesive plans that integrate local, state, and federal levels of strategic fire planning

CAL FIRE published a fact sheet on its Land Use Planning Program. The CAL FIRE Land Use Planning Program has a dedicated team of fire professionals strategically located throughout California who, in conjunction with the local CAL FIRE unit, act as a resource for local governments in matters related to fire hazard planning. Their services include:

1. Technical guidance related specifically to safety element fire hazard planning
2. Assistance with the safety element submittal process to the Board of Forestry and Fire Protection
3. Guidance on the Subdivision Map Act related to Very High Fire Hazard Severity Zones (VHFHSZ's)
4. Assistance with State Responsibility Area (SRA) Fire Safe Regulation issues

CAL FIRE also produced "Example Goals, Policies and Implementation Measures" to assist cities and counties in developing wildfire hazard plan safety element goals, policies, and implementation measures. In September 2016, the Board of Forestry and Fire Protection issued a guidance document that it uses in its required review of safety elements. CAL FIRE's Land Use Planning Program also issued a compendium of land use planning resources and a guide to local government submittal information.

Climate Change and the General Plan

SB 379 (2015) requires cities and counties to include climate adaptation and resiliency strategies in the safety elements of their general plans upon the next revision of their housing elements beginning January 1, 2017. The bill requires the climate adaptation update to include a set of goals, policies, and objectives for their communities based on the most current information available regarding climate change adaptation and resiliency. Implementation of SB 379 is under way.

Other Examples of California Legislation Influencing General Plans and Land Use Planning

SB 244 Disadvantaged Communities

This 2011 legislation recognized that many disadvantaged unincorporated communities lacked adequate investment in infrastructure such as sidewalks, safe drinking water, and adequate waste processing. This lack of adequate investment threatens both health and safety of residents and creates inequity in access to high-quality services. SB 244 created procedural requirements to identify these areas of risk and update general plan policies to improve conditions.

AB 1739 Groundwater Management

This 2014 legislation requires that, prior to the adoption or any substantial amendment of a general plan, the planning agency review and consider certain specified groundwater plans and refer a proposed action to certain specified groundwater management agencies. This requirement is a linked to drought and long-term water availability.

SB 1168, AB 1739, and SB 1319, Collectively Known as the Sustainable Groundwater Management Act of 2014

This group of bills considers the connections among groundwater management, land use, and flood management and allows local agencies to customize plans to their regional needs.

California Coastal Act of 1976

The California Coastal Act is unique in protecting the environmental integrity of California's coast, except for San Francisco Bay which has its own state planning and regulatory agency with regional authority (the San Francisco Bay Conservation and Development Commission [BCDC]). Implementation of Coastal Act policies is accomplished primarily through the preparation of Local Coastal Programs (LCPs) that are required to be completed by each county and city within the coastal zone and approved by the California Coastal Commission.

The McAteer-Petris Act and the Suisun Marsh Preservation Act

The McAteer-Petris Act, enacted on September 17, 1965, established the San Francisco Bay Conservation and Development Commission as a temporary state agency charged with preparing a plan for the long-term use of the Bay. In August 1969, the McAteer-Petris Act was amended to make BCDC a permanent agency and to incorporate the policies of the Bay Plan into state law. Nejedly-Bagley-Z'berg Suisun Marsh Preservation Act of 1974 recognized the threats to the Suisun Marsh from potential residential, commercial, and industrial developments, and the need to preserve this unique wildlife resource for future generations. The Act directed the BCDC and the Department of Fish and Wildlife to prepare a Suisun Marsh Protection Plan. The Suisun Marsh Preservation Act was enacted in 1977 to incorporate the findings and policies contained in the plan into state law.

California Environmental Quality Act of 1970

Among many other actions of the California Environmental Quality Act (CEQA), it enables regional air pollution control districts to participate in the local land use planning decision-making process.

Best Practices Highlight 3.A: Hermosa Beach—Integrating Coastal Protection with Land Use Planning

In 2017, the City of Hermosa Beach updated and integrated two of the City's key planning documents - the general plan and the Local Coastal Program (LCP). Collectively referred to as PLAN Hermosa, the integrated plan sets a long-term vision and provides policy direction and guidance to residents, City staff, decision-makers, and the community on what investments the City makes in its infrastructure, how it preserves its small-town character and historic buildings, and where changes are needed to grow its economy and create local jobs.

Within PLAN Hermosa, goals and measurable actions have been established that will help achieve the City's long-term vision as a community that values a small beach town character, vibrant economy, and healthy environment and lifestyles.

Within the City's integrated plan, the safety element was updated to identify hazards and specifically those exacerbated by climate change. In addition, social vulnerability, physical vulnerability, and infrastructure vulnerability were assessed and conclusions used to set priorities for addressing adaptation needs.

3.10 CALIFORNIA STATE STRATEGY 5: INCORPORATE CLIMATE CHANGE INTO LOCAL, TRIBAL, REGIONAL, AND STATEWIDE HAZARDS PROFILES, RISK ASSESSMENTS, AND MITIGATION PLANS

California has recognized the variety of ways in which climate change may affect the state. As a result, action to address climate change is being integrated into nearly every aspect of state operations. The SHMP's provision of hazard mitigation guidance and Cal OES coordination efforts support integration of projected climate change impacts when developing hazard mitigation measures. This integration makes these measures more compatible with other state, local, and tribal aims.

In 2009, Cal-Adapt,[26] a publicly accessible web portal with downscaled climate change projections, was released, and has resulted in a tool that provides information critical to the integration of climate change impacts into state and local plans. Subsequent to the release of Cal-Adapt, Cal OES developed the Adaptation Planning Guide to aid communities in using the Cal-Adapt information to support local decision-making.[27] The integration of climate change considerations into hazards mitigation is further bolstered by the recent passage of SB 379 (2015).

