



DRAFT

California Climate Adaptation Strategy

October 18, 2021

Public comment period ends November 17, 2021.

Options to submit written input include:

Mail: California Natural Resources Agency,
715 P Street, Sacramento, CA 95814

Email: icarp@opr.ca.gov

Additionally, we will hold three regional workshops and two tribal listening sessions to solicit input on the draft. Details will be posted on the [2021 California Climate Adaptation Strategy](#) web page.

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A Note to Readers

Thank you for your review of the draft 2021 California Climate Adaptation Strategy! It was informed by the contributions of hundreds of people across the state, and reflects deep collaboration among dozens of state entities.

Our approach to the Strategy is designed to accelerate climate adaptation action across regions and sectors in California; identify how key state agency actions fit together to achieve these priorities; and build on the successes and lessons learned since the first climate adaptation strategy in 2009.

The Strategy is organized around outcome-based priorities, and integrates key elements of the state's latest sector-specific plans. It also identifies a success metric and timeline for completion for every action in the strategy. Please note, all metrics and timeframes presented in the draft are still in progress and undergoing internal review. Across the Newsom Administration, steps are being taken, at the Governor's direction, to accelerate climate action timelines where possible.

For further information on the state's goals and approach to the draft 2021 California Climate Adaptation Strategy, please visit the [2021 California Climate Adaptation Strategy](#) web page.

Your input will inform the final strategy, which will be released as a website rather than a static document. We have provided a conceptual representation of the strategy website in the accompanying Final Strategy Concept PPT slides in case helpful in your review of the draft.

The draft 2021 California Climate Adaptation Strategy was released for public comment on October 18, 2021, and we welcome written feedback by November 17, 2021.

Options to submit written input include:

1. Mail: California Natural Resources Agency, 715 P Street, Sacramento, CA 95814
2. Email: icarp@opr.ca.gov

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Landing Page: California Climate Adaptation Strategy

Our Challenge - California is a global leader in reducing greenhouse gas emissions and transitioning to a carbon-neutral future. Our state's economy has continued to grow as carbon pollution has decreased. As we drive toward carbon neutrality, we must protect our communities and natural environment from the climate crisis already here. In the last decade, Californians have endured severe droughts, floods, historic wildfires, rising seas, and record temperatures. Californians now see, feel, and breathe what scientists have been explaining for decades: greenhouse gas pollution is warming our planet and generating threats to life on earth.

Our Opportunity - The choices we make today will define California's future. Our climate adaptation efforts reduce climate risks and build resilience for our state's residents, communities, and natural places. A truly climate resilient 'California For All,' demands we build climate resilience while also addressing deep-rooted systemic inequities. The 2021 Adaptation Strategy provides a framework for bold adaptation solutions that fully integrate equity into California's climate resilience programs.

Our Approach - California is statutorily required to release an updated climate adaptation strategy every three years.¹ The 2021 Strategy is designed to build on the successes and lessons learned since our first iteration in 2009. It also integrates key elements of the latest sector-specific plans, such as the Natural and Working Lands Climate Smart Strategy, Wildfire and Forest Resilience Action Plan, Climate Action Plan for Transportation Infrastructure, and Water Resilience Portfolio. Key elements of our approach:

- 1. Set strategic direction and identify needed outcomes.** The Strategy links together the state's existing and planned climate adaptation efforts, showing how they fit together to achieve broad climate resilience priorities. The Strategy also specifies needed actions, with timeframes and metrics, to drive progress and enable accountability.
- 2. Unify efforts across all sectors and regions.** The Strategy is organized around outcome-based priorities, rather than individual sectors, enabling a coordinated, integrated approach to building climate resilience. This recognizes that climate adaptation must be integrated into the work of all state agencies. The priorities have been developed based on input from Californians across all regions of the state and in consultation with California Native American tribes.
- 3. Help all Californians understand and contribute to California's climate resilience.** The final Strategy will be released as an interactive website that serves as a hub for state climate resilience action. This website will be updated to reflect progress and make

¹ This Strategy describes California's policy approach to addressing the impacts of climate change. Nothing in this Strategy is intended to be a commitment to any particular project or program. Further, all actions described in this document must be consistent with the relevant agency's existing authorities and follow all applicable legal requirements, including, but not limited to budget appropriation, the California Environmental Quality Act, the Administrative Procedures Act, etc. Nothing in this Strategy creates any legally enforceable rights or remedies.

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adjustments, and will allow for Californians to easily access information on our efforts.

How to Explore the 2021 State Adaptation Strategy

By Priority: To see the state's key priorities for building climate resilience and how state agencies are working to advance them, begin by exploring each priority.

By Goal: To review the Strategy's specific goals and actions, explore by goal.

By Region: To learn about climate challenges and related state efforts in a specific region, select from nine different geographic regions across the state.

Landing Page Icon: Climate Adaptation in Partnership with California Native American Tribes

Since time immemorial, California Native Americans have stewarded, managed, and lived interdependently with the lands, waters, and natural resources that now make up the State of California. In recognition of this truth and the critical importance of partnership with California's many Native American tribes in advancing a climate-resilient California for all, this Strategy commits to incorporating Tribal expertise and traditional ecological knowledge into this work at all levels. The Strategy strives to reflect the priorities of Tribes in adapting to climate change, and to deliver a strategy useful to Tribes as they carry out their own adaptation efforts.

Many species and natural and working lands hold cultural importance to California Native Americans and are critical to their lives and wellbeing. For many tribes, native plants and animals serve as natural materials and traditional foods. Certain lands and waters are significant to identity, culture, and belief systems. Threats to these species, lands, and waters will not only have an ecological impact, but a cultural impact to many California Native American tribes.

In addition to climate change threats to natural and working lands, built infrastructure, and communities and economies, Tribal cultural resources are significantly threatened by climate change impacts. Historic and cultural resources include artifacts, archaeological sites, cultural landscapes, ethnographic resources, museum collections, buildings, and structures. A number of these sacred sites, objects, and heritage sites, in addition to natural resources, are a critical aspect of living culture for many Californians, especially California Native American tribes. Cultural resources are elements of cultural continuity and identity that provide a connection to the land and inspire practices today.

Historic and cultural resources face many impacts from climate change, and efforts to preserve and connect with them must be interwoven with initiatives to address the effects of climate change to the built and natural environments, and communities.

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Landing Page Icon: Summary of Projected Climate Change Impacts on California

California is already experiencing the impacts of a changing climate, including observable shifts in the frequency and severity of extreme weather events, such as more frequent and severe heat waves and wildfires, more variable precipitation, and a succession of droughts that have increased as temperatures warm.

While the impacts vary in different regions of California, the evidence is clear – every corner of the state is already seeing and will continue to feel the impacts of climate change, requiring sustained commitment to ambitious emissions reductions and proactive implementation of climate adaptation and resilience efforts. While we don't have answers to every question about what these changes mean for California, this strategy provides a clear framework for action that also allows for adjustments and course corrections as our understanding evolves.

Statewide trends are elaborated below. For more information on the impacts of climate change in California and for insight into region-specific variations, explore [CA's Fourth Climate Change Assessment](#) and the [Indicators for Climate Change in California](#) report.

The latest IPCC report included relevant [regional projections](#) that reaffirm the findings from the CA Fourth Assessment highlighted below; the science indicates California faces increased temperatures, drought, fire weather, and more extreme flooding.

Statewide Trends

Temperature: Annual temperature increases experienced over most of California have already exceeded 1°F, with some areas exceeding 2°F. The daily maximum average temperature, an indicator of extreme temperature shifts, is expected to rise 4.4°F – 5.8°F by mid-century and 5.6°F – 8.8°F by late century. Heat-Health Events (HHEs), which better predict risk to populations vulnerable to heat, will worsen drastically throughout the state: by midcentury, the Central Valley is projected to experience average HHE's that are two weeks longer, and HHEs could occur four to ten times more often in the Northern Sierra region.

Precipitation: California is known for its highly variable precipitation and has the highest variability of year-to-year precipitation in the contiguous United States. California's variable precipitation is also characterized by multi-year wet or dry periods. As a result, future average precipitation is difficult to predict, but may likely not change substantially when measured by annual precipitation. However, there is high confidence in projections that even if precipitation remains stable or increases, drought severity and the number of dry years will increase, even as more extreme precipitation events may occur. Warming air temperatures will increase moisture loss from soils, which will lead to drier seasonal conditions even if precipitation increases. The snowpack in California's mountains is a key source of surface and groundwater in the state, and rising temperatures will cause a decline in snowpack by more than a third by 2050 and more than half by 2100, even if precipitation levels remain stable.

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Wildfire: Wildfires are driven by multiple, complex, and interacting factors such as the environment, land use, and human activity that can make future wildfires difficult to predict. A model developed for California's Fourth Climate Change Assessment projects a 77 percent increase in average area burned and a 50 percent increase in the frequency of extreme fires by 2100. California is already experiencing these increases - in recent years the area burned by wildfire has dramatically increased and unprecedented fires are occurring at higher elevations and along the coast. In addition, many of California's wildfires are burning hotter and more intensely than observed in recent history. The 2020 wildfires resulted in the largest wildfire season recorded in California's modern history. 2020 saw nearly 10,000 fires that burned over four million acres. However fewer than 40 fires accounted for the vast majority of the area burned, pointing to the accelerating severity and frequency of extreme fires. For example, the 2020 August Complex fire has been described as the first "gigafire" with over 1 million acres burned, making it California's largest recorded wildfire.

Sea-level rise, coastal flooding, and erosion: Sea-level rise is already accelerating along the CA coast and will continue to rise substantially over the 21st century, threatening coastal communities, natural resources, cultural sites and infrastructure. The State's coastline is expected to experience between 1.1 – 1.9 feet of sea level rise by 2050 (with a low-probability, but high impact extreme of 2.7 feet) and between 2.4 – 6.9 feet by 2100 (with a low-probability, but high impact extreme of 10.2 feet). Coastal wave events, in combination with current and rising sea levels, will increase flood impacts on land, which will exacerbate the impact on coastal assets. Rising sea levels may also salinate coastal groundwater aquifers and raise groundwater tables, leading to impacts to buried infrastructure. Finally, rising water levels will increase coastal erosion, impacting beaches and cliffs throughout the state, with a projected 31 – 67 percent of Southern California beaches potentially lost by the end of the century if adaptation actions are not implemented.

Ocean warming, hypoxia, and acidification: The world's oceans absorb excess heat (~90%) and CO₂ (~30%) from greenhouse gas emissions, the former contributing to ocean warming and the latter to ocean acidification. Both warming and acidification can be catastrophic to marine habitats (e.g. disease, degradation, bleaching) and the coastal communities and industries that rely on them. Relatedly, deoxygenation or hypoxia of surface waters can lead to dead zones inhospitable to marine life.

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PRIORITY: Strengthen Protections for Climate Vulnerable Communities

While climate change already impacts every region of the state, regions and communities experience these impacts differently based on a wide range of factors. [Climate vulnerability](#) describes the degree to which natural, built, and human systems are at risk of exposure to climate change impacts. Climate vulnerable communities experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, gender, sexual orientation and identification, national origin, and income inequality.

Reducing risks from climate impacts requires strengthening protections and increasing the resilience of communities and people to respond, recover, and adjust. Yet, some communities face compounding vulnerabilities and experience disproportionate impacts--particularly low-income communities, Communities of Color, and tribal communities.

A truly resilient California ensures all communities thrive and none are left behind. Therefore, one of California's climate adaptation priorities is to ensure adaptation and resilience actions appropriately respond to the needs and priorities of the communities most vulnerable to climate impacts.

GOAL A: Engage with and build capacity in climate vulnerable communities

Action 1: Provide technical assistance and funding to expand the capacity and planning capabilities of under-resourced communities, including California Native American tribes, to implement climate change mitigation, adaptation, and resilience projects.

- **Success Metric:** Disadvantaged communities have increased success in accessing State climate resilience funding
 - **Timeframe:** Under review
- **Success Metric:** Under-resourced communities have a greater participation in key decision-making processes on climate change adaptation and resilience
 - **Timeframe:** Under review
- **Success Metric:** Improve how communities and public agencies learn from each other and work together
 - **Timeframe:** Under review
- **Success Metric:** Fund the participation and leadership of CBOs and frontline communities in adaptation planning
 - **Timeframe:** Under review

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- **Agency/Agencies:** CA Strategic Growth Council | CA Natural Resources Agency - San Francisco Bay Conservation and Development Commission
- **For More Detail:** [Community Assistance for Climate Equity Program, San Francisco Bay Conservation and Development Commission Bay Adapt](#)

Action 2: Increase community participation in planning transportation projects that build climate resilience.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA State Transportation Agency – Caltrans | CA Natural Resources Agency - Coastal Commission
- **For More Detail:** [CalTrans Strategic Management Plan 2020-2024](#)

Action 3: Partner with underserved communities and with tribes in California and tribal governments to build coastal and ocean climate resilience.

- **Success Metric:** Availability of multilingual sea-level rise interpretive and educational materials
 - **Timeframe:** Under review
- **Success Metric:** Improve how communities and public agencies learn from each other and work together
 - **Timeframe:** Under review
- **Success Metric:** Fund the participation and leadership of community-based organizations and frontline communities in adaptation planning
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency – Ocean Protection Council, State Coastal Conservancy, Department of Water Resources, Coastal Commission, Department of Fish and Wildlife, State Parks, San Francisco Bay Conservation and Development Commission
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#), [CA Coastal Commission Environmental Justice Policy](#), [CA Coastal Commission Tribal Consultation Policy](#), [CA State Parks Sea Level Rise Adaptation Strategy](#), [San Francisco Bay Conservation and Development Commission Bay Adapt](#)

Action 4: Support Technical Assistance to make climate smart agricultural knowledge and incentives available to Socially Disadvantaged Farmers and Ranchers and disadvantaged communities.

- **Success Metric:** Increased number of Socially Disadvantaged Farmers and Ranchers receiving technical assistance through the Climate Smart Agriculture Technical Assistance grant program
 - **Timeframe:** Under review
- **Success Metric:** Non-English language outreach materials prepared by technical assistance providers; Number of applications submitted by socially disadvantaged farmers
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Climate Smart Agriculture Technical Assistance Grant Program](#)

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Action 5: Support California Native American tribes' development of climate change and health equity resilience planning tools and capacity.

- **Success Metric:** Tribal health or environmental programs accessing resources for leadership and planning
 - **Timeframe:** 2022 and annually thereafter
- **Success Metric:** Tools and resources developed by tribal or environmental programs receiving technical assistance
 - **Timeframe:** Under review
- **Agency/Agencies:** California Health and Human Services Agency - CA Department of Public Health
- **For More Details:** [Climate Change & Health Equity Section](#)

Action 6: Enhance adaptive capacity of communities through increased climate-related service and volunteerism through the California Climate Action Corps.

- **Success Metrics:** In Frontline communities: # hrs of service provided by Climate Action Corps AmeriCorps members, # of Community Based Organizations and local government partners supported, # of volunteers engaged, # of people provided with educational information, # of trees planted, # of homes protected from wildfire, and amount of food waste diverted (in lbs)
 - **Timeframe:** Under review
- **Agency/Agencies:** California Volunteers
- **For More Detail:** [California Volunteers Climate Action Corps](#)

Action 7: Through meaningful multilingual and culturally-relevant outreach and engagement, seek and facilitate community input into health impacts studies of climate-related hazards, highlighting disparities and ways to minimize exposures in vulnerable communities.

- **Success Metric:** Number of outreach events and mechanisms implemented to engage community-based organizations, non-governmental organizations and other relevant entities; number of and extent to which studies incorporate community input; number of studies that advance the understanding of disparities, vulnerabilities, and ways to mitigate them
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Environmental Protection Agency - Office of Environmental Hazard and Health Assessment
- **For More Detail:** [Office of Environmental Health Hazard Assessment Strategic Plan: 2018 Update; Human Health Impacts of Climate Change](#)

Action 8: In Bay Area Region climate resilience efforts, elevate communities to lead.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - San Francisco Bay Conservation and Development Commission
- **For More Detail:** [San Francisco Bay Conservation and Development Commission Bay Adapt](#)

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Action 9: In the Delta, engage with communities most likely to be affected by state climate change planning decisions.

- **Success Metric:** State adaptation planning efforts engage and involve vulnerable and under-represented
 - **Timeframe:** Under review
- **Success Metric:** Increased engagement and input of Delta communities likely to be most affected by climate change
 - **Timeframe:** Under review
- **Success Metric:** Work with Delta communities to share vulnerability assessment findings and to develop an adaptation strategy to build climate resilience
- **Agency/Agencies:** CA Natural Resources Agency - Delta Stewardship Council, Delta Conservancy, State Lands Commission, State Coastal Conservancy, Coastal Commission, San Francisco Bay Conservation and Development Commission | CA Environmental Protection Agency - State Water Resources Control Board | CA Department of Food and Agriculture
- **For More Detail:** [Delta Stewardship Council Climate Change Vulnerability Assessment](#); [CA State Lands Commission 2021-2025 Strategic Plan](#); [State Water Resources Control Board Resolution No. 2017-0012](#), [San Francisco Bay Conservation and Development Commission Bay Adapt](#)

GOAL B: Improve understanding of climate impacts on California's communities, including vulnerability drivers

Action 1: Identify climate vulnerable communities in California to direct public and private actions that reduce risk and build resilience.

- **Success Metric:** Launch statewide and all-risk web-based platform that identifies climate vulnerable communities
 - **Timeframe:** 2022
- **Agency/Agencies:** CA Governor's Office of Planning and Research, in coordination with all relevant state agencies
- **For More Detail:** [Integrated Climate Adaptation and Resiliency Program](#)

Action 2: Improve and refine quantitative wildfire risk assessments across all lands and ownerships, focusing on identifying the most vulnerable communities and populations, for inclusion in CA's Vulnerable Communities Platform.

- **Success Metric:** Through CA Fire-Adapted Communities Work Group, develop consistent wildfire risk assessment methodology
 - **Timeframe:** Under review
- **Success Metric:** Conduct statewide analysis of wildfire hazard potential and adaptive capacity that can be used to identify communities that may be especially vulnerable to this threat, in addition to other pollution burdens and vulnerabilities.
 - **Timeframe:** Under Review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Forestry and Fire Protection | CA Governor's Office of Planning and Research | CA Environmental Protection Agency - Office of Environmental Health Hazard Assessment
- **For More Detail:** [CA's Wildfire and Resilience Task Force Action Plan](#); [Office of Environmental Health Hazard Assessment CalEnviroScreen](#)

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Action 3: Increase the collection, analysis, and reporting of data on climate-related health impacts.

- **Success Metric:** Number of indicators, models, and/or tools added to the Department of Public Health Climate Change and Health Vulnerability Indicators for California data visualization platform and/or available for public use in assessing and addressing the health effects of climate change; bibliography with plain language summaries of health outcome/epidemiological studies; number of published epidemiological studies examining human health impacts of climate-related stressors; indicators of impacts on human health in the *Indicators of Climate Change in California* report
 - **Timeline:** 2021 and annually thereafter
- **Agency/Agencies:** California Health and Human Services Agency - CA Department of Public Health | California Environmental Protection Agency - Office of Environmental Health Hazard Assessment
- **For More Details:** [Climate Change & Health Equity Section; Human Health Impacts of Climate Change; Indicators of Climate Change in California; Change & Health Vulnerability Indicators for California](#)

Action 4: Invest in actionable, community-driven, and equitable research partnerships to inform climate actions that build community resilience, integrate land use and development considerations, and facilitate transitions to climate smart communities.

- **Success Metric:** Research is utilized by community organizations, state agencies, tribes, local and regional governments, and other stakeholders to inform climate action
 - **Timeframe:** Climate Change Research program grants are typically 3 years, with outcomes expected on a rolling basis
- **Agency/Agencies:** CA Strategic Growth Council
- **For More Detail:** [Climate Change Research Program](#)

Action 5: Identify access and functional needs communities exposed to greater risks from climate impacts.

- **Success Metric:** Maintain reliable access to quality, accurate data to ensure high functionality of the California Access and Functional Needs Viewer (mapping tool)
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Governor's Office of Emergency Services
- **For More Detail:** [Listos Emergency Preparedness Information](#)

Action 6: Enhance the understanding of climate change impacts on California's Tribal communities and their ecosystems by collaborating with Tribes to document, as part of the Indicators of Climate Change in California Report, their perspectives on climate change-related stressors.

- **Success Metric:** Indicators of Climate Change in California Report and related materials on Tribal impacts
 - **Timeframe:** 2022 and every four years thereafter
- **Agency/Agencies:** CA Environmental Protection Agency - Office of Environmental Health Hazard Assessment

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- **For More Detail:** [Indicators of Climate Change: Impacts on California Tribes](#)

Action 7: Improve the understanding of climate change and its impacts on cultural heritage, including to Indigenous and adjacent communities.

- **Success Metric:** Complete assessment of climate impacts on cultural heritage based on emerging understanding being discussed through the Cultural Resources Climate Change Taskforce.
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - State Parks Office of Historic Preservation and participating Task Force agencies
- **For More Detail:** [Cultural Resources Climate Change Task Force](#)

GOAL C: Build resilience in climate vulnerable communities through state programs

Action 1: Expand defensible space and home hardening, prioritizing actions that reduce risk to vulnerable communities.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Success Metric:** In the coastal zone, use Local Coastal Programs and Public Works Plans to expand defensible space and home hardening. (Coastal Commission)
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Forestry and Fire Protection, Coastal Commission | Governor's Office of Emergency Services
- **For More Detail:** [California's Wildfire and Forest Resilience Action Plan](#), [Coastal Commission Local Coastal Programs](#)

Action 2: Support wildfire prone communities by expanding the Regional Forest and Fire Capacity Program beyond high-risk areas throughout the state and increase local and regional governments' capacity to build and maintain a pipeline of forest health and fire prevention projects.

- **Success Metric:** Establish regional leads to implement the program statewide.
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Conservation
- **For More Detail:** [Department of Conservation Regional Forest and Fire Capacity Program](#)

Action 3: Update the Transportation Infrastructure Competitive Program Guidelines to incentivize climate adaptation and climate risk assessments/strategies.

- **Success Metric:** Under development through CAPTI
 - **Timeframe:** FY 21-22 and FY 22-23
- **Agency/Agencies:** CA State Transportation Agency – Caltrans
- **For More Detail:** [Climate Action Plan for Transportation Infrastructure \(CAPTI\)](#)

Action 4: Review local government plans to meet housing needs (Housing Elements) with a lens toward climate resilience, adaptation, and protection of vulnerable communities to relevant hazards, such as fire and flooding.

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- **Success Metric:** Number of housing elements received, reviewed, and approved; status of compliance
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Business, Consumer Services and Housing Agency - Department of Housing and Community Development
- **For More Detail:** [Housing Element Program](#)

Action 5: Strengthen protections for people experiencing homelessness, who are vulnerable to climate risks, by assisting local governments and continuums of care in housing individuals and families experiencing or at risk of homelessness through funding programs for permanent and interim housing.

- **Success Metric:** Number of individuals housed; reduction in Homelessness Point-in-Time Count
 - **Timeframe:** FY 21-22 and FY 22-23
- **Success Metric:** Permanent or interim housing units constructed, acquired, or rehabilitated
 - **Timeframe:** FY 21-22 and FY 22-23
- **Agency/Agencies:** CA Business, Consumer Services and Housing Agency - Department of Housing and Community Development
- **For More Detail:** [Homekey](#)

Action 6: Invest Community Development Block Grant funds in long-term disaster recovery and resilience building that targets the unmet housing recovery needs of low and moderate-income households in a way that mitigates disaster risk and reduces future losses among vulnerable communities.

- **Success Metric:** Percent of funds used to benefit low and moderate-income persons
 - **Timeframe:** Under review
- **Success Metric:** Number of projects within Federally Declared Disaster Impacted Counties
 - **Timeframe:** Under review
- **Success Metric:** Number of projects located within the most impacted and distressed areas
 - **Timeframe:** Under review
- **Success Metric:** Number of projects within the disaster impacted counties
 - **Timeframe:** Under review
- **Success Metric:** Number of mitigation Planning and/or Public Services projects that directly benefit the most impacted and distressed areas.
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Business, Consumer Services and Housing Agency - Department of Housing and Community Development | California Governor's Office of Emergency Services
- **For More Detail:** [Community Development Block Grant – Mitigation Program](#)

Action 7: Promote walkable and bikeable communities and infill development to build resilience of climate-vulnerable communities.

- **Success Metric:** Provide technical assistance in partnership with the CalTrans Active Transportation Resource Center to local health departments to engage in the

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CalTrans Active Transportation Program to increase safe facilities and their use for walking, cycling, and transit to improve health in communities facing inequities.

- **Timeframe:** 2021 and ongoing
- **Agency/Agencies:** Governor's Office of Planning and Research - Strategic Growth Council | CA Natural Resources Agency - Tahoe Conservancy | CA Business, Consumer Services and Housing Agency - Department of Housing and Community Development | CA Health & Human Services Agency – CA Department of Public Health
- **For More Detail:** [Tahoe Conservancy Tahoe Livable Communities Program](#), [Affordable Housing and Sustainable Communities Program](#), [Transformative Climate Communities Program](#), [Active Transportation Safety Program](#), [CA Department of Public Health Center for Healthy Communities](#)

Action 8: Prioritize social equity and disadvantaged communities in sea level rise planning and adaptation strategies.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - State Lands Commission, State Coastal Conservancy, Coastal Commission, San Francisco Bay Conservation and Development Commission, Ocean Protection Council
- **For More Detail:** [CA State Lands Commission Strategic Plan](#), [CA Coastal Commission Environmental Justice Policy](#), [State Coastal Conservancy Justice, Equity, Diversity, and Inclusion Guidelines](#), [San Francisco Bay Conservation and Development Commission Bay Adapt](#), [Ocean Protection Council Strategic Plan and State Sea Level Rise Principles](#)

Action 9: Build climate resilience, economic sustainability of agriculture, and resilient food systems for all by increasing access to locally grown food and produce in low-income communities through the Department of Food and Agriculture's Office of Farm to Fork.

- **Success Metric:** Increased funding for and participation in the Farm to School Program to provide CA-grown or produced foods for school meals and expand farm to school education
 - **Timeframe:** Annual reporting, continuous programs
- **Success Metric:** Enable stable access to nutritious, locally grown food in vulnerable communities through increased funding to and participation in the California Nutrition Incentive Program, Healthy Refrigeration Grant Program, Senior Farmers Market Nutrition Program, and Farm to Community Food Hubs Program.
 - **Timeframe:** Annual reporting, continuous programs
- **Success Metric:** Increase local production of nutritious food in climate vulnerable communities through increased funding to and participation in the Urban Agriculture Grant Program.
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Farm to School Program](#), [California Nutrition Incentive Program](#), [Healthy Refrigeration Grant Program](#)

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Action 10: Strengthen coastal protection and resilience through consideration and integration of environmental justice principles in permit decisions and planning documents.

- **Success Metric:** Develop guidance for staff and local governments to better address environmental justice and equity in sea level rise planning, including robust community engagement to better understand needs
 - **Timeframe:** Under review
- **Success Metric:** Engage and collaborate with all stakeholders, including community members, visitors, business owners, affordable housing developers and advocates, and tribal groups, as well as underserved and other vulnerable communities who live, visit, and recreate along the coast to ensure equitable participation in adaptation planning processes, and equitable outcomes from decisions
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission, San Francisco Bay Conservation and Development Commission
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#), [Environmental Justice and Social Equity San Francisco Bay Plan Amendment](#)

Action 11: Promote equity, community engagement, and culturally competent emergency response program design.

- **Success Metric:** Create and sustainably fund an Office of Equity to meet the challenges of serving diverse, marginalized and underserved populations when preparing for, responding to, and recovering from disasters
 - **Timeframe:** Under review
- **Success Metric:** Number of community engagements through Listos California as well as other program outreach efforts and grants assisting vulnerable communities
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Governor's Office of Emergency Services
- **For More Detail:** [Listos California](#)

Action 12: Prioritize climate resilience and health equity resources for people and places experiencing the most need and risks due to historical and continuing disinvestment and inequities.