The Safeguarding California Plan: 2018 Update - California's Climate Adaptation Strategy communicates current and needed actions that state government should take to build climate change resiliency, with the ultimate goal of ensuring that people, communities, and natural systems are able to withstand the impacts of climate disruption. To this end, the document presents recommended adaptation strategies.

Some state agencies actively participating in climate change initiatives include the California Natural Resources Agency, the California Department of Water Resources (DWR), the California Coastal Commission (CCC), the Ocean Protection Council (OPC), CAL FIRE, the Governor's Office of Planning and Research (OPR), the State Lands Commission (SLC), the California Department of Public Health (CDPH), the Bay Conservation and Development Commission (BCDC), the California State Lands Commission (SCC), the State Water Resources Control Board (SWRCB), and many others. Regional agencies, such as the San Francisco Bay Regional Quality Control Board, and local jurisdictions are also addressing climate change mitigation. For more information about efforts to address climate change, see *Section 4.3*.

For example, in 2017, the SWRCB adopted a resolution addressing its comprehensive response to climate change. The 2017 resolution builds on the SWRCB's 2007 resolution setting forth initial actions to respond to climate change and requires a proactive approach to climate change in all SWRCB actions, with the intent to embed climate change consideration into all programs and activities. For more information about the SWRCB resolution, visit:

[26] California Energy Commission. Cal-Adapt. 2017. Retrieved on 5/30/2017 from www.cal-adapt.org.
[27] California Natural Resources Agency and California Emergency Management Agency. California Adaptation Planning Guide. 2012. Sacramento: author.

https://www.waterboards.ca.gov/water_issues/programs/climate/.

The Regional Water Quality Control Boards are also implementing legislative mandates to strengthen climate change resilience, including the Sustainable Groundwater Management Act, which will bring depleted groundwater basins into balance to provide a buffer against future droughts.

Two important senate bills establish the framework for incorporating climate change adaptation into local and regional hazard mitigation plans and general plan safety elements. SB 379 (2015) says that "Upon the next revision of a local hazard mitigation plan, adopted in accordance with the federal Disaster Mitigation Act of 2000 (Public Law 106-390), on or after January 1, 2017, or, if a local jurisdiction has not adopted a local hazard mitigation plan, beginning on or before January 1, 2022, the safety element shall be reviewed and updated as necessary to address climate adaptation and resiliency strategies applicable to the city or county."

SB 246 (2015) establishes the Integrated Climate Adaptation and Resiliency Program (ICARP) to coordinate regional and local efforts with state climate adaptation strategies. For more information about other adaptation legislation and initiatives, see *Section 4.3.6*.

3.11 CALIFORNIA STATE STRATEGY 6: ENHANCE COLLABORATION ON THE DEVELOPMENT AND SHARING OF DATA SYSTEMS AND GIS MODELING

California Geoportal

With advances in GIS modeling and computer technology, many new websites offering interactive hazard mapping tools have emerged. The most comprehensive example of this is the California Department of Technology's Geoportal, which provides easy and convenient ways to search, discover, and use geospatial data resources. A primary goal of the California Geoportal is to improve access to California's geographic data portfolio and expand the creative use of those data resources.

The California Geoportal strives to increase information transparency and is committed to creating an open environment for accessing important government-derived geographic data. The benefits derived from the California Geoportal will encourage information sharing and promote efficiency and effectiveness in providing individuals and organizations with timely and accurate geographic information for better and more informed decision-making.

The Geoportal is organized into five topical sections: public safety, natural resources, education, health, and government. The public safety section includes many of the hazard maps necessary for developing LHMPs, including Alquist-Priolo Special Studies Zones, Fire Threat and Wildland Fire Maps, and Tsunami Maps.

Of special note is the inclusion of the Cal OES developed "MyPlan" which is included under the heading Natural Hazards in the Public Safety section. Also of great importance is the addition of Cal-Adapt in the Natural Resources section of the portal.

For additional details, go to: http://portal.gis.ca.gov/geoportal/catalog/content/about.page.

California's Open Data Portal

California also shares government data through the state's open data portal, which provides data sets from various state agencies including the California Air Resources Board, California Public Utilities Commission, California Department of Water Resources, Office of Environmental Health Assessment, and many others. To view available data sets, visit: https://data.ca.gov/.

Examples of State GIS and Other Hazard Data Tools

Cal-Adapt

Cal-Adapt is developed by the Geospatial Innovation Facility at University of California, Berkeley with funding and advisory oversight from the California Energy Commission. It is designed to provide access to the wealth of data and information that has been, and continues to be, produced by the State of California's scientific and research community. The data available on this site offer a view of how climate change might affect California at the local level. The site includes interactive visualization tools and maps related to climate change topics, including average temperatures, extreme heat, sea-level rise, snowpack, wildfire, and cooling and heating degree-days. Information on drought and streamflow projections is under development at this time.

CalEnviroScreen

CalEnviroScreen was developed by the Office of Environmental Health Hazard Assessment (OEHHA), on behalf of the California Environmental Protection Agency (CalEPA) to identify disadvantaged communities as required by SB 525 in 2017. It is a screening methodology that can be used to help identify California communities that are disproportionately burdened by multiple sources of pollution.

California Healthy Places Index

The California Healthy Places Index (HPI) is an interactive data and mapping tool that provides a detailed snapshot of the social determinants of health across California, mapped down to the Census tract level. HPI provides comparison rankings of Census tracts statewide and an accompanying policy action guide. HPI can thus be a useful tool in targeting areas with high levels of social and economic disadvantage for funding, policy, and planning interventions.

Seismic Maps

The California Geological Survey website provides the ability to download GIS maps pertinent to the Alquist-Priolo Earthquake Fault Zoning Map Act and the Seismic Hazards Mapping Act, as well as landslide susceptibility and tsunami inundation maps that can be used to develop LHMPs, and to meet real estate hazard disclosure requirements.