- **Success Metric:** Number of State, regional, and local climate action plans, adaptation plans, general plans, and hazard mitigation plans in public databases that explicitly prioritize strategies to benefit health equity and address racial equity
 - **Timeframe:** 2022 and annually thereafter
- **Agency/Agencies:** CA Health and Human Services Agency | Department of Public Health
- **For More Detail:** [Climate Change & Health Equity Section](#)

Action 13: Ensure the Affordable Housing and Sustainable Communities Program, the State's largest affordable housing program, invests in climate resilient infrastructure

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through integration of climate change impact considerations, including best available science, in scoring.

- **Success Metric:** Continue to evaluate and update Climate Resilience scoring in AHSC Guidelines, through AHSC Guidelines updates process and interagency involvement
 - **Timeframe:** Each round, AHSC applicants include climate-resilient infrastructure and adaptive measures as part of a competitive AHSC application submission
- **Success Metric:** Track the number of climate-resilient infrastructure components and adaptive measures included in awarded AHSC projects
 - **Timeframe:** Each round, AHSC applicants include climate-resilient infrastructure and adaptive measures as part of a competitive AHSC application submission
- **Success Metric:** Track the number of climate-resilient infrastructure components and adaptive measures that have been realized through completed AHSC projects
 - **Timeframe:** Some projects can take over 5 years to complete. Communities won't realize most benefits for at least several years after award
- **Agency/Agencies:** CA Strategic Growth Council
- **For More Detail:** [Affordable Housing and Sustainable Communities Program](#)

Action 14: Through application scoring and project execution, ensure that community development projects funded by the Transformative Climate Communities Program consider climate resilience.

- **Success Metric:** Include best adaptation strategies for each project type in evaluation, scoring, and execution process to ensure that the State investment is safeguarded against impacts of climate change
 - **Timeframe:** Each TCC grant agreement is about 5-7 years; communities would realize some benefits a couple years after project implementation
- **Agency/Agencies:** CA Strategic Growth Council | CA Natural Resources Agency - Department of Conservation
- **For More Detail:** [Transformative Climate Communities Program](#)

Action 15: Enact policies for California High-Speed Rail that establish sustainability, climate change adaptation, and social equity goals.

- **Success Metric:** Annual or periodic reporting related to High-Speed Rail Authority sustainability policies and progress, including: the annual Sustainability Report
 - **Timeframe:** Annual
- **Success Metric:** Adoption and periodic update of Climate Adaptation Plan
 - **Timeframe:** As needed
- **Success Metric:** Implementation of Environmental Justice Policy, Title VI Policy, and Limited English Proficiency Policy, measured by Annual Accomplishment Report.
 - **Timeframe:** Annual
- **Agency/Agencies:** CA State Transportation Agency - High-Speed Rail Authority
- **For More Detail:** [CA High-Speed Rail 2021 Climate Adaptation Plan](#)

Action 16: Increase awareness and understanding of climate impacts on children, a climate vulnerable population, by providing public health expertise and collaborating

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with state and local agencies, community organizations and other entities taking actions to build climate resilience.

- **Success Metric:** Guidance on the climate change impacts and climate vulnerability of children in view of supporting adaptation and resilience; number of outreach materials on climate vulnerability of children for county health departments, health care providers, school authorities and the public
- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Environmental Protection Agency - Office of Environmental Health Hazard Assessment
- **For More Detail:** [Office of Environmental Health Hazard Assessment Strategic Plan: 2018 Update, Office of Environmental Health Hazard Assessment Children's Health](#)

Action 17: Incorporate cultural heritage in California's climate action.

- **Success Metric:** Increased understanding of the role cultural heritage can play in accelerating and scaling climate action
 - **Timeframe:** Under review
- **Success Metric:** Create a California Cultural Resources Climate Change Plan that encompasses actions taken, identifies areas for greater collaboration, and provides guideposts for future efforts
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - State Parks Office of Historic Preservation
- **For More Detail:** [Cultural Resources Climate Change Task Force](#)

Action 18: In the Delta, advance community resilience to climate change through flood risk reduction and prioritized levee investments.

- **Success Metric:** Except where the Department of Water Resources identifies a necessary deviation, state discretionary funding in levee investments will align with priorities identified by the Delta Levees Investment Strategy
 - **Timeframe:** Under review
- **Agency/Agencies:** Delta Stewardship Council
- **For More Detail:** [Delta Levees Investment Strategy](#)

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PRIORITY: Bolster Public Health and Safety in Light of Increasing Climate Risks

Climate change poses significant threats to public health and safety in the form of immediate and near-term shocks, as well as sustained, long-term impacts. For instance, wildfires have resulted in injuries and deaths while also creating lasting health impacts for residents across the state experiencing smoke-filled air and due to loss of homes and livelihoods. Preventing and reducing acute and long-term health and safety impacts of climate-driven events requires a comprehensive approach.

GOAL A: Consider future climate impacts in planning and investment decisions

Action 1: Provide guidance and technical assistance to local communities on sustainable, resilient, and equitable planning for land use and community development, transportation, and resource preservation that advances the state's climate goals.

- **Success Metric:** Number of CA communities that use the Office of Planning and Research guidance to update General Plans and develop policies that are sustainable, resilient, and equitable
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Governor's Office of Planning and Research
- **For More Detail:** [Office of Planning and Research General Plan Guidelines](#)

Action 2: Incorporate climate considerations into State, tribal, and local emergency planning efforts.

- **Success Metric:** Create or request a Federal Emergency Management Agency certified training course on climate change for emergency management personnel and create criteria for tracking utilization and effectiveness of this training
 - **Timeframe:** Under review
- **Success Metric:** Update the State Hazard Mitigation Plan's statewide risk assessment, disaster history, and key statistics; state hazard mitigation goals, objectives, and strategies; recent mitigation progress, success stories, and best practices; and climate mitigation progress and adaptation strategies
 - **Timeframe:** Under review
- **Success Metric:** Number of Dam Emergency Action Plans submitted, reviewed, and approved
 - **Timeframe:** Under review
- **Success Metric:** Survey community-based organizations representing vulnerable populations regarding the usability, accessibility, and functionality of the Adaptation Planning Guide to inform the next update
 - **Timeframe:** 2022
- **Agency/Agencies:** CA Governor's Office of Emergency Services
- **For More Detail:** [Emergency Management Training Program](#), [State Hazard Mitigation Plan](#), [Dam Emergency Action Planning](#), [2020 California Adaptation Planning Guide](#)

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Action 3: Strengthen alignment of coastal resilience planning activities.

- **Success Metric:** Work with federal, state and local government and others to align relevant planning documents (e.g., Local Coastal Programs, General Plans, Local Hazard Mitigation Plans) to minimize adaptation project implementation challenges and better capitalize on funding opportunities for hazard mitigation, preparation and disaster response
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission, San Francisco Bay Conservation and Development Commission | Governor's Office of Planning and Research | Governor's Office of Emergency Services
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#), [Coastal Plan Alignment Compass](#); [Office of Planning and Research General Plan Guidelines](#), [San Francisco Bay Conservation and Development Commission Bay Adapt](#)

Action 4: Develop coastal adaptation plans for coastal adaptation elements into planning documents for all coastal jurisdictions.

- **Success Metric:** Coastal adaptation plans written and adopted for, at a minimum, all coastal counties
 - **Timeframe:** 2023
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council
- **For More Detail:** [Ocean Protection Council Strategic Plan](#)

Action 5: Promote special considerations for critical infrastructure and facilities during planning processes to proactively protect coastal resources against coastal hazards, including sea level rise.

- **Success Metric:** Update Local Coastal Program guidance to promote planning ahead to preserve function of critical facilities under high sea level rise scenarios
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#)

Action 6: Prioritize investments that reduce climate risk to CA's transportation system based on exposure and sensitivity analyses of climate change and natural disasters.

- **Success Metric:** Develop and maintain statewide transportation risk management plan to identify and respond to future disruptions
 - **Timeframe:** Under review
- **Success Metric:** Develop statewide repository of location-specific adaptive strategies that can be incorporated into infrastructure maintenance and rehabilitation projects
 - **Timeframe:** Under review

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- **Success Metric:** Increase use of simulation systems and predictive technologies to understand how future disruptions may impact infrastructure and travel patterns
 - **Timeframe:** Under review
- **Success Metric:** Implementation of the Caltrans District Vulnerability Assessment recommendations
 - **Timeline:** Under review
- **Agency/Agencies:** CA State Transportation Agency - Caltrans
- **For More Detail:** [California Transportation Plan 2050](#)

Action 7: Integrate climate adaptation and resilience principles into the design, construction, and operation of the High-Speed Rail system.

- **Success Metric:** Number of exposure assessments of future climate hazards and scenarios conducted
 - **Timeframe:** As needed in parallel with updated Federal or State climate projections
- **Success Metric:** Number of meetings held of Climate Adaptation Implementation Committee (cross-discipline collaborative committee)
 - **Timeframe:** Annual
- **Success Metric:** Number of climate risk assessments that account for climate hazards performed as a part of the Authority risk management system
 - **Timeframe:** Annual
- **Success Metric:** Success of adaptation through resilience and adaptation criteria added to the Design Criteria Manual and procurement documents
 - **Timeframe:** Long-term, tracked throughout system operations
- **Success Metric:** Implementation and success of site-specific adaptation strategies as needed
 - **Timeframe:** Long-term, tracked throughout system operations
- **Agency/Agencies:** CA State Transportation Agency - High-Speed Rail Authority
- **For More Detail:** [CA High-Speed Rail 2021 Climate Adaptation Plan](#)

Action 8: Ensure proposed Clean and Drinking Water State Revolving Fund projects account for impacts related to climate change.

- **Success Metric:** Number of Clean Water SRF and Drinking Water SRF funded projects with mitigation and adaptation measures implemented as fully as practicable
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board
- **For more detail:** [State Water Resources Control Board Resolution No. 2017-0012](#), [Clean Water State Revolving Fund](#), [Drinking Water State Revolving Fund](#)

Action 9: Identify opportunities to implement climate smart land management on state lands that support build resilience.

- **Success Metric:** Increase acreage of state lands utilizing relevant strategies called for in the Natural and Working Lands Climate Smart Strategy
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - State Lands Commission, Coastal Commission

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- **For More Detail:** [CA State Lands Commission Strategic Plan](#), [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#)

Action 10: Promote emergency planning (hazard mitigation) efforts and projects that are research-supported, innovative approaches to community resilience – such as those that offer multiple co-benefits; are scalable at the community level; and may bring multiple funding sources or in-kind resources from private and public sector stakeholders.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** Governor's Office of Emergency Services
- **For More Detail:** [404 Hazard Mitigation Grant Program](#), [Flood Mitigation Assistance \(FMA\)](#), [Building Resilient Infrastructure and Communities \(BRIC\)](#), [State Hazard Mitigation Plan \(SHMP\)](#)

GOAL B: Build infrastructure resilience to protect public health and safety

Action 1: Reduce the risk of energy infrastructure-related ignitions that lead to catastrophic wildfire.

- **Success Metric:** Number of approved utility wildfire mitigation plans to reduce the risk of infrastructure-related wildfires and increase the wildfire risk mitigation capabilities of electrical corporations throughout the state
 - **Timeframe:** 10 years starting in 2020
- **Agency/Agencies:** CA Natural Resources Agency - Office of Energy Infrastructure and Safety
- **For More Detail:** [Office of Energy Infrastructure and Safety](#)

Action 2: Increase resilience of critical climate-vulnerable energy infrastructure.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - California Energy Commission | CA Public Utilities Commission | CA Department of Food and Agriculture
- **For More Detail:** [Energy Commission Integrated Energy Policy Report](#), [California Public Utilities Commission Climate Adaptation Proceeding](#)

Action 3: Reduce vulnerability of water and wastewater infrastructure to flooding, storm surge, and sea level rise.

- **Success Metric:** Number of National Pollutant Discharge Elimination System permits and waste discharge requirements that include infrastructure climate resilience requirements
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board

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- **For More Detail:** [State Water Resources Control Board Resolution](#)

Action 4: Help communities diversify their water supply sources.

- **Success Metric:** Reduction in number of drinking water systems with only one well, or only one type of water source
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [SAFER Needs Assessment](#), [Countywide Drought and Water Shortage Contingency Plans](#), [Water Resilience Portfolio](#)

Action 5: Evaluate and strengthen resilience of regulated water and wastewater facilities.

- **Success Metric:** Climate change vulnerability assessments regularly updated in community water system sanitary surveys (i.e. Electronic Annual Report) with assessment results made available via a publicly-accessible system
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [State Water Resources Control Board Resolution](#)

GOAL C: Reduce urgent public health and safety risks posed by climate change

Action 1: Reduce health impacts of wildfire smoke.

- **Success Metric:** Launch Smoke Ready California Campaign
 - **Timeframe:** 2021
- **Success Metric:** Enhance prescribed fire reporting
 - **Timeframe:** Under review
- **Success Metric:** Develop and make public a wildfire smoke exposure dashboard to quantify the places, duration, and severity of wildfire smoke exposure across California, as part of the Climate Change and Health Vulnerability Indicators for California
 - **Timeframe:** 2022
- **Success Metric:** Conduct research on the health impacts of wildfire smoke to enable planning to protect vulnerable populations
 - **Timeframe:** 2021 and ongoing
- **Success Metric:** Update and release *WILDFIRE SMOKE: Considerations for California's Public Health Officials*
 - **Timeframe:** 2021
- **Agency/Agencies:** California Environmental Protection Agency - Air Resources Board | CA Health & Human Services Agency – CA Department of Public Health

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- **For More Detail:** [California's Wildfire and Forest Resilience Action Plan, CDPH Climate Change and Health Equity Section, Environmental Health Investigations Branch, and Emergency Preparedness Office](#)

Action 2: Conserve water.

- **Success Metric:** Reduction of water use across the state
 - **Timeframe:** Under Review
- **Success Metric:** Adoption of new standards for outdoor residential water use, water loss through leaks, and outdoor commercial, industrial, and institutional (CII) water use on landscapes with dedicated irrigation meters.
 - **Timeframe:** Statute directed State Water Board to adopt new standards and performance measures by June 2022.
- **Success Metric:** Implement urban water use efficiency and water loss standards for urban retail water suppliers
 - **Timeframe:** Beginning January 1, 2024, annual calculation from each urban retail water agency
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board | CA Natural Resources Agency – Department of Water Resources
- **For More Detail:** [California Statutes Making Conservation a California Way of Life, CA State Water Resources Control Board 2021 Strategic Work Plan, Urban Water Use Efficiency Standards and Water Use Objective](#)

Action 3: Help regions prepare for drought.