Sea-level Rise Viewers

The California State Lands Commission (SLC) website offers access to two sea-level rise viewers (as well as other sea-level rise mapping tools). In addition to the state viewer provided to assist SLC staff, the SLC website also links to and is supported by the Sea-level Rise interactive viewer developed by the National Oceanic and Atmospheric Administration (NOAA). NOAA's web mapping tool visualizes community-level impacts from coastal flooding or sea-level rise (up to 6 feet above average high tides). Photo simulations of how future flooding might affect local landmarks are also provided, as are data related to water depth, connectivity, flood frequency, socio-economic vulnerability, wetland loss and migration, and mapping confidence. The U.S. Geological Survey (USGS) CoSMoS tool is also publicly available, is linked through Cal-Adapt, and has been heavily used by local jurisdictions in their vulnerability assessment work.

Awareness Floodplain Map

DWR provides an interactive "Awareness Floodplain Map" tool to identify all pertinent flood hazard areas for areas that are not mapped under the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP) and to provide the community and residents with an additional tool for understanding potential flood hazards not mapped as a regulated floodplain. The awareness maps identify the 100-year flood hazard areas using approximate assessment procedures. These floodplains are shown simply as flood-prone areas without specific depths and other flood hazard data. Awareness Floodplain Maps will be added as they become available.

CAL FIRE Map Viewers

CAL FIRE has created a web-based map viewer to allow Californians to participate in understanding and identifying the areas most affected by tree mortality as a threat to life and property. This viewer shows areas of tree mortality mapped from 2012 through 2016 as well as examples of assets important to life and property, such as roads, water supply infrastructure, and communications facilities. Where the tree mortality intersects with an asset, the area will be categorized as high priority. CAL FIRE also maintains the State Responsibility Area (SRA) GIS mapping layer and a data viewer to assist landowners in determining if their property may fall within an SRA. SRA boundaries are those adopted by the Board of Forestry and Fire Protection in January 2011, updated to reflect changes as of July 1, 2016. They are the official boundaries recognized by the Board of Forestry and Fire Protection to define the areas where CAL FIRE has financial responsibility for fire suppression and prevention.

General Plan Guidelines Online Data Mapping Tool

The General Plan Guidelines Data Mapping Tool (GPMT) is a useful tool to help communities identify existing resources, including natural resources, roads, buildings, and demographics, and develop open space inventories accordingly. The GPMT pulls data from multiple state and federal sources into one comprehensive site and allows supplemental data layers from local jurisdictions. The GPMT allows mapping of known resources, assets, and needs of the community and can be used in conjunction with Cal-Adapt to further support local jurisdictions' climate change analysis.

Climate Heat Adaptation Tool

The California Natural Resources Agency is sponsoring development of the Climate Heat Adaptation Tool (CHAT) as part of its Fourth Climate Assessment Portfolio. CHAT is a decision-support tool for city, county, and state practitioners involved in public health and local planning efforts to better prepare for extreme heat in the future. This online, interactive tool will support the inclusion of extreme heat and its impact on human health into long-term policy and planning decisions in California. CHAT will be launched in 2018.

MyPlan and MyHazards

The purpose of MyPlan is to improve the quality of hazards and risk assessment by local communities in preparing Local Hazard Mitigation Plans (LHMPs), general plan safety elements, and Local Coastal Programs (LCPs). MyPlan complements the *MyHazards* mapping tool, which was established to provide homeowners, property owners, and residents with natural hazards data in response to simple queries involving a location or address. Data accessible in MyHazards on a more localized, neighborhood scale address hazards such as flood, earthquake, fire, tsunami, and liquefaction zones. Mitigation strategies are also displayed based on applicability to that particular hazard. Users are provided links that explain how to complete mitigation actions.

Progress Summary 3.G: MyPlan and GIS TAWC

Progress as of 2018: Launched in the fall of 2010, the MyPlan Internet Mapping Tool (IMT) continues to provide Geographic Information Systems (GIS) web-based mapping to specialized local users such as planning, building, public works, and administrative professionals at the city, county, special district, and tribal organization levels, as well as consultants who, under contract with local jurisdictions, are tasked with evaluating and mitigating natural hazards. The California Governor's Office of Emergency Services (Cal OES) convened a meeting with the California Natural Resources Agency (CNRA) and California Department of Technology (CDT) to discuss the planned update for MyPlan. During this collaborative session, CDT agreed to take on the technical update of MyPlan to better streamline with other tools and applications that are native to Cal OES. CDT is well positioned to handle inter-agency coordination for this project.

In 2016, Cal OES in collaboration with CDT launched an enhanced version MyPlan. As part of the 2016 launch, modifications and adjustments were made to meet broader and current needs, including the addition of data layers that are valuable to planners of all types. The updates also included user interface updates, technology updates, and an ability to use the website via mobile devices. This required developers to recreate the application to meet the most current standards and have the flexibility to build upon it further in the future.

In 2018, Cal OES began considering switching the MyPlan platform to potentially allow access to hazard mapping information on handheld devices. If this project goes forward, it will be guided by the Geographic Information Systems Technical Advisory Working Committee (GIS TAWC) and occur during implementation of the 2018 SHMP.

3.12 CALIFORNIA STATE STRATEGY 7: SUPPORT AND COORDINATE MONITORING OF PROGRESS ON STATE GOALS AND OBJECTIVES

The SHMT is a key source of information on hazard mitigation project and progress. Collaborative efforts often inform SHMT members of hazard mitigation projects that may be related to mitigation actions they are currently undertaking. SHMT meetings provide a venue for the sharing hazard mitigation progress with other team members and featuring mitigation "success stories."

Strategic targets established for hazard mitigation can include quantified objectives (such as expressing the numbers of vulnerable buildings to be identified and/or retrofitted by type of structure), other measurable outcomes reached, or a certain time deadline. Common factors are 1) determination of reasonable targets, 2) establishment of means by which progress can be measured, and 3) dates by which action must be completed.

Sometimes targets are broadly stated. For example, a state-initiated performance target setting was SB 547 (1986), which required California cities and counties in high seismicity regions (previously referred to as Seismic Zone 4) of the Uniform Building Code then in force to identify all "potentially hazardous" buildings (in this case, unreinforced masonry or unreinforced masonry structures) within their boundaries by January 1, 1990.

An example given in the 2010 SHMP of strategic target setting included seismic retrofit targets established by Health and Safety Code Section 130050 et seq., expressed in terms of time as follows:

- By 2013, replace or retrofit all acute care hospitals posing a significant risk to life in the event of earthquakes
- By 2030, replace or retrofit all acute care hospitals that will not be immediately occupiable and reasonably capable of providing emergency services after earthquakes

While they do not include numbers, these targets state conditions by which progress can be measured and determined. Other examples in California law include time targets, numerical targets, and certain programmatic requirements.

An example of a target reflecting programmatic requirements as well as a numerical target and deadline date is SB 32 (2016), which amends the statewide goal to reduce greenhouse gas emissions 40 percent below 1990 levels by 2030, and requires the California Air Resources Board (CARB) to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions.

An example of a mitigation planning target was established under the Sustainable Groundwater Management Act of 2014, which directed DWR to identify groundwater basins and sub-basins in conditions of critical overdraft, and required all basins designated as high or medium priority and critically overdrafted to be managed under a groundwater sustainability plan or coordinated groundwater sustainability plan by January 31, 2020. All other high and medium priority basins must be managed under a groundwater sustainability plan by January 31, 2022.

It should be noted that setting hazard mitigation performance targets is a highly complex and expensive undertaking that implies the existence or development of capacity to measure progress against a given target.

3.13 CALIFORNIA STATE STRATEGY 8: ESTABLISH A MITIGATION REGISTRY FOR COMMUNICATING PROGRESS

During preparation of previous SHMPs, the SHMT discussed the desirability of establishing, with state and local agencies and the private sector, a registry of mitigation projects featuring a statewide database publicizing local

experiences in mitigating various types of hazards, especially the primary hazards of earthquakes, floods, and wildfires. Such a database would represent valuable information on mitigation efforts and enhance hazard mitigation strategies undertaken by state and local governments, businesses, and community organizations.

In 2017, the SHMP mitigation report form was updated and made available on the Cal OES Hazard Mitigation web page. Cal OES continues to encourage SHMT members and others to use this form to report mitigation progress. The form was used as a method for tracking mitigation progress for the 2018 SHMP update.

At the local level, tracking progress is an essential aspect of the LHMP evaluation and implementation process. Jurisdictions should develop a mitigation action monitoring system that fits the needs of their community in tracking progress over time toward completing planned actions. The plan must identify how, when, and by whom the plan will be monitored.

An existing system available to jurisdictions, the state, and FEMA for tracking the status of the identified hazard mitigation actions is the FEMA Mitigation Action Tracker.

FEMA developed the Mitigation Action Tracker to support the collection and tracking of local hazard mitigation actions. The Mitigation Action Tracker serves as a valuable tool to capture and organize mitigation actions at any stage, from proposed actions to funded projects. Registered users have the ability to add new actions, remove old actions, or update the status of an action as it changes over time. In addition, funding and collaboration opportunities to implement mitigation actions may be identified through the tracking process.

California encourages jurisdictions to use the FEMA Mitigation Action Tracker tool over the life of their approved LHMPs, to help support comprehensive tracking of jurisdictional mitigation progress and support statewide implementation efforts. To link directly to the Mitigation Action Tracker, visit: https://mat.msc.fema.gov/About.aspx.

3.14 CALIFORNIA STATE STRATEGY 9: EXPAND MITIGATION PROJECT LOSS AVOIDANCE TRACKING THROUGH THE STATE MITIGATION ASSESSMENT REVIEW TEAM (SMART) SYSTEM

During preparation of the 2007 SHMP, the concept of the State Mitigation Assessment Review Team (SMART), a post-disaster loss-avoidance tracking system, was first introduced. The purpose of SMART is to assess federally funded mitigation projects completed prior to a disaster after the event to establish a record of the effectiveness of the mitigation actions. SMART system objectives are to assess the outcome of previously funded mitigation projects in a disaster area by 1) ascertaining project performance at a given level of intensity of an event, and 2) identifying effectiveness of mitigation practices. A summary of the SMART system assessment steps is included in *Section 10.6*.

Progress Summary 3.H: SMART Post-Disaster Loss Avoidance Tracking

Progress as of 2018: In the fall of 2017 the California Governor's Office of Emergency Services (Cal OES) began a re-evaluation of the State Mitigation Assessment Review Team (SMART) system to determine how it could be restructured to be more effective. As a result of this evaluation, the decision was made to move operation of the SMART system to the Cal OES Hazard Mitigation Grant Program (HMGP) in the Response and Recovery Directorate. HMGP is in the process of developing updated standard operating procedures for the SMART system. The SMART system is discussed in more detail in *Section 10.6*.

3.15 STATE PRIORITIES

Mitigation actions are the response to priorities determined through federal and state mandates, plans (such as the California Earthquake Loss Reduction Plan, the Strategic Fire Plan, Managing the State's Flood Risk, and Safeguarding California), and special reports. A variety of state laws and programs guide not only state mitigation actions, but also those taken by local agencies, businesses, and private citizens. *Chapter 1: Introduction* summarizes state laws guiding mitigation action at all levels. Additional information is provided in *Annex 1: Guide to California Hazard Mitigation Laws, Policies, and Institutions*.

There are also mandates directing state agencies to protect state-owned property. The state protects critical facilities such as the State Water Project, university systems, park systems, highways, and bridges, and facilities owned or operated by the Department of General Services. *Chapters 6, 7, and 8* include mapped depictions of state-owned properties in relation to primary hazards (earthquakes, fires, and floods).

3.15.1 STATE PRIORITY DETERMINATION

Because of the probability and severity of multiple risks faced by the state, California is forced to continuously address multiple hazards, vulnerabilities, and risks described in depth in *Chapters 6 through 9*. Differences in diversity, geographic variation, and levels of risks and vulnerability make it difficult to assign priority to one type of hazard over another on a statewide basis.