- **Success Metric:** Fewer impacts to communities, agriculture, and fish and wildlife in next drought.
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Water Resilience Portfolio, Report to the Legislature on the 2012-16 Drought, Countywide Drought and Water Shortage Contingency Plans](#)

Action 4: Protect groundwater as an important water source for future generations.

- **Success Metric:** Sustainability, as defined in law, in covered groundwater basins
 - **Timeframe:** 2040
- **Agency/Agencies:** CA Natural Resources Agency | Department of Water Resources; CA Environmental Protection Agency | State Water Resources Control Board | CA Department of Food and Agriculture
- **For More Detail:** [Sustainable Groundwater Management Act](#)

Action 5: Reduce flood damages in California by helping regions prepare for new flood patterns.

- **Success Metric:** Reduced flood damages in California
 - **Timeframe:** Under review
- **Success Metric:** Number of new projects permitted to capture peak flow and improve groundwater recharge

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- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources, Delta Stewardship Council, San Francisco Bay Conservation and Development Commission | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Water Resilience Portfolio](#), [San Francisco Bay Conservation and Development Commission Bay Shoreline Flood Explorer](#), [Department of Water Resources Flood Management](#), [Central Valley Flood Protection Plan](#)

Action 6: Protect public health by increasing reliable access to safe, affordable drinking water and sanitation.

- **Success Metric:** Reduction in the number of drinking water systems on the "Human Right to Water" list over time. Specific metrics and tracking are in the yearly Fund Expenditure Plan approved by the Board
 - **Timeframe:** Under review. Overall timeframe of the Safe and Affordable Funding for Equity and Resilience program is 10 years. Different goals in the Fund Expenditure Plan have different timeframes
- **Success Metric:** Reduced timelines for funding projects for water and wastewater systems most at risk to climate change and increase in total number of projects funded per year
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board | CA Natural Resources Agency - Department of Water Resources
- **For More Detail:** [SAFER Drinking Water Fund Expenditure Plan](#), [Countywide Drought and Water Shortage Contingency Plans](#), [Water Resilience Portfolio](#)

Action 7: Support local and regional agencies to recycle or reuse water.

- **Success Metric:** Increased volumes of recycled water across the state
 - **Timeframe:** Under Review
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [CA State Water Resources Control Board 2021 Strategic Work Plan](#), [Water Quality Control Policy for Recycled Water](#)

Action 8: Invest state bond funds in water storage that provides flood control, ecosystem, water quality, emergency response, and recreation benefits.

- **Success Metric:** State agency contracts deliver public benefits from new water storage projects in the Proposition 1 Water Storage Investment Program.
 - **Timeframe:** Under Review
- **Agency/Agencies:** CA Natural Resources Agency - California Water Commission, Department of Water Resources, Department of Fish and Wildlife, Department of Parks and Recreation | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Proposition 1 Water Storage Investment Program: Funding the Public Benefits of Water Storage Projects](#)

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Action 9: Support the public health sector's capacity to address the climate crisis and increase health equity.

- **Success Metric:** Number of local health departments and tribal health or environmental programs receiving technical assistance and staff resources to address climate change as a public health crisis
 - **Timeframe:** 2021 and ongoing
- **Success Metric:** Number of models to project climate-related morbidity and mortality in California, and tools to assess the health effects of climate-related policy changes.
 - **Timeframe:** 2022 and ongoing
- **Agency/Agencies:** CA Health and Human Services Agency - Department of Public Health
- **For More Details:** [Climate Change & Health Equity Section](#)

Action 10: Integrate health equity data, tools, and metrics into State climate change-related plans, policies, and investments, to improve health equity outcomes.

- **Success Metric:** Number of State climate change-related plans, policies, and investments incorporating health equity-related data, tools, and metrics
 - **Timeframe:** 2021 and ongoing
- **Agency/Agencies:** CA Health and Human Services Agency - Department of Public Health
 - **For More Details:** [Climate Change & Health Equity Section](#)

Action 11: Minimize toxic chemical exposures associated with climate-related events by providing toxicological expertise and consultation to support state and local decision-making and emergency response.

- **Success Metric:** Number of fact sheets describing potential chemical exposures with different types of climate-related events; an online resource developed in collaboration with state/local emergency response partners; participation in emergency planning and response; recommendations to Department of Fish and Wildlife on fisheries closures and openings based on domoic acid levels in shellfish; with CDPH, evaluation and tracking of illness reports associated with harmful algal blooms (HABs); toxicological consultations on HAB events; recommendations and advice to the State Water Resources Control Board regarding HAB toxins in drinking water
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Environmental Protection Agency - Office of Environmental Health Hazard Assessment
- **For More Detail:** [Office of Environmental Health Hazard Assessment Strategic Plan: 2018 Update; OEHHA Harmful algal blooms, OEHHA notification levels for chemicals in drinking water](#)

Action 12: Promote safer, sustainable pest management.

- **Success Metric:** Increased technical assistance and funding for and participation in programs that help to develop alternatives and tools farmers need to transition to safer, integrated pest management options. These programs include the Biologically Integrated Systems Program, Proactive Integrated Pest Management Solutions

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Program, and Interregional Research Program Number Four (IR-4), including advanced plant breeding

- **Timeframe:** Annual reporting, Continuous Programs
- **Success Metric:** Number of pounds, acres treated with specified pesticides
 - **Timeframe:** Five years
- **Agency/Agencies:** CA Environmental Protection Agency - Department of Pesticide Regulation | CA Department of Food and Agriculture
- **For More Detail:** [Transition to Safer, Sustainable Pest Management Practices](#)

Action 13: Protect natural resources and agriculture from invasive species and pests whose impact changes spatially and temporally as a result of climate change.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture | CA Natural Resources Agency - Department of Conservation, Department of Forestry and Fire Protection
- **For More Detail:** [Department of Food and Agriculture](#), [Department of Conservation](#), [Department of Forestry and Fire Protection](#)

Action 14: Improve water quality by reducing excess nutrients in groundwater.

- **Success Metric:** Number of Alternative Manure Management Program projects with relevant technologies
 - **Timeframe:** Annual reporting, continuous program
- **Success Metric:** Increased capacity to produce transportable manure-based amendments including compost produced on-farm that stabilizes Nitrogen and improves nutrient cycling
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture, State Water Resources Control Board
- **For More Detail:** [Alternative Manure Management Program](#), [Irrigated Land Regulatory Program](#)

Action 15: Modernize the harmful algal bloom notification network.

- **Success metric:** Provision of real time data and predictions
 - **Timeframe:** Provision of real time data by 2022, predictions by 2024
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board, California Water Quality Monitoring Council | CA Natural Resources Agency – Ocean Protection Council
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#), [California Harmful Algal Blooms Portal](#)

Action 16: Integrate future climate risk into emergency management, response, and early warning systems.

- **Success Metric:** Number of pre-positioned resources intended to anticipate and mitigate catastrophic wildfires and other climate-driven disasters
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Governor's Office of Emergency Services
- **For More Detail:** [Governor's Office of Emergency Services](#)

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PRIORITY: Build a Climate Resilient Economy

Our economy relies on safe and reliable infrastructure, a healthy workforce, healthy natural systems, and stable supply chains, all of which are affected by climate impacts. While there is no reliable single economy-wide number on the economic costs of climate change, climate change impacts already demonstrate the need for up-front investment in reducing risks to reduce the long-term fiscal impacts to the state budget as well as to our communities and industries. It has been estimated that on average every \$1 invested in climate risk reduction can deliver at least \$6 in savings. Proactive adaptation and resilience measures like investments in public health systems and community resilience, supporting climate-smart businesses, protecting workers vulnerable to climate impacts, wetland restoration, forest management, and climate resilient infrastructure, will save California billions in future costs.

GOAL A: Expand economic opportunity through building climate resilience

Action 1: Implement the Just Transition Roadmap to support regions with economic transitions resulting from climate impacts by incorporating high road economic principles — on equity, sustainability, and job quality — into all regional economic and workforce development initiatives supported by the State.

- **Success Metric:** Include high road principles in individual program guidelines, so that all programs score and evaluate applications on a rubric that integrates job quality, climate resilience, equity, and inclusivity as defined in the Just Transition Roadmap
 - **Timeframe:** Immediate and ongoing
- **Success Metric:** Build a clear set of related metrics for the Community Economic Resilience Fund, measuring both short-term and long-term outcomes
 - **Timeframe:** 2021 – 2026
- **Agency/Agencies:** Governor's Office of Planning and Research | CA Labor & Workforce Development Agency | Governor's Office of Business and Economic Development, in coordination with all relevant state agencies
- **For More Detail:** [Just Transition Roadmap](#)

Action 2: Maintain the economic viability and resiliency of California's agricultural lands by protecting agricultural land from development and providing the technological tools necessary for sustainable growth.

- **Success Metric:** Number of plans to guide improvements in soil health and habitat created through Department of Conservation grant programs
 - **Timeframe:** Under review
- **Success Metric:** Number of local government plans to address economic viability funded by Department of Conservation grant programs
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Conservation | CA Department of Food and Agriculture
- **For More Detail:** [Department of Conservation Division of Land Resource Protection](#)

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Action 3: Enhance and protect California's coastal tourism economy through resilience investments.

- **Success Metric:** By 2022 complete an assessment of California's sustainable coastal tourism industry with recommendations on how to grow the industry consistent with marine conservation law and policy
 - **Timeframe:** Under review
- **Success Metric:** Fisheries landings: catch, price, and revenue by species; number of anglers making landings; number of recreational fishing licenses sold; recreational catch amount/location/effort; ocean business revenue; frequency/type/location of visits to the coast
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council, Department of Fish and Wildlife, Coastal Commission
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#)

Action 4: Support California communities to attract businesses and economic opportunities resulting from adaptation actions that build resilience to economic assets and services.

- **Success Metric:** Number of communities who are including climate resilience as a location advantage to businesses
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Governor's Office of Business and Economic Development
- **For More Detail:** [CA Business Investment Services](#)

Action 5: Develop adaptive management approaches to assess and effectively respond to climate-caused shifts in fisheries.

- **Success Metric:** Enhanced Status Reports and Fishery Management Plans for priority species in the 2018 Marine Life Management Act Master Plan
 - **Timeframe:** Under review
- **Success Metric:** fisheries landings: catch, price, and revenue by species, number of anglers making landings, number of commercial and recreational fishing licenses and permits sold, commercial and recreational catch amount/location/effort
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Ocean Protection Council
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#), [CA Marine Species Portal](#)

Action 6: Bring to scale a thriving forest and wood products market in California that leverages public investments by energizing private capital for sustainable forest management, regional economic recovery, and climate resilience.

- **Success Metric:** Deploy \$17 million in federal funds under the Biomass Utilization Fund in Tuolumne County. Create over 50 jobs, with over half of job opportunities offered to low- and moderate-income individuals; deploy \$47 million dollars of climate catalyst fund
 - **Timeframe:** Under review
- **Success Metric:** Number of executed loans from the Climate Catalyst fund

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- **Timeframe:** June 2024
- **Success Metric:** Deploy pilot projects to develop regional woody feedstock aggregation strategies through organizational innovations
 - **Timeframe:** Under review
- **Success Metric:** Reduction of agricultural burning in the San Joaquin Valley
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Sierra Nevada Conservancy, Department of Forestry and Fire Protection | CA Governor's Office of Business and Economic Development | CA Governor's Office of Planning and Research | CA Department of Food and Agriculture
- **For More Detail:** [Biomass Utilization Fund](#); [CA Infrastructure and Economic Development Bank](#)

GOAL B: Deepen understanding of climate change effects on California's economy

Action 1: Raise awareness of climate risks in the business community and assist businesses to operate with minimal interruption during and after extreme climate events or emergencies.

- **Success Metric:** Number of industry outreach/communications material developed and number of industry engagements to inform the business community about the issues associated with climate risk and resiliency
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Governor's Office of Business and Economic Development
- **For More Detail:** [CA Business Investment Services](#)

Action 2: Fund applied climate research through the California Climate Change Assessments to quantify economic impacts of climate change in various sectors, with a focus on economic loss and opportunity.

- **Success Metric:** Research results that lend quantifiable economic outcomes for future climate risks, including extreme heat, wildfire, sea level rise and flooding, and extreme precipitation (including drought)
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Governor's Office of Planning and Research - CA Strategic Growth Council | CA Natural Resources Agency - CA Energy Commission
- **For More Detail:** [CA Climate Change Assessment](#)

Action 3: In the Sierra Nevada region, assess and adjust management of recreation areas to ensure viability in light of predicted changes in length of summer and winter seasons due to climate change.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Tahoe Conservancy
- **For More Detail:** [Tahoe Climate Adaptation Action Portfolio](#)

Action 4: Identify and assess sea-level rise impacts and associated financial costs to coastal lands.

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- **Success Metric:** Aligned priorities, including funding and investment initiatives, through SLR Leadership Team
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency – Ocean Protection Council, State Lands Commission, San Francisco Bay Conservation and Development Commission
- **For More Detail:** [Ocean Protection Council Strategic Plan](#), [CA State Lands Commission Strategic Plan](#), [San Francisco Bay Conservation and Development Commission Bay Adapt](#)

GOAL C: Utilize state programs to build a climate resilient economy

Action 1: Support and incentivize agricultural climate resilience.

- **Success Metric:** Stand up the Fresno-Merced Future of Food Innovation Corridor to support the Central Valley's investment in the labor forces and technology needed to scale up climate smart agricultural practices
 - **Timeframe:** 2024
- **Success Metric:** Number of Healthy Soils Program projects funded, acres of resilience-building and soil protecting measures from incentives, and outreach through demonstration projects as part of the Healthy Soils Program
 - **Timeframe:** Annual reporting, Continuous programs
- **Success Metric:** Increase funding for and participation in the State Water Efficiency and Enhancement Program that improve agricultural water use efficiency and/or diversify farm income
 - **Timeframe:** Annual reporting, Continuous programs
- **Success Metric:** Ensure stability of critical pollinator populations by funding pollination projects and technical assistance support pollinators.
 - **Timeframe:** Annual reporting, Continuous programs
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Healthy Soils Program](#), [State Water Efficiency and Enhancement Program](#), [Pollinator Habitat Program](#)

Action 2: Protect coastal agriculture and maximize agriculture production on Prime Agricultural Lands.