California's disaster history since 1950 indicates that the primary hazards of earthquakes, floods, and wildfires require priority attention because they account for the largest losses and occur most often. All of the major plans for addressing these hazards are built on the premise that the state, while living with these hazards, shall reduce their impacts on people and property. For discussions of the implications of California's disaster history on setting priorities for specific mitigation actions, see *Chapters 4, and 6 through* 9.

All the major natural hazard plans (earthquake, flood, and fire) call for utilization of land use planning and better risk information as foundations for effective risk reduction actions. It should be noted that the ongoing issues of climate adaptation, environmental justice, and cyber security are now being integrated into, and influencing, mitigation priorities.

Setting Priorities Based on Mitigation Goals and Federal Mandates

Certain fundamental priorities are inherent in the first three goals of this SHMP. The fourth goal, to promote community resilience through integration of hazard mitigation with public policy and standard business practices, comprises the basic guiding principle for priority actions based on this SHMP.

Federal mandates constitute an important source of prioritization. Congressional legislation and presidential executive orders affect the entire federal system. For example, the allocation for the distribution of federal funding is based on federal requirements, and any state priorities must be addressed within those requirements.

Priorities reflected in pursuit of SHMP goals and objectives are consistent with requirements of Section 206.435(b)(2) of Title 44, Code of Federal Regulations, which mandates that states establish procedures and priorities for the selection of mitigation actions that, if not taken, will have a severe detrimental impact, such as:

- Potential loss of life
- Loss of essential services
- Damage to critical facilities
- Economic hardship on the community

Such federally mandated priorities provide guidance for the state in evaluation of proposed hazard mitigation grant projects (See *Appendix L*). California requires that all FEMA funded mitigation projects must support and be consistent with goals identified in this SHMP.

Setting Priorities Based on State Legislation and Executive Orders

Emerging priorities for action are reflected in new laws addressing specific hazard mitigation needs. Examples of these are identified in *Chapter 4*, and *Chapters 6 through 9*. After large disasters, post-disaster assessments often stimulate new recommendations for legislative and administrative action. These legislative and administrative assessments result in important new lines of mitigation policy for hazards such as earthquakes, floods, wildfires, and other disasters. Actions that are a result of state legislation or Governor's executive orders carry the highest priorities. Actions recommended or identified in agency strategic plans or reports demand a somewhat lesser priority.

Budget Adoption

The allocation of state resources is the responsibility of the Governor and legislature through the state budget process and reflects priorities in any given year. Budget shortfalls can interfere with long-term funding of many mitigation programs at the state or local level.

3.15.2 PRIORITIES USING FEDERAL HAZARD MITIGATION FUNDING

Cal OES is responsible for distributing federal mitigation funds from the Federal Emergency Management Agency (FEMA). The following are primary priorities for distributing FEMA funds:

- **Protecting lives and property at risk from imminent hazards created or exacerbated by disasters**. Mitigating risk in in high hazard areas of the state is a priority both pre- and post-disaster. Recovery efforts after a disaster have several sources of funding that can help in abating or mitigating hazards. The process for making Hazard Mitigation Grant Program (HMGP) funds available usually takes 180 to 300 days. A Hazard Mitigation Operational Strategy is developed and outlines how the California Governor's Office of Emergency Services (Cal OES) and the Federal Emergency Management Agency (FEMA) will operate in the Joint Field Office (JFO) to address the priorities established by the California State Hazard Mitigation Officer (SHMO), in response to a disaster declaration.

  Priority is given to funding projects that will mitigate imminent hazards, that are highly cost-effective, and that assist in critical efforts to help communities recover from disasters. The state also promotes and gives priority to those projects and activities that would not cause adverse environmental impacts, ensuring the state is in compliance with all relevant state and federal environmental and historical preservation laws. The state utilizes and promotes green infrastructure methods to support its overall mission of using natural infrastructure to manage stormwater and water supplies while delivering environmental, social, and economic benefits for communities. These priorities together all lead toward better protection of lives and property. Establishing these priorities provides guidance for local and tribal governments to build in flexibility for identifying critical mitigation needs that may arise from a disaster when there is no time to update a local and tribal plan. See *Chapter 10* for additional information regarding FEMA and additional funding priorities and opportunities.

- **Protecting vulnerable critical facilities and infrastructure**. Another important priority for federal funding is to help with protecting critical facilities and infrastructure. Though the state and many communities have ongoing capital improvement programs, there remains an almost overwhelming need to retrofit, replace, protect, or relocate facilities and infrastructure important to the state's communities that are at risk from hazards.

- **Maximizing project benefit-cost ratios.** A principal criterion for evaluating grants is the extent to which a project maximizes benefits and minimizes future disaster costs. In other words, the greater the cost-effectiveness of the project, the lower future disaster costs will be. As part of the Hazard Mitigation Assistance (HMA) grant subapplication review, the higher the project benefit cost ratio, the higher the subapplication is ranked, thus giving the project a higher priority to receive grant funding.

- **Reducing repetitive losses.** Mitigation areas with repetitive loss are high priorities for hazard mitigation funding and resiliency efforts. Repetitive losses are a drain on community, state, and national disaster management resources and are very cost-effective to mitigate. The current national and state priority is the reduction of repetitive flood losses because these translate into a loss to the National Flood Insurance Program (NFIP). California has numerous areas of repetitive flood loss. Through the Community Rating System, building codes, education and resiliency programs, California works to reduce these losses. Additionally, many areas of the state experience repetitive losses from other hazards which are also mitigated through education, and various funding opportunities. See *Section 7.1.4.1* and *Appendices J and K* for repetitive loss information.