- **Success Metric:** Update Local Coastal Program guidance on coastal agriculture to address emerging and core issues such as climate change impacts on coastal farms
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission | CA Department of Food and Agriculture
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#)

Action 3: Ensure continued public access to California's coast in light of changing shoreline conditions and sea level rise.

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- **Success Metric:** Identify locations where public access ways, the CA Coastal Trail, or roadways that facilitate access to these areas may be limited or eliminated in the future due to sea level rise and increased storm events. Begin planning for other options to maintain maximum public access such as through new vertical access ways, trail relocations, rerouting of transportation corridors, bluff top facility enhancements or other alternatives
 - **Timeframe:** Under review
- **Success Metric:** Develop a “Coastal Access for All” Plan that ensures equitable public access to and along the ocean, with measurable targets for beaches, physical trails and access points, education, transportation, and recreational opportunities.
 - **Timeframe:** 2025
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission | CA Transportation Agency - Caltrans
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#), [Ocean Protection Council Strategic Plan](#)

Action 4: In the Tahoe Basin, build capacity for all phases of the forest landscape management cycle, including workforce development.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Tahoe Conservancy and Basin partners
- **For More Detail:** [Lake Tahoe Basin Forest Action Plan](#)

Action 5: In the Delta, identify and address current and future climate risk and liabilities.

- **Success Metric:** Work with stakeholders to develop an adaptation strategy that addresses long term economic viability for the Sacramento-San Joaquin Delta region.
 - **Timeframe:** 2023
- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - State Lands Commission, Delta Stewardship Council
- **For More Detail:** [CA State Lands Commission Strategic Plan](#)

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PRIORITY: Accelerate Nature-Based Climate Solutions and Strengthen Climate Resilience of Natural Systems

Climate smart management of our natural and working lands – forests, farms, wetlands, coasts, deserts, community greenspaces, and more – is a key pillar of California's climate change agenda. Governor Newsom elevated the role of this sector in [Executive Order N-82-20](#), and called for accelerated use of nature-based solutions that deliver on our climate change goals and other critical priorities, such as improving public health and safety, securing our food and water supplies, and increasing equity.

Nature-based climate solutions are actions that work with and enhance nature to build climate resilience and/or contribute to carbon neutrality. For example, climate smart forest management reduces the threat of catastrophic wildfire, supports long-term carbon storage, and builds resilience of our forests to future climate impacts. Similarly, coastal wetland restoration can reduce the risk of flooding, store carbon, and build community, economic, and ecological resilience along California's coasts.

This priority emphasizes our commitment to advancing multi-benefit, nature-based solutions that ensure California's communities and natural systems continue to thrive in the face of climate change. While we all pay a price when our lands are unhealthy – with our health, our economic prosperity, and our security – some of us are burdened more than others. As we accelerate nature-based climate solutions, a core goal for California is to do so in a manner that increases equity and environmental justice.

GOAL A: Increase pace and scale of nature-based climate solutions

Action 1: Identify opportunities for co-management of lands and marine resources and invite and incorporate traditional ecological knowledges and cultural practices in the tool set for understanding and responding to climate change.

- **Success Metric:** Under review
 - **Timeline:** Under review
- **Agency/Agencies:** All
- **For More Detail:** [Statement of Administration Policy – Native American Ancestral Lands](#)

Action 2: Increase the pace and scale of wildfire resilience and forest health projects.

- **Success Metric:** Scale up forest health treatments to 500,000 acres annually.
 - **Timeframe:** Complete by 2025
- **Success Metric:** Scale up state prescribed fire treatments up to 100,000 acres annually.
 - **Timeframe:** Complete by 2025
- **Agency/Agencies:** Office of the Governor - Wildlife and Forest Resilience Task Force | CA Natural Resources Agency
- **For More Detail:** [California's Wildfire and Forest Resilience Action Plan](#)

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Action 3: Launch a new program to identify and execute 500 high priority fuel breaks across the state.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Forestry and Fire Protection
- **For More Detail:** [California's Wildfire and Forest Resilience Action Plan](#)

Action 4: Increase regional capacity to prioritize, develop, and implement projects that improve forest health and fire resilience.

- **Success Metric:** Number of regions with forest and fire resiliency plans.
 - **Timeframe:** Under review
- **Success Metric:** In the coastal zone, use Local Coastal Programs and Public Works Plans to implement forest health and fire resilience plans and projects. (Coastal Commission)
- **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Conservation, State Coastal Conservancy, Coastal Commission
- **For More Detail:** [Coastal Commission Local Coastal Programs](#), [Department of Conservation Regional Forest and Fire Capacity Program](#)

Action 5: Protect, restore, or create an additional 10,000 acres of coastal wetlands.

- **Success Metric:** Under review
 - **Timeframe:** 2025
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council, Department of Fish and Wildlife, State Coastal Conservancy, Coastal Commission
- **For More Detail:** [Ocean Protection Council Strategic Plan](#)

Action 6: Increase the acreage of coastal wetlands - 20% by 2030 and 50% by 2040.

- **Success Metric:** Develop a statewide coastal wetland inventory to monitor and track protection, restoration, and creation targets for increasing coastal wetlands.
 - **Timeframe:** 2022 (with anticipated future updates)
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council, Department of Fish and Wildlife, State Coastal Conservancy, Coastal Commission
- **For More Detail:** [Ocean Protection Council Strategic Plan](#)

Action 7: Increase green space and infrastructure across California's communities and prioritize climate vulnerable communities.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - multiple
- **For More Detail:** [CA Natural Resources Agency Urban Greening Program](#), [CAL FIRE Urban and Community Forestry Program](#)

Action 8: Support planning and building capacity to implement climate smart agricultural practices by helping growers seeking to develop Conservation Plans.

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- **Success Metric:** Number of conservation agriculture plans developed; Number of contacts (workshops and webinars) with Socially Disadvantaged Farmers and Ranchers to increase access to conservation planning process
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Conservation Agriculture Planning Grants Program](#)

Action 9: Accelerate implementation of the Strategic Plan to Protect California's Oceans and Coasts through the Sea-Level Rise Working Group & Executive Committee.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council, Department of Fish and Wildlife
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#)

Action 10: Test innovative, nature-based climate solutions.

- **Success Metric:** Number of innovative, nature-based demonstration projects in State Parks
 - **Timeframe:** Under review
- **Success Metric:** Number of nature-based climate adaptations that include monitoring as a project requirement
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - State Parks, Department of Fish and Wildlife, Delta Conservancy, Ocean Protection Council, State Lands Commission, State Coastal Conservancy, Coastal Commission
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#), [CA State Parks Sea Level Rise Adaptation Strategy](#), [CA State Lands Commission 2021-2025 Strategic Plan](#), [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#) , and [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#)

Action 11: Protect existing 15,000 acres of seagrass habitat and add additional 1,000 acres by 2025.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council, Department of Fish and Wildlife, State Coastal Conservancy, Coastal Commission
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#)

Action 12: Protect and restore kelp forest ecosystems.

- **Success Metric:** Development of kelp restoration and management plan
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council, Department of Fish and Wildlife, Coastal Commission

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- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#)

Action 13: Assist federal government in scaling up forest treatments to 500,000 acres per year by supporting collaborative forest management, and encouraging landscape level planning.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** Office of the Governor - Wildlife and Forest Resilience Task Force | CA Natural Resources Agency - Sierra Nevada Conservancy
- **For More Detail:** [California's Wildfire and Forest Resilience Action Plan](#), [Sierra Nevada Conservancy's Watershed Improvement Program](#)

Action 14: Utilize existing market mechanisms and tools to accelerate nature-based climate solutions.

- **Success Metric:** Number of Environmentally Sensitive Habitat Area, wetland, and marine resources mitigation strategies that deliver climate resilience benefits
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission, Department of Fish and Wildlife | CA Department of Food and Agriculture
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#)

Action 15: In the Sacramento-San Joaquin Delta, build climate resilience through restoration.

- **Success Metric:** 60,000 to 80,000 acres of restored natural ecosystems
 - **Timeframe:** Under review
- **Success Metric:** Additional acres of projects that reverse subsidence and sequester carbon
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Water Resources, Department of Fish and Wildlife, Delta Conservancy, Delta Stewardship Council
- **For More Detail:** [The Delta Plan](#), [Cal EcoRestore](#)

GOAL B: Increase landscape connectivity and establish climate refugia

Action 1: Maintain and increase areas of high resilience to climate change.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency
- **For More Detail:** [30x30 Initiative](#)

Action 2: Utilize California's Marine Protected Areas to build climate resilience.

- **Success Metric:** Fund research to better understand the mechanisms and role that MPAs can play in building climate resilience.

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- **Timeframe:** Under review
- **Success Metric:** Develop and implement the MPA Statewide Leadership Team Work Plan
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council, Department of Fish and Wildlife
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#)

Action 3: Conserve agricultural lands at risk of development.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Strategic Growth Council | CA Natural Resources Agency - Department of Conservation, Coastal Commission | CA Department of Food and Agriculture
- **For More Detail:** [Department of Conservation CA Farmland Conservancy Program](#), [Department of Conservation and Strategic Growth Council Sustainable Agricultural Lands Conservation Program](#), [Coastal Agriculture in the CA Coastal Act](#)

Action 4: Enhance and maintain state wildlife refuges, ecological reserves, and hatcheries, and increase pace and scale of habitat restoration and adaptive management on state lands.

- **Success Metric:** Improved habitat quality on state wildlife areas, ecological reserves, hatcheries, and other state lands
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources, Delta Stewardship Council | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Water Resilience Portfolio](#), [California Biodiversity Initiative – A Roadmap for Protecting the State's Natural Heritage](#)

Action 5: Reconnect aquatic habitat to help fish and wildlife endure drought and adapt to climate change.

- **Success Metric:** Fewer barriers to fish passage on California streams and rivers
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Water Resilience Portfolio](#), [California Fish Passage Assessment Database](#)

Action 6: Restore and expand rivers, mountain meadows, and deltaic wetlands to improve water quality and storage, enhance wildlife habitat and biodiversity, sequester carbon, and buffer floods.

- **Success Metric:** Expansion of wetland and floodplain acreage statewide
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency – multiple

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- **For More Detail:** [Sierra Nevada Conservancy Watershed Improvement Program](#), [Lake Tahoe Climate Adaptation Action Portfolio](#), [Wetlands Restoration for Greenhouse Gas Reduction Program](#), [Department of Fish and Wildlife Watershed Restoration Grant Programs](#)

Action 7: Minimize causes and impacts of ocean acidification and hypoxia.

- **Success Metric:** Based on the latest scientific research, advance adoption of regulations, as needed, establishing water quality objectives for ocean acidification and hypoxia that include, but are not limited to, publicly owned treatment works, stormwater, and non-point source pollution, by 2025, with scientific analysis of the relationship between nutrient inputs and acidification hot spots completed by 2022
 - **Timeframe:** 2022-2025
- **Success Metric:** With the water recycling industry, and state and federal government, increase funding for water reuse projects coastwide
 - **Timeframe:** Ongoing
- **Success Metric:** Based on the latest scientific results, establish interim goals as needed for significantly reducing nutrient loading and/or phasing out coastal wastewater discharge into the ocean; work with partners to achieve a goal of 80-90% coastal wastewater recycling that can be put to beneficial use
 - **Timeframe:** 2022-2040
- **Success Metric:** Ensure implementation of California's Ocean Acidification Action Plan's Goals
 - **Timeframe:** 2023
- **Success Metric:** Participate in research on ocean acidification and hypoxia and initiate development of water quality objectives, or some other appropriate regulatory action, and a program of implementation once sufficient scientific information is available
 - **Timeframe:** Ongoing
- **Agency/Agencies:** CA Natural Resources Agency – Ocean Protection Council | CA Environmental Protection Agency – State Water Resources Control Board
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#), [CA State Water Resources Control Board 2021 Strategic Work Plan](#)

GOAL C: Integrate nature-based climate solutions into relevant infrastructure and investments

Action 1: Integrate natural land, resource, ecosystem, and public health protection strategies into transportation resiliency planning.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA State Transportation Agency - Caltrans
- **For More Detail:** [California Transportation Plan 2050](#)

Action 2: Minimize adverse environmental impacts of the transportation system through enhancing California's natural resources and environmental health.

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- **Success Metric:** Increase usage of natural infrastructure solutions such as bioswales, rainwater storage systems, and permeable pavements to enhance infrastructure resiliency
 - **Timeframe:** Under review
- **Agency/Agencies:** CA State Transportation Agency – Caltrans
- **For More Detail:** [California Transportation Plan 2050](#)

Action 3: Prioritize the use of natural infrastructure in efforts to protect and restore watersheds, coasts, marine waters, and ecosystems.

- **Success Metric:** Consistent with the state's coastal resilience principles, develop guidance and permit language for these types of projects
 - **Timeframe:** Under review
- **Success Metric:** Develop guidance for Commission staff and project applicants on evaluating shoreline management adaptation options in light of sea level rise in support of nature-based adaptation strategies and phased adaptation approaches
 - **Timeframe:** Under review
- **Success Metric:** In coordination and collaboration with CA Natural Resources Agency and others, develop and implement strategies to protect the state's biodiversity, working and natural lands in the coastal zone, and coastal waters and build climate resilience and economic sustainability
 - **Timeframe:** Under review
- **Success Metric:** Number of nature-based shoreline adaptation projects permitted
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board | CA Natural Resources Agency - California Coastal Commission, State Coastal Conservancy, Department of Fish and Wildlife, San Francisco Bay Conservation and Development Commission, Ocean Protection Council
- **For More Detail:** [State Water Resources Control Board 2021 Strategic Work Plan](#), [State Coastal Conservancy Climate Ready Program](#), [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#), [San Francisco Bay Plan](#), [Ocean Protection Council Strategic Plan](#)

Action 4: Encourage investment in upper watersheds to protect water quality and supply.