- **Ensuring communities are eligible for federal programs by supporting local multi-hazard mitigation planning and encouraging all communities to prepare and adopt a Local Hazard Mitigation Plan**. FEMA provides states with hazard mitigation grant funding from three programs: the Hazard Mitigation Grant Program (HMGP) described under the Robert T. Stafford Act, the Pre-Disaster Mitigation Program described in the Disaster Mitigation Act of 2000, and the Flood Mitigation Assistance Program, as part of the National Flood Insurance Reform Act (NFIRA) of 1994. These programs require approved projects to be consistent with locally and state-developed plans and comprise a cost-effective long-term mitigation program. Also, each program allows some funding to be available for hazard mitigation planning efforts.

  Encouraging communities to develop and implement LHMPs is a high priority for California. Such plans are necessary to ensure that local communities are made aware of the hazards and vulnerabilities within their jurisdictions, to develop strategies to reduce those vulnerabilities, and to receive certain federal financial assistance for hazard mitigation. See *Chapter 5* for more information about the LHMP program in California.

- **Addressing climate impacts.** For HMA funding, the state is working with FEMA to set priorities for projects that address climate impacts or adaptation efforts. This effort includes the Climate Resilient Mitigation Activities (CRMAs) identified by FEMA as eligible for HMA funding.

- **Protecting vulnerable populations.** The HMA grant subapplication process gives priority to funding of mitigation projects in disadvantaged communities. Disadvantaged communities within California are identified by CalEPA's CalEnviroScreen tool.

Integrating Federal, State, and Local Priorities

Following a disaster, a Cal OES appointed representative, working with the State Hazard Mitigation Officer and appropriate committees and task forces, develops a mitigation strategy that identifies areas and types of hazard mitigation activities proposed as priorities. This identification is guided by both the established framework of statewide mitigation priorities and the federal priorities described above. It also takes into account the nature of the disaster. Specific post-disaster prioritization is determined as part of initial program guidance to potential applicants. Information to be considered in establishing priority categories may include the evaluation of natural hazards in the disaster area, state-of-the-art knowledge, and practices relative to hazard reduction, existing state mandates or legislation, existing state or local programs, and long-term mitigation goals and objectives at the state, local, tribal, and community level.

Each disaster has particular characteristics that influence the specific mitigation priority determination. For example, earthquake hazards differ from those that affect much of the rest of the nation. Flood risk management in California is a shared responsibility among local, state, and federal agencies. Four of the nation's 15 largest cities are in California (Los Angeles, San Diego, San Jose, and San Francisco), and all are at risk for some type of flooding. Integrated Water Management (IWM) is, along with land use planning and increasing agency collaboration, one of the top priorities for addressing the states flood approach.[28] Wildfire has a different set of considerations. When an area has been burned, one major factor of the hazard in the immediate area–fuel load–has been reduced. The immediate mitigation concerns are then to avoid further damage from mudslides and flooding (especially in steeply

[28] California's Flood Future: Recommendations for Managing the State's Flood Risk. November 2013

sloped areas). The long-term concern is to reduce hazards and/or vulnerabilities to fire in areas that have not burned and contain heavy fuel loads.

Additionally, Cal OES has modified its grant subapplicant scoring and rating form to recognize and provide additional scoring to local jurisdictions that have adopted their LHMPs as part of their general plan safety elements. For more information on grant subapplication review and determination of project priorities, see *Chapter 10*.

3.16 STATE MITIGATION CAPABILITIES

The State of California has a history of successfully implementing hazard mitigation through a process of legislation, program development, and project implementation. This history demonstrates the state's capability to implement state-level hazard mitigation programs that are effective and, in many ways, state of the art. Some examples of state capability to reduce risk and increase resilience include the following:

Earthquake Hazard

- California Earthquake Authority's Brace+Bolt program pilot, launched in 2013, successfully provided seismic retrofit grant funding to homeowners and is being expanded to more areas of Northern and Southern California with $6 million of grant funding available in 2017.

Flood Hazard

- The 2017 Central Valley Flood Protection Plan (CVFPP), updated in August 2017, incorporates the latest information and science to improve flood risk management throughout California's Central Valley. The CVFPP emphasizes the importance of investing in long-term, multi-benefit actions to improve flood risk management while improving ecosystem functions, modernizing operations and maintenance practices, and strengthening institutional support for flood management. It identifies the need to invest $17 billion to $21 billion in the Central Valley flood system over the next 30 years.

Sea-level Rise Hazard

- The State of California Sea-Level Rise Guidance Document, initially released in 2010 and first updated in 2013, has provided guidance to state agencies for incorporating sea-level rise projections into planning, design, permitting, construction, investment, and other decisions. The Sea-Level Rise Guidance 2018 Update reflects recent advances in ice loss science and updates and expands projections of sea-level rise. The 2018 Guidance update can assist cities and counties as they comply with SB 379 (2015), which requires local planning efforts to address climate change, as well as assist state agencies in preparing for and adapting to climate change, as directed by Executive Order B-30-15.

Wildfire Hazard

- As part of the Tree Mortality Task Force's High Hazard Zone Tree Removal effort, the California Department of Transportation (Caltrans) is identifying and removing dead and dying hazardous trees along highways that could affect the safety of the traveling public.
- The 2017-18 Local Assistance for Tree Mortality (LATM) Grant Program gives a one-time appropriation of $6 million in grants to local agencies in the 10 high priority counties participating in the Tree Mortality Task Force for the purposes of identifying, removing, and disposing of dead and dying trees that pose a threat to public health and safety.
- The Office of the State Fire Marshal's Code Development and Analysis Division reviews all of California's regulations relating to fire and life safety for relevancy, necessity, conflict, duplication, and/or overlap. The division also prepares the California State Fire Marshal's fire and life safety regulations and building standards for review and adoption by the California Building Standards Commission.

Energy Shortage Hazard

- In 2015, the Energy Commission adopted the Existing Buildings Energy Efficiency Action Plan to help meet the Governor's goal to double the efficiency savings of existing buildings by 2030 and adopted the first update in December 2016. Further updates are expected every three years. SB 350 (2015), the Clean Energy and Pollution Reduction Act, requires the Energy Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a doubling of energy efficiency savings from buildings and retail end uses by 2030.

Other Mitigation-Related Efforts

- AB 2800 (2017) requires state agencies to take into account current and future impacts of climate change in all stages of planning, designing, building, operating, maintaining, and investing in state infrastructure. The bill required that a Climate-Safe Infrastructure Working Group be established from 2017 to 2020 to examine how to integrate scientific data concerning projected climate change impacts into state infrastructure engineering. In early September 2018, the Climate-Safe Infrastructure Working Group launched "Paying It Forward: The Path Toward Climate-Safe Infrastructure in California", a 160-page report addressing the problem of climate change impacts on aging or poorly maintained infrastructure. Key sections of the report present the problem, a vision, and elements of a framework to action to ensure resilient and sustainable infrastructure in the future.

3.16.1 LEGAL FOUNDATIONS OF STATE CAPABILITY

Chapter 1: Introduction, Section 1.4, provides a general summary of the laws, policies, and institutions underlying the state's capability in implementing hazard mitigation. Together they establish the underlying framework for the state's policies related to hazard mitigation and disaster management and form the core of the state's capabilities. To more fully understand the legal foundations of the state's capability, it is useful to examine federal and State of California laws and programs described in further detail in *Annex 1: Guide to California Hazard Mitigation Laws, Policies, and Institutions*.

3.16.2 TYPES OF STATE CAPABILITY

The state's efforts at implementing hazard management can be viewed as being effective at three levels: state legislation, state-level implementation, and local level implementation of state priorities.

State Legislation

State legislation related to hazard mitigation is, for the most part, hazard-specific. While much legislation has been the result of disaster events in which specific vulnerabilities were highlighted, there is also a sustained approach to legislation with a focus on planning and emerging hazards.

Recent examples of these laws include the following:

- SB 1278 and AB 1965 revised the definition of urban level of flood protection and modified the dates and timeframes for general plan amendments (July 2, 2015) and zoning ordinance updates (July 2, 2016).
- SB 32, signed by Governor Brown on September 8, 2016, put into law a statewide goal to reduce greenhouse gas emissions 40 percent below 1990 levels by 2030.
- The Sustainable Groundwater Management Act of 2014 (AB 1739, SB 1168, and SB 1316) commits California to local management of groundwater supplies with the goal of achieving sustainable management of groundwater basins through development and implementation of groundwater sustainability plans (GSPs) by local agencies within 20 years.

Much of the state legislation addressing hazard mitigation has resulted from recommendations by special commissions formed following a disaster. The legislative aspect of California's approach to hazard mitigation is responsive, focused, and effective.

Additional information on over 30 laws forming a foundation for emergency management and hazard mitigation in California may be found in *Annex 1, Section 1.10*. A variety of additional laws and programs responding to mitigation needs for specific hazards (earthquake, wildfires, and floods) are documented in *Appendices G, H, and* I.

State-Level Implementation of Priorities

The state has expended tens of billions of dollars on seismic, fire, and flood hazard mitigation. Some of these efforts include the Dam Safety Act of 2006, the Alquist-Priolo Earthquake Fault Zone Mapping Act, the Unreinforced Masonry Building Law, the Essential Services Building Seismic Safety Act, the Seismic Hazards Mapping Act, statutes forming the California Earthquake Authority, the State Water Project, the Caltrans Seismic Retrofit Program, residential seismic retrofit programs, mapping of Fire Hazard Severity Zones, the State Water Plan, the Central Valley Flood Protection Plan, and the Sustainable Groundwater Management Act.

The state has certain direct oversight authority over specific forms of hazard mitigation involving land use. For example, the California Coastal Commission (CCC) administers the California Coastal Act, which provides for long-term protection of California's 1,100 miles of coastline. Along with the San Francisco Bay Conservation and Development Commission (BCDC) and the State Coastal Conservancy, the CCC administers the California Coastal Management Program.

Unique in the U.S., the California Coastal Act, administered by the CCC and local jurisdictions or entities with certified Local Coastal Programs (LCPs), Port Master Plans, Long-Range Development Plans, or Public Works Plans, provides for the protection and enhancement of California's coast and ocean for present and future generations. It does so through careful planning and regulation of environmentally sustainable development, rigorous use of science, strong public participation, education, and effective intergovernmental coordination. In the San Francisco Bay Area, the Bay Conservation and Development Commission (BCDC), created by the McAteer-Petris Act, supports implementation of state coastal priorities.

Section 30253 of the California Coastal Act requires that new development minimize risks to life and property in areas of high geologic, flood, and wildfire hazard. Development must assure stability and structural integrity, and not create or contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or require construction of protective devices that substantially alters natural landforms along bluffs or cliffs.

Additionally, Section 2697 of the Seismic Hazard Mapping Act requires that cities and counties condition approval of subdivision plans and the issuance of building permits on approved seismic hazard investigations and plans to mitigate identified hazards. This requirement induces sustainable mitigation in that it affects all future construction within designated zones. Section 2699 requires cities and counties to take into account seismic hazards zones when preparing the safety elements of general plans (and other elements that must be consistent with the safety element according to state law), and when adopting and revising land use planning and permitting ordinances.

To improve understanding of natural hazards and the performance of hazard mitigation practices, state agencies and many of the state's universities are researching the behavior of natural events and developing improved methods for research. There is also considerable research devoted to improving disaster-resistant building materials and practices. The California Energy Commission, the California Air Resources Board, and the Strategic Growth Council all fund university level research addressing specific hazard topics. This research is critical to improving building standards and practices.

Local-Level Implementation of State Priorities

State efforts to implement hazard mitigation at both the state and local level are complicated. State laws that strengthen building codes and standards and their enforcement have been effective in that California arguably appears to have experienced substantially less damage than had such regulations not been adopted. This especially seems to be the case for California's three primary hazards: earthquakes, flood, and wildfire. Local governments may adopt amendments enhancing minimum requirements of the California Building Code.