- **Success Metric:** Sustainable forest health conditions that protect water quality and aquatic habitat, and reduce fire risk
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board | California Natural Resources Agency - Department of Forestry and Fire Protection, Department of Conservation, Department of Water Resources, Sierra Nevada Conservancy
- **For More Detail:** [California Forest Carbon Plan](#), [Sierra Nevada Conservancy Strategic Plan 2019-2024](#), [State Water Resources Control Board 2021 Strategic Work Plan](#), [Regional Forest and Fire Capacity Program](#)

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Action 5: Integrate nature-based solutions in the development of California's High-Speed Rail system.

- **Success Metric:** Number of Vegetation Management Plans executed, and quantitative or qualitative success based on monitoring of landscaping and nature-based solutions
 - **Timeframe:** Annual
- **Success Metric:** Number of grants funded and trees planted through Urban Forestry Program
 - **Timeframe:** Annual
- **Agency/Agencies:** CA State Transportation Agency - High-Speed Rail Authority
- **For More Detail:** [CA High-Speed Rail 2021 Climate Adaptation Plan](#)

GOAL D: Accelerate state processes to support implementation of nature-based climate solutions

Action 1: Develop and deploy an automated system for prescribed burn permits.

- **Success Metric:** Under review
 - **Timeframe:** Complete by 2021
- **Agency/Agencies:** CA Natural Resources Agency - Department of Forestry and Fire Protection
- **For More Detail:** [California's Wildfire and Forest Resilience Action Plan](#)

Action 2: Coordinate and guide prescribed fire activities, and address the key barriers to its widespread use in California.

- **Success Metric:** Launch a Prescribed Fire Strategic Action Plan
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Forestry and Fire Protection, in partnership with U.S. Forest Service and other federal, state, local and tribal governments | CA Environmental Protection Agency - Air Resources Board
- **For More Detail:** [California's Wildfire and Forest Resilience Action Plan](#)

Action 3: Streamline coastal permitting processes for restoration/nature-based solutions through pre-application coordination, programmatic approvals, consistent monitoring standards, regulatory reform, and agency leadership.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Ocean Protection Council, State Coastal Conservancy, Coastal Commission, San Francisco Bay Conservation and Development Commission, Department of Fish and Wildlife
- **For More Detail:** [Cutting Green Tape](#), [Coastal Commission Strategic Plan 2021-2025](#), [San Francisco Bay Restoration Regulatory Integration Team](#), [San Francisco Bay Conservation and Development Commission Bay Adapt](#)

Action 4: Accelerate permitting for groundwater recharge projects to capture peak flows for groundwater recharge

- **Success Metric:** Number of new groundwater recharge projects implemented on natural and working lands

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- **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources, Delta Stewardship Council, San Francisco Bay Conservation and Development Commission | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Department of Fish and Wildlife](#), [Department of Water Resources](#), [Delta Stewardship Council](#), [San Francisco Bay Conservation and Development Commission](#), [Department of Food and Agriculture](#), [State Water Resources Control Board](#)

Action 5: Align and improve permitting to help launch and incentivize more multi-benefit, multi-partner restoration projects that build water resilience.

- **Success Metric:** Accelerate pace and scale of multi-benefit, multi-partner restoration and water projects
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources, Delta Stewardship Council | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Water Resilience Portfolio](#), [Cutting Green Tape](#)

Action 6: Expedite the regulatory approval process for appropriate large habitat restoration projects.

- **Success Metric:** A General Order adopted for Clean Water Act Section 401 Water Quality Certification and waste discharge requirements for restoration projects statewide
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [State Water Resources Control Board 401 Water Quality Certification and Wetlands Program](#)

Action 7: In the Tahoe Basin, streamline the environmental review process for forest treatment activities in the wildland-urban interface to reduce the risk of wildfire while strengthening environmental safeguards.

- **Success Metric:** Use of the Tahoe Program Timberland Environmental Impact Report
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Tahoe Conservancy
- **For More Detail:** [Lake Tahoe Basin Forest Action Plan](#)

GOAL E: Deepen understanding of the effects of climate change on California's natural and working lands and biodiversity

Action 1: Develop state-of-the-science models to map wildfire fuels and simulate the future of California's natural and working lands.

- **Success Metric:** Under review

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- **Timeframe:** Under review
- **Agency/Agencies:** CA Environmental Protection Agency - Air Resources Board | CA Natural Resources Agency - Department of Forestry and Fire Protection
- **For More Detail:** [Air Resources Board](#), [Department of Forestry and Fire Protection](#)

Action 2: Develop coordinated regional or statewide monitoring programs for coastal waters and habitats, including estuarine, wetland, beach, dune, rocky intertidal, and marine ecosystems.

- **Success Metric:** Planning and execution of programs and projects to improve the health and resilience of built and natural communities in coastal regions, including habitat restoration, infrastructure upgrades, and multi-benefit or nature-based climate change adaptation projects
 - **Timeline:** Under review
- **Agency/Agencies:** CA Environmental Protection Agency - San Francisco Bay Regional Water Quality Control Board | CA Natural Resources Agency - Ocean Protection Council
- **For more detail:** [San Francisco Estuary Wetland Regional Monitoring Program](#), [Monitoring and Assessment of California's Estuarine Marine Protected Areas](#)

Action 3: Understand climate vulnerabilities of state-owned park units and marine protected areas along California's coast and ocean.

- **Success Metric:** Percentage of state-owned park units with completed vulnerability assessments
 - **Timeframe:** 2024
- **Success Metric:** Percentage of CDFW properties and marine protected areas with completed vulnerability assessments
 - **Timeframe:** Under Review
- **Agency/Agencies:** CA Natural Resources Agency – Ocean Protection Council, State Parks, Department of Fish and Wildlife, Department of Water Resources, Coastal Commission
- **For More Detail:** [CA Ocean Protection Council Strategic Plan](#), [CA State Parks Sea Level Rise Adaptation Strategy](#), [Marine Protected Area Climate Resiliency Report](#), [Coastal Commission LCP Grant Program](#)

Action 4: Understand climate impacts on agricultural land viability and use that information to inform conservation decisions and strategies.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Conservation | CA Department of Food and Agriculture
- **For More Detail:** [Department of Conservation Division of Land Resource Protection](#)

Action 5: Invest in accessible and actionable science on the effect of climate change on species, habitats, and ecosystems.

- **Success Metric:** Under review
 - **Timeframe:** Under review

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- **Agency/Agencies:** CA Natural Resources Agency – Department of Water Resources, Department of Fish and Wildlife
- **For More Detail:** [Department of Fish and Wildlife Science Institute](#)

Action 6: Increase monitoring efforts to better understand and enable the early detection of climate impacts on biodiversity.

- **Success Metric:** Number of state-owned lands and marine protected areas with sustainable long-term monitoring frameworks implemented
 - **Timeframe:** 2024
- **Agency/Agencies:** CA Natural Resources Agency – Department of Fish and Wildlife
- **For More Detail:** [CA Department of Fish and Wildlife Climate-Biodiversity Sensor Network](#)

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PRIORITY: Make Decisions Based on the Best Available Climate Science

California's investment in actionable research is a cornerstone of its leadership on climate change. A science to action approach, including advancing partnership-based research, will allow us to leverage information on the expected location, timing, and extent of climate impacts and will ensure investments and policies can reduce future climate risk. CA's Climate Change Assessments and the many research programs across state agencies contribute to the scientific foundation for understanding climate-related vulnerability and informing resilience actions. As a state, we commit to the continued dedication of climate science through smart investments, support of new and innovative research, and application of findings for the purpose of adaptation.

Goal A: Invest in actionable, climate science

Action 1: Increase the State's ability to anticipate and plan for climate impacts through implementation of the California Climate Change Assessments, which fund applied science and tools that provide actionable insight into the impacts a changing climate has on California's economy, ecosystems, and communities.

- **Success Metric:** Release of updated science, in the form of scientific reports and regional syntheses, that can be used in guidance for planning and decision-making
 - **Timeframe:** Five-year cycle for each Assessment
- **Agency/Agencies:** CA Governor's Office of Planning and Research
- **For More Detail:** [California Climate Change Assessments](#)

Action 2: Scale actionable, community-driven, and equitable research partnership models that inform climate actions that build community resilience, integrate land use and development considerations, and facilitate transitions to climate smart communities.

- **Success Metric:** Results shared with community organizations, state agencies, Tribes, local and regional governments, and other stakeholders to contribute to more informed climate action
 - **Timeframe:** Climate Change Research Program grants are typically 3 years, with outcomes expected on a rolling basis
- **Agency/Agencies:** CA Strategic Growth Council
- **For More Detail:** [Climate Change Research Program](#)

Action 3: In the Tahoe Basin, support research to improve future projects and programs, such as future hydrology projections and greenhouse gas sequestration in meadows and forests.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Tahoe Conservancy
- **For More Detail:** [Tahoe Conservancy](#)

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Action 4: Invest in research and other efforts to improve nature-based climate solution decision-making.

- **Success Metric:** Number of funded projects that support restoration design, pre- & post-restoration monitoring, and real-time decision making
 - **Timeframe:** Under review
- **Success Metric:** Support research on climate indicators for California via the Indicators of Climate Change Reports and the Department of Water Resources California Hydroclimate Report
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources, Delta Stewardship Council | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Water Resilience Portfolio](#), [Indicators of Climate Change in California](#), [Department of Water Resources California Hydroclimate Report](#)

Action 5: Support utilization of emerging technologies and partnerships to improve forecasts of precipitation, seasonal snowpack, and runoff at all time scales.

- **Success Metric:** Improved forecasting ability and improved understanding of likely climate impacts on a watershed scale
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources, Delta Stewardship Council | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Water Resilience Portfolio](#)

Action 6: Coordinate actionable research that informs climate resilient decarbonization, including development and application of climate projections that inform cost-effective, resilient design considerations for low-carbon energy systems.

- **Success Metric:** Delivery of climate projections
 - **Timeframe:** 2022
- **Success Metric:** Launch of a data platform and analytics engine to make climate projections available to users
 - **Timeframe:** 2023
- **Success Metric:** Deliver research to understand and enhance climate resilience in California's clean energy transition
 - **Timeframe:** 2026
- **Success Metric:** Use of valuation frameworks developed through EPIC-funded research by state and local agencies to incorporate societal benefits into electricity sector adaptation planning
 - **Timeframe:** 2024-2025
- **Success Metric:** Use of CA Energy Commission-funded research results by IOUs to support vulnerability assessments as well as customer and grid-resilience investments and to inform their obligations to prioritize disadvantaged vulnerable communities in the context of climate change

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- **Timeframe:** 2024-2025
- **Agency/Agencies:** CA Natural Resources Agency – California Energy Commission
- **For More Detail:** [Electric Program Investment Charge Research Development & Deployment Program](#), [Natural Gas RD&D Program](#)

Action 7: Develop and utilize a rapid assessment climate vulnerability index assessment tool that is inclusive of Indigenous values and cultural resources.

- **Success Metric:** Engage Indigenous communities, along with other stakeholders, to gain a more holistic understanding of the multiple values a site may possess
 - **Timeframe:** Under review
- **Success Metric:** Create a values definition that is inclusive of Indigenous values and those of adjacent communities, to be used in a rapid assessment climate vulnerability index assessment tool
 - **Timeframe:** Under review
- **Success Metric:** Conduct the rapid assessment considering the climate threats to the values a site possesses, modulate those threats for social and other factors, and conduct the rapid assessment
 - **Timeframe:** Under review
- **Success Metric:** Create a toolkit so that others can utilize the tool- thereby increasing climate ambition by making the toolkit accessible on a global scale.
 - **Timeframe:** Under review
- **Success Metric:** Provide education, training, and technical assistance to potential users, in conjunction with partners working on similar frameworks
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - State Parks Office of Historic Preservation
- **For More Detail:** [State Parks Office of Historic Preservation Climate Action Program](#)

Action 8: Work closely with federal agencies, businesses, and universities to better manage and protect California resources utilizing the latest available airborne and spaceborne climate monitoring data and data products.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency | CA Department of Food and Agriculture | CA Environmental Protection Agency
- **For More Detail:** [Memorandum of Understanding between the CA Institute of Technology Jet Propulsion Laboratory and CA Natural Resources Agency, CA Environmental Protection Agency and CA Department of Food and Agriculture](#)

Action 9: Develop an evolving suite of indicators that document over time, the observed impacts of a changing climate across California.

- **Success Metric:** Release of *Indicators of Climate Change in California* reports and related online resources
 - **Timeframe:** 2022 and every four years thereafter

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- **Agency/Agencies:** CA Environmental Protection Agency - Office of Environmental Health Hazard Assessment | CA Natural Resources Agency - Department of Fish and Wildlife
- **For More Detail:** [Office of Environmental Health Hazard Assessment Strategic Plan: 2018 Update](#), [Indicators of Climate Change in California](#)

Action 10: Through the Delta Science Strategy, improve scientific understanding of climate change impacts and adaptation opportunities.

- **Success Metric:** Number of projects and amount of funding focused on climate change and related science questions in the Delta
 - **Timeframe:** Under Review
- **Agency/Agencies:** Delta Stewardship Council
- **For More Details:** [Delta Stewardship Council's Delta Science Program](#)

Action 11: In the Delta, coordinate science crucial to resilient water management.

- **Success Metric:** Prioritize key scientific questions to be answered to inform water management and improve Delta monitoring efforts.
 - **Timeframe:** Revisit priorities and prioritization processes every four to five years.
- **Success Metric:** Fund priority science actions through competitive solicitations (e.g., biennial Delta Science Proposal Solicitation Notice) and directed studies.
 - **Timeframe:** Under review.
- **Success Metric:** Track and report progress on addressing critical science gaps (e.g., 2017-2021 Science Action Agenda Progress Summary) to inform water and habitat management practices, and future funding opportunities.
 - **Timeframe:** Track and report progress on a biennial basis.
- **Agency/Agencies:** CA Natural Resources Agency - Delta Stewardship Council, Department of Fish and Wildlife, Department of Water Resources | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Delta Science Plan, Delta Science Action Agenda 2017 – 2021](#)

Goal B: Operationalize climate science into decision making

Action 1: Support a whole-of-government approach to State agency integration of climate risk into decision making through regularly updated and consistent guidance.