California law also stipulates mandatory local hazard mitigation requirements, such as Senate Bill 379 requirements that local jurisdictions include climate adaptation strategies in the general plan safety element. SB 1000 requires local jurisdictions to include upon the next update of their general plan, either a new environmental justice element or environmental justice goals, objectives, and policies integrated into the other required general plan elements.

The state encourages local governments to voluntarily initiate hazard mitigation efforts. An example of local-level implementation can be seen in the recent approval by Bay Area residents of Measure AA which applies a parcel tax to raise funds to address potential flooding and sea-level rise impacts resulting from climate change.

Another example of local implementation efforts supporting the SHMP goal of protecting property is the creation of numerous geological hazard abatement districts (GHADs), local voter-approved districts that are primarily established to fund mitigation of geologic hazards.

A major area of opportunity exists to realize benefits of locally initiated and implemented hazard mitigation strategies and actions integrated with jurisdictional planning. This is why one of the state's hazard mitigation priorities is reflected in Goal 4 (promote integrated hazard mitigation policy), Objective 4: "Improve the quality and effectiveness of regional, local, and tribal hazard mitigation plans through effective training and guidance that strengthens linkages between these plans, local general plan elements, local coastal plans, other local plan initiatives, related land use controls, and the SHMP."

3.17 COMPREHENSIVE MULTI-AGENCY MITIGATION ACTION PROGRAM

As can be seen from the preceding progress statements in this chapter, California uses a multi-agency approach, capturing the energy and resources of multiple state and local agencies as well as tribal governments and the private sector to make advances in natural hazard mitigation and disaster loss reduction.

State agencies are tasked by statute and executive orders to provide mitigation programs related to specific hazards. Mitigation actions stemming from these separate authorizations are woven together into a comprehensive multi-agency mitigation action program, as described below.

Interagency integration is a key strategy used by the state to strengthen capabilities in order to further mitigation efforts. This is accomplished through coordination of multiple state agencies, along with organizations that have focused missions.

Examples of mitigation efforts using integration include:

- *Cyber Threat Prevention and Response*. The California Cybersecurity Task Force consists of an inter-agency team headed by Cal OES which coordinates efforts of the California Department of Technology, Cal OES, the California Military Department, and the California Highway Patrol with those efforts grouped into two sectors, external facing and internal-facing. For more information about the Task Force, see *Section 9.3.2*.
- *Well Stimulation and Hydraulic Fracturing Regulation and Oversight*. As a result of SB 4 (2013), the following five state agencies are now are involved in coordinated oversight and regulation of well stimulation and hydraulic fracturing activities: Division of Oil, Gas, and Geothermal Resources (DOGGR), Office of Environmental Health Assessment, Department of Toxic Substance Control (DTSC), State Water Resources Control Board (SWRCB), and California Air Resources Board (CARB).

3.17.1 MULTIPLE FUNDING SOURCES

As discussed in *Chapters 6 through 10*, billions of dollars of state, local/tribal, and private funds are committed to hazard mitigation efforts in amounts far exceeding those administered by FEMA. This multi-agency approach is coordinated and cross-cutting, yet decentralized. Operating through separate agency programs, the state's comprehensive mitigation program is fiscally supported by a variety of financial sources, including general funds, bonds, fees, and federal grants, as described more fully in *Annex 2: Public Sector Funding Sources*.

Thus, no single agency directs or has authority over all hazard mitigation actions and resources. Instead, because of California's size and complexity, the model is that of a distributed system of coordinated and often complementary mitigation actions. Within that, each agency seeks to avoid conflict or redundancies of its mitigation programs with those of other agencies, regardless of the funding source. For example, as a result of the 2012 to 2016 statewide

drought, more than $300 million has been authorized for grant projects administered by multiple state agencies designed for water conservation, flood risk, watershed protection, ecosystem restoration, and groundwater management. Another example is the Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP), which has invested more than $700 million for projects designed to help California reach its greenhouse gas emission goals, improve air quality, reduce dependence on petroleum, and increase energy efficiency, which will ensure energy supplies can meet future energy demand.

3.17.2 COORDINATION OF MITIGATION ACTIONS

In this multi-agency context, coordination of mitigation planning and action priorities is undertaken through a variety of means, including cross-referencing of common mitigation objectives in separate agency plans as well as a variety of joint inter-agency coordination mechanisms, both formal and informal. Within each agency, coordination is exercised at both the management and field levels.

The Role of the SHMT

The SHMT has played an instrumental role in coordinating participating agencies at the management level in the preparation of this SHMP. In addition to supporting preparation of the 2018 SHMP, SHMT members play critically important roles in coordinating implementation of actions identified in the 2013 SHMP, including monitoring mitigation progress within their agencies. Coordination is focused at the statewide level in a wide variety of action areas specified by a broad range of programmatic legislation and executive orders.

Coordination Example: Tree Mortality Task Force

An example of a coordinated multi-agency mitigation effort by the state is the Tree Mortality Task Force comprised of over 300 state and federal agencies, local governments, utilities, and various stakeholders that coordinate emergency protective actions and monitor ongoing conditions to address the vast tree mortality resulting from four years of unprecedented drought and the resulting bark beetle infestations across large regions of the state.

Coordination Challenges

Previously, the organization of tribal mitigation plan reviews was not closely coordinated with Local Hazard Mitigation Plan (LHMP) reviews. Since 2016, Cal OES LHMP technical assistance and training staff have been working more closely with FEMA Region IX staff to gain access to tribal mitigation plans in review by FEMA. As access to these tribal mitigation plans becomes available, Cal OES staff continue to work with FEMA Region IX staff to strengthen the state's approach to support integration of state, local and tribal mitigation actions.

For an overview of the many new, ongoing, and completed mitigation actions within the state, see *Appendix C: Multi-Agency Mitigation Action Matrix*.