- **Success Metric:** Update the Planning and Investing in for a Resilient California Guidebook (implementing EO B-30-15 and EO N-19-19) and hold training workshops with agencies who operate, maintain, and invest in state infrastructure
 - **Timeframe:** 2022
- **Success Metric:** Provide guidance for state agency staff and local governments to plan for sea level rise adaptation, impacts, and hazards in a way that is responsive and flexible, and based on best available science and unique local community contexts
 - **Timeframe:** 2023 (and every five years thereafter)
- **Success Metric:** Provide scientific guidance to agencies to understand potential impacts of sea level rise to contaminated sites

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- **Timeframe:** under review
- **Agency/Agencies:** CA Governor's Office of Planning and Research | CA Natural Resources Agency – Department of Water Resources, Ocean Protection Council, Coastal Commission, San Francisco Bay Conservation and Development Commission | CA Environmental Protection Agency - Department of Toxic Substances Control
- **For More Detail:** [Planning and Investing for a Resilience California, California's Sea Level Rise Guidance, Coastal Commission Coastal Management Program 309 Assessment and Strategy, 2021-2025 Coastal Commission Strategic Plan, Coastal Commission Sea Level Rise Policy Guidance, Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning, CA Ocean Protection Council Strategic Plan, San Francisco Bay Conservation and Development Commission Bay Adapt](#)

Action 2: Incorporate the best available science, including the use of adaptation pathways, on sea level rise into policies, plans, and permits and have explicit processes for updating these with new information.

- **Success Metric:** Number of state-wide policies, plans or documents completed to reduce future damage from coastal hazards, address sea level rise and mitigate climate change
 - **Timeframe:** Under review
- **Success Metric:** Number of Local Coastal Programs or other plans completed to reduce future damage from coastal hazards, address sea level rise and mitigate climate change
 - **Timeframe:** Under review
- **Success Metric:** Number of Local Coastal Program Grants and funding amount
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission, San Francisco Bay Conservation and Development Commission | Governor's Office of Planning and Research
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy, 2021-2025 Coastal Commission Strategic Plan, Coastal Commission Sea Level Rise Policy Guidance, Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning, San Francisco Bay Conservation and Development Commission Bay Adapt, San Francisco Bay Plan](#)

Action 3: Integrate consideration of California's most recent downscaled climate change projections into state conservation investment decisions.

- **Success Metric:** Strengthen climate adaptation components of conservation planning efforts
 - **Timeframe:** Under review
- **Success Metric:** Incorporate climate change projections when assessing the ecological conditions of conservation targets
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - CA Energy Commission, Department of Fish and Wildlife, Wildlife Conservation Board

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- **For More Detail:** [CA Department of Fish and Wildlife Natural Community Conservation Planning Program](#), [CA Department of Fish and Wildlife's Regional Conservation Investment Strategies Program](#), [CA Department of Fish and Wildlife State Wildlife Action Plan](#)

Action 4: Improve the ability of regions to anticipate water-related weather and climate changes.

- **Success Metric:** Improved forecasting ability and improved understanding of likely climate impacts on a watershed scale
 - **Timeframe:** Under review
- **Success Metric:** Support regional decision making related to water with watershed-scale climate vulnerability and adaptation assessments
 - **Timeframe:** Under review
- **Success Metric:** Improved forecasting ability and improved understanding of likely climate impacts on a watershed scale
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources, Delta Stewardship Council, San Francisco Bay Conservation and Development Commission | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board | Governor's Office of Planning and Research
- **For More Detail:** [Water Resilience Portfolio](#), [San Francisco Bay Conservation and Development Commission Adapting to Rising Tides Program](#)

Action 5: Incorporate new practices into the climate smart agricultural incentive program benefit calculators, as science supports.

- **Success Metric:** Changes made to climate smart agricultural incentive program benefit calculators and number of new practices incorporated as science supports
 - **Timeframe:** Continuous
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Department of Food and Agriculture Climate Change Programs](#)

Action 6: Support knowledge exchange and outreach to develop a deeper understanding of climate change impacts on crops and livestock, climate change projections, and decision support tools for farmers and ranchers, disseminating up-to-date climate science and climate smart agricultural practices.

- **Success Metric:** Collaboration and co-authorship with U.S. Department of Agriculture Climate Hub on an Agricultural Adaptation Workbook to facilitate technical assistance in California specialty crops
 - **Timeframe:** Under review
- **Success Metric:** Number of new online adaptation tools supported by the Department of Food and Agriculture
 - **Timeframe:** Under review
- **Success Metric:** Number of videos and educational material regarding Climate Smart Agriculture on the CDFA website, as well as the level of distribution of these materials in areas of agricultural adaptation.
 - **Timeframe:** Under review

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- **Success Metric:** Number and geographical distribution of field days supported by the Healthy Soils Program, and number of technologies discussed at field days
 - **Timeframe:** Under review
- **Success Metric:** Farmer engagement with Community Education Specialists from University of California Cooperative Extension services (UCCE) to expand awareness of climate smart agricultural practices; measuring numbers of workshops and of attendees
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Department of Food and Agriculture Climate Change Programs](#)

Action 7: Study potential climate change impacts to the High-Speed Rail system and incorporate climate data and considerations into decision-making.

- **Success Metric:** Number of mitigative actions taken that stem from climate hazard assessments conducted through the High-Speed Rail Safety and Security Management Plan (Authority risk management system)
 - **Timeframe:** Annual
- **Success Metric:** Success of site-specific adaptation strategies and changes to design criteria made to mitigate risks posed by climate hazards (that may be tracked through asset management)
 - **Timeframe:** Long-term, tracked throughout operations
- **Success Metric:** Revisions to the High-Speed Rail Safety and Security Management Plan to improve how climate hazards are evaluated
 - **Timeframe:** Annual
- **Success Metric:** Number of exposure analysis updates as more/new climate projections and other data/information becomes available
 - **Timeframe:** As needed and in parallel with new Federal or State climate projections
- **Success Metric:** Number of Climate Adaptation Implementation Committee meetings held to review analysis results, consequences, adaptation decisions, etc.
 - **Timeframe:** Annual
- **Agency/Agencies:** CA State Transportation Agency - High-Speed Rail Authority
- **For More Detail:** [CA High-Speed Rail 2021 Climate Adaptation Plan](#)

Action 8: Improve wildfire smoke guidance for schools and children and develop outreach materials for health care providers and the public on wildfire smoke health effects and ways to decrease exposure.

- **Success Metric:** Guidance on the health effects of wildfire smoke for vulnerable populations including children; number of fact sheets and other outreach materials on wildfire smoke risks and adaptation measures for use by county health departments, health care providers, school; consultations to Cal EPA BDOs and other state agencies on wildfire smoke risks and adaptation measures
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Environmental Protection Agency - Office of Environmental Health Hazard Assessment | CA Health & Human Services Agency - Department of Public Health | CA Department of Education

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- **For More Detail:** [Office of Environmental Health Hazard Assessment Strategic Plan: 2018 Update](#), [Office of Environmental Health Hazard Assessment Children's Health Web Page](#), [California Department of Public Health](#)

Action 9: Build the capacity of state and local government staff to better address climate change and sea level rise vulnerabilities through technical assistance, guidance and training.

- **Success Metric:** Provide policy guidance and other forms of technical assistance to Commission staff, local governments and other state agencies in support of updating Local Coastal Programs to address climate impacts, such as on addressing environmental justice and equity in sea level rise planning, increased risk of wildfire and post fire land management, droughts, seawater intrusion and ocean acidification
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission, Department of Fish and Wildlife
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#)

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PRIORITY: Partner and Collaborate to Leverage Resources

Climate change is impacting, and will continue to impact, all Californians. All entities – from individuals, to tribal, local, regional and state governments, to community-based organizations and the private sector – hold a piece of the puzzle and must work together to leverage each other's strengths and actions in response to the climate crisis. Working together allows us to go further, faster. This priority serves to encourage collaboration and demonstrate the State's commitment to achieve equitable climate adaptation action through partnerships.

GOAL A: Facilitate collaboration to build climate resilience across sectors and scales

Action 1: Accelerate state and local adaptation efforts through policy alignment, sharing of best practices, facilitating collaborative partnerships, and direct investments through the Integrated Climate Adaptation and Resiliency Program, its Technical Advisory Council, State Adaptation Clearinghouse, and Interagency Resilience Working Group.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Governor's Office of Planning and Research, in coordination with all relevant state agencies
- **For More Detail:** [Integrated Climate Adaptation and Resiliency Program](#)

Action 2: Improve coordination and alignment on climate adaptation and resilience in the water sector through partnerships.

- **Success Metric:** Establish regular dialogue with local and regional water stakeholders
 - **Timeframe:** Under review
- **Success Metric:** Engage tribes to drive climate resilience
 - **Timeframe:** Under review
- **Success Metric:** Work with partners on bi-national, cross-border opportunities to improve water resilience
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Fish and Wildlife, Department of Water Resources, Delta Stewardship Council | CA Department of Food and Agriculture | CA Environmental Protection Agency - State Water Resources Control Board
- **For More Detail:** [Water Resilience Portfolio](#)

Action 3: Explore community stewardship agreements and policies to meaningfully engage the public in the management of public lands and resources and provide additional oversight and protections for State Lands Commission and Department of Fish and Wildlife lands.

- **Success Metric:** Under review
 - **Timeframe:** Under review

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- **Agency/Agencies:** CA Natural Resources Agency - State Lands Commission, Department of Fish and Wildlife
- **For More Detail:** [CA State Lands Commission 2021-2025 Strategic Plan](#)

Action 4: Work with local governments to establish a shared vision for climate change and sea level rise adaptation planning updates to Local Coastal Programs.

- **Success Metric:** Coastal Commission and local governments agree to co-develop guidance on an improved Local Coastal Program update process that supports more frequent and incremental or 'phased' updates to Local Coastal Programs, including identifying appropriate time horizons for policy application, 'first order' policy language, and future update requirements
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#)

Action 5: Coordinate with U.S. Department of Agriculture's Natural Resource Conservation Service on funding opportunities and the Climate Hub activities supporting adaptation tools and resources.

- **Success Metric:** Effective and strategic distribution of funds and resources and coordinated adaptation approaches
 - **Timeframe:** Under review
- **Success Metric:** Collaboration and co-authorship on an Agricultural Adaptation Manual to facilitate technical assistance in California specialty crops
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Department of Food and Agriculture Climate Change Programs](#)

Action 6: Provide technical assistance to farmers implementing climate smart agricultural practices through collaboration with the CA Air Resources Board, U.S. Department of Agriculture, University of CA Cooperative Extension, and non-governmental organizations.

- **Success Metric:** Resources are available on-site for implementation of climate smart agricultural practices
 - **Timeframe:** Under review
- **Success Metric:** Number of technical assistance agreements with University of CA Cooperative Extension, CA State University, and non-governmental organizations
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Department of Food and Agriculture Climate Change Programs](#)

Action 7: Collaborate with state, regional and local agencies to build a resilient High-Speed Rail system of the future, and partner with communities to meet local needs through station area planning.

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- **Success Metric:** Number of stakeholder and community engagement meetings and surveys through Authority community liaisons
 - **Timeframe:** Under review
- **Success Metric:** Completion of successful early site activation that meets needs of community
 - **Timeframe:** Under review
- **Success Metric:** Identification of disadvantaged or underserved community needs and goals for station areas and High-Speed Rail
 - **Timeframe:** Under review
- **Success Metric:** Number of meetings held with peers including regional partners and state agencies
 - **Timeframe:** Annual
- **Success Metric:** Agreements made related to data or information sharing
 - **Timeframe:** Annual
- **Agency/Agencies:** CA State Transportation Agency - CA High-Speed Rail Authority
- **For More Detail:** [CA High-Speed Rail 2021 Climate Adaptation Plan](#)

Action 8: In the Sierra Nevada region, collaborate with federal, state, and private partners to increase pace and scale of forest restoration and maximize the climate resilience benefits of forest treatments.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Tahoe Conservancy, Sierra Nevada Conservancy
- **For More Detail:** [Sierra Nevada Conservancy Watershed Improvement Program, Tahoe Central-Sierra Initiative, Tahoe Climate Adaptation Action Portfolio](#)

Action 9: In the in San Francisco Bay Area region, create a “One Bay” vision to adapt to rising sea levels, and advance implementation of the regional strategy for sea level rise Bay Adapt Joint Platform.

- **Success metric:** Completion of a regional sea level rise vision with participation from nine Bay Area counties, cities and frontline communities
 - **Timeframe:** 2025
- **Success Metric:** Annual reporting on metrics toward achieving the 9 actions and 21 tasks in the Bay Adapt Joint Platform
 - **Timeframe:** 5 years
- **Agency:** CA Natural Resources Agency - San Francisco Bay Conservation and Development Commission, in coordination with Bay Area Governments, NGOs, Stakeholders, and Communities.
- **For more detail:** [San Francisco Bay Conservation and Development Commission Bay Adapt Joint Platform, San Francisco Bay Conservation and Development Commission Bay Adapt](#)

Action 10: Develop a living network of Bay Area community-based organizations to foster collaboration and increase equity in shoreline resilience planning and permitting

- **Success metric:** Launch a pilot Community Based Organization Directory Map
 - **Timeframe:** 2022

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- **Agency/Agencies:** CA Natural Resources Agency - San Francisco Bay Conservation and Development Commission, in coordination with Bay Area environmental justice and community-based organizations
- **For more information:** [San Francisco Bay Conservation and Development Commission Community Based Organization Directory Map Survey](#)

Action 11: Partner with the private sector to scale climate smart agriculture through the Healthy Soils Partnership Framework.

- **Success metric:** Number of private sector companies offering funding for healthy soil management practices or integrating soil health into their supply chain
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For more detail:** [Public-Private Engagement on Healthy Soils](#)

Action 12: Spatially track shoreline adaptation projects to help communicate the region's progress, facilitate cross-jurisdictional planning, and identify opportunities for local community involvement and use of nature-based adaptation strategies.

- **Success metric:** Launch Shoreline Adaptation Project Tracker Map for San Francisco Bay
 - **Timeframe:** 2023
- **Agency/Agencies:** CA Natural Resources Agency - San Francisco Bay Conservation and Development Commission, in coordination with San Francisco Estuary Institute and regional partners
- **For more information:** [Ecoatlas](#)

GOAL B: Build public awareness of climate adaptation and resilience issues

Action 1: Facilitate collaboration on adapting to climate change amongst grant applicants, grantees, and sub-grantees through convenings, trainings, and peer-to-peer learning.

- **Success Metric:** Number of convenings, trainings, and peer-to-peer learning held per year
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Department of Conservation | CA Department of Food and Agriculture
- **For More Detail:** [Department of Conservation Division of Land Resource Protection](#)

Action 2: Coordinate with Universities to share climate adaptation and resilience research and training opportunities.

- **Success Metric:** Number of opportunities for training publicized
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Department of Food and Agriculture Climate Change Programs](#)

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Action 3: Working with partners, maintain and build up Climate Smart Agriculture outreach videos on Department of Food and Agriculture website.

- **Success Metric:** Use of videos to demonstrate a wide variety of adaptation approaches, increasing adoption and visibility
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Department of Food and Agriculture
- **For More Detail:** [Department of Food and Agriculture Climate Change Programs](#)

Action 4: Increase public awareness of and encourage participation in planning to address climate change in coastal communities and statewide.

- **Success Metric:** Working with Ocean Protection Council and other state partners, develop and implement a targeted outreach and education campaign to inform the public of the risks posed by climate change, including sea level rise, how adaptation can build resilience, the trade-offs associated with various adaptation strategies, and disproportionate burdens experienced by environmental justice communities
 - **Timeframe:** Under review
- **Success Metric:** Tell local and regional stories about people and places adapting to climate change
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency - Coastal Commission, San Francisco Bay Conservation and Development Commission
- **For More Detail:** [Coastal Commission Coastal Management Program 309 Assessment and Strategy](#), [2021-2025 Coastal Commission Strategic Plan](#), [Coastal Commission Sea Level Rise Policy Guidance](#), [Sea Level Rise Working Group Joint Statement on Sea Level Rise Adaptation Planning](#), [San Francisco Bay Conservation and Development Commission Bay Adapt](#)

Action 5: Empower Californians to take meaningful climate action through increased service and volunteerism opportunities.

- **Success Metric:** Through Climate Action Corps programming overall: number of people educated number volunteers engaged, number and type of individual actions reported
 - **Timeframe:** Under review
- **Agency/Agencies:** California Volunteers
- **For More Detail:** [California Volunteers Climate Action Corps](#)

Action 6: Increase protection of heritage and cultural resources from climate impacts through science-based and traditional ecological knowledge solutions, in partnership with Native American Tribes, adjacent communities, and the cultural and arts sector.

- **Success Metric:** Under review
 - **Timeframe:** Under review
- **Agency/Agencies:** CA Natural Resources Agency – State Parks Office of Historic Preservation
- **For More Detail:** [Cultural Resources Climate Change Task Force](#)

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Landing Page Icon: Regions

California is made up of diverse regions with different economies, geographies, and cultures. This means each of these regions experience climate change impacts and opportunities in unique ways. The state supports a “regions-up” approach, which recognizes the importance of regional-scale adaptation planning and action. This Strategy aims to include space for regional leadership and identify when and how the state can best support regional action.

As part of the process to update the Strategy, the State held 10 regional workshops to align state and regional priorities. These workshops also helped the State understand regional needs and actions, as well as understand the climate impacts of highest concern to regional stakeholders. Summaries from each of the workshops are provided by geographic region.

Throughout the regional workshops, several themes emerged:

- Equitable and meaningful co-development of adaptation strategies are needed;
- Climate impacts are intimately linked to historic and current inequities;
- There is no one-size-fits-all approach to climate adaptation; each region has its own set of challenges and opportunities.

This Strategy strives to address these themes across each of the priorities. The State is committed to supporting local and regional adaptation approaches.

In recognition of the critical importance of also working in partnership with California's many Native American tribes in advancing a climate-resilient California for all, this Strategy emphasizes its commitment to incorporating tribal expertise and traditional ecological knowledge into this work at all levels. The Strategy strives to reflect the priorities of Tribes in adapting to climate change, and to be useful to Tribes as they carry out their own adaptation efforts. As California is home to the second largest population of Native American communities in the nation, it is important that California continue to work with tribal governments and communities.

Regional Page Icon: Central Coast

Climate Impacts

The Central Coast region, which includes the counties of Santa Barbara, San Luis Obispo, Monterey, San Benito, and Santa Cruz, is characterized by hardwood forests, scrublands, and herbaceous grasslands that comprise most of its land cover. Coastal stretches include sand dunes, sandy beaches, and bluff and cliff coastlines. With approximately 2.3 million residents across the five counties, most cities are small to medium-sized. The region's main economic drivers include tourism, agriculture, and related food processing activities, as well as power and oil production.

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Temperatures vary depending on distance from the coast. Maximum and minimum temperatures for the entire Central Coast will continue to increase through the next century, with greater increases in the inland region. By mid-century, the average annual maximum temperature is expected to rise between 4-5°F across all five counties.

The Central Coast varies in precipitation depending on location. Overall, the Central Coast is experiencing a decrease in annual precipitation, and it is projected that the variability in precipitation will increase substantially with extremely wet and dry years becoming more extreme. For example, the wettest day of the year is expected to increase up to 35 percent. In addition, projected future droughts are likely to be a serious challenge to the region's already stressed water supplies. Frequent and sometimes large wildfires will continue to be a major disturbance, and post-fire recovery time may be lengthened.

Sea level rise is accelerating and poses a significant threat to the regions' coastal communities. Sea level rise is projected to increase 1.1 – 1.9 feet by 2050, and 3.3 – 6.9 feet (with the potential for 10.1 feet under extreme sea level rise scenarios) by the end of century. Coastal wave events in combination with rising seas will drive coastal flooding landward increasing the region's vulnerability.

[Central Coast 2021 State Adaptation Strategy Workshop Summary](#)

[Central Coast Region Report](#) in California's Fourth Climate Change Assessment

[Central Coast Regional Climate Resilience Resources & Case Studies](#) in California's Adaptation Clearinghouse

Regional State Agencies:

- [CA Coastal Commission](#)
- [CA Governor's Office of the Tribal Advisor](#)
- [CA Native American Heritage Commission](#)
- [CA State Central Coast Regional Water Quality Control Board](#)
- [CA State Coastal Conservancy](#)
- [CA State Lands Commission- Sea Level Rise](#)
- [CA State Lands Commission – Coastal Hazards Remediation Work](#)

Regional Page Icon: Inland Deserts

Climate Impacts

The Inland Deserts region includes Imperial County and the desert regions of Riverside and San Bernardino counties. Containing both the Mojave and Sonoran deserts, it has the largest amount of federally protected lands in the State – 7,448 square miles of National Parks and Monuments, including important wildlife refuges and unique ecosystems. The Inland Deserts region has 1 million inhabitants, with 85% living in urbanized areas including the Victor Valley in San Bernardino County, the Coachella Valley in Riverside County, and the El Centro Metropolitan Area in Imperial County. The Inland Deserts region's economy is driven by tourism and agricultural lands and is

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bolstered by transportation, logistics and warehousing, and real estate development, which includes housing and renewable energy.

The region is known for its extreme heat with a high frequency of relatively extremely hot days. Like other regions, specific climate conditions vary depending on elevation. The extreme heat of the Inland Deserts region will become more extreme under climate change, where temperatures are expected to increase by 8-14°F by 2100. The number of extremely hot days per year in the region is also projected to increase.

Historically, precipitation averages 5 inches per year, but it can be variable in amount and location from year-to-year. Annual average precipitation is not expected to change under climate change, but like other regions, the dry periods will likely become drier and the wet periods wetter. Warmer and drier conditions may increase the likelihood of severe drought in this region as well as stress an already-limited regional water supply.

Wildfire activity could potentially increase for the Inland Deserts region depending on vegetation changes and the growth of invasive grasses, which serve as the major fuel for wildfire in the region. Inland desert vegetation growth is driven by precipitation, which will remain highly variable for this region.

[Inland Deserts 2021 State Adaptation Strategy Workshop Summary](#)

[Inland Deserts Regional Report](#) in California's Fourth Climate Change Assessment

[Inland Deserts Regional Climate Resilience Resources & Case Studies](#) in California's Adaptation Clearinghouse

Regional State Agencies:

- [CA Governor's Office of the Tribal Advisor](#)
- [CA Native American Heritage Commission](#)
- [CA State Colorado River Basin Regional Water Quality Control Board](#)
- [CA State Lands Commission- School Lands](#)
- [CA State Santa Ana Regional Water Quality Control Board](#)
- [Coachella Valley Mountains Conservancy](#)
- [Colorado River Board of California](#)

Regional Page Icon: Los Angeles

Climate Impacts

The Los Angeles region, which includes Los Angeles, Orange, Ventura, and the western portions of San Bernardino and Riverside counties, is home to many different ecosystems ranging from coasts, mountains, and desert interior landscapes. The region's Mediterranean climate is characterized by hot, dry summers and cool, wet winters, which allow for agricultural production. Snow-based water from the Sierra Nevada and Colorado Rockies has historically satisfied the region's large residential, industrial, agricultural, and ecological freshwater demands. The region's primary

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economic drivers include entertainment and digital media industries, international trade, defense contracting, medicine, and a growing high-tech sector. Home to more than 18 million people, this region contains approximately half of California's population.

Average maximum temperatures in the Los Angeles region are expected to increase 4-5°F by mid-century and 5-8°F by late century. Alongside this average maximum temperature increase, extreme temperatures and extreme hot days are also expected to increase. The hottest day of the year may be up to 10°F warmer for many locations across the Los Angeles region by mid-century.

Oscillation between dry and wet extremes are projected to increase. Increased frequency and severity of rain events are also projected to occur for this region, alongside a potential doubling in frequency of extremely dry years by late century. Dry extremes will contribute to increased wildfire occurrence and severity. Current projections indicate that burned area will increase 60-75 percent.

Sea-levels will continue to rise in the future. By mid-century, sea-level rise is expected to increase by 1.1 – 1.9 feet. By end of century, projections indicate 3.3 – 6.8 feet of sea-level rise, with the potential for 10 feet under extreme sea-level rise scenarios. Rising seas, in combination with large wave events, will lead to more coastal flooding onshore.

[Los Angeles 2021 State Adaptation Strategy Workshop Summary](#)

[Los Angeles Regional Report](#) in California's Fourth Climate Change Assessment

[Los Angeles Regional Climate Resilience Resources & Case Studies](#) in California's Adaptation Clearinghouse

Regional State Agencies:

- [CA Governor's Office of the Tribal Advisor](#)
- [CA Native American Heritage Commission](#)
- [Baldwin Hills Conservancy](#)
- [CA Coastal Commission](#)
- [CA State Coastal Conservancy](#)
- [CA State Lands Commission- School Lands](#)
- [CA State Lands Commission - Sea Level Rise](#)
- [Los Angeles Regional Water Quality Control Board](#)
- [San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy](#)
- [Santa Monica Mountains Conservancy](#)

Regional Page Icon: North Coast

Climate Impacts

The North Coast region encompasses Mendocino, Humboldt, Del Norte, Lake, Trinity, and Siskiyou Counties. It is characterized by its rugged coast, Humboldt Bay and

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lagoons, redwood forests, rivers, and iconic salmon and steelhead. Comprised of small to medium-sized communities with ~ 372,000 residents, the region is the top producer of timber and is supported by the cannabis industry and tourism.

Average annual maximum temperatures are projected to increase by 5-9°F in the region by 2100. Interior areas of the North Coast will experience the greatest degree of warming. Winter season temperatures are expected to warm by a greater magnitude to those of other seasons, with a 5-7°F increase by mid-century and 8-11°F increase by end of century.

Variability in precipitation is projected to increase with a higher likelihood of extreme wet and extreme dry years. River stream flows are projected to decline in dry season and increase in wet seasons. Oscillation from dry to wet conditions and shortened wet seasons will cause total snowpack to decrease from historical averages.

Future wildfire projections suggest a longer fire season, an increase in wildfire frequency, and an expansion of the area susceptible to fire. Increases in average temperature and frequency, duration, and severity of heat waves will also add to the extension of fire season, especially in sites with variable and decreasing snowpack.

Sea-level rise projections in the North Coast range widely due to geologic activity within the region. Projections along the southern portion of the region estimate between 1.5 – 2.3 ft of sea level rise by 2050, and 4.1 – 7.6 feet by 2100 (with the possibility of 10.5 feet under the extreme sea level rise scenario). In contrast, due to tectonic uplift, the northern portion of this region has lower projected rates in the forthcoming decades (0.7 – 1.5 ft by 2050), and projections of 2.5 – 5.9 feet by 2100, with the possibility for 9.3 feet under the extreme scenario.

[North Coast 2021 State Adaptation Strategy Workshop Summary](#)

[**North Coast Regional Report**](#) in California's Fourth Climate Change Assessment

[**North Coast Regional Climate Resilience Resources & Case Studies**](#) in California's Adaptation Clearinghouse

Regional State Agencies

- [CA Governor's Office of the Tribal Advisor](#)
- [CA Native American Heritage Commission](#)
- [CA State Coastal Conservancy](#)
- [CA Coastal Commission](#)
- [CA State Lands Commission- School Lands](#)
- [CA State Lands Commission - Sea Level Rise](#)
- [CA State North Coast Regional Water Quality Control Board](#)

Regional Page Icon: Sacramento Valley

Climate Impacts

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The Sacramento Valley region, comprised of Sacramento, Yolo, Sutter, Yuba, Colusa, Glenn, Butte, Tehama, Shasta and parts of Solano and Placer counties, is home to large expanses of agricultural production and rangelands, wetlands, riparian habitats, and forested foothills. Much of the region's recreational, energy generation, and agricultural activity centers around three major river watersheds - the Feather, American, and Sacramento rivers- that converge in the Valley on their way toward the Delta. The region is also home to the state Capitol and over 950,000 of the region's 2.4 million mostly urban residents (or 40%), many of whom live within 500-year flood plains in the Sacramento River watershed.

The Sacramento Valley will likely see average daily maximum temperatures increase by 10 °F by end-of-century. Rising temperatures are driving more frequent and intense heat waves and fewer cooling degree days and nights in the Sacramento Valley.

Annual precipitation is expected to remain about the same on average, or increase only slightly this century, though increased variability and frequency of extreme weather events means the region will be more prone to droughts and floods. Oscillation between extremely dry and extremely wet periods make the possibility of an extreme flood event more likely. Additionally, due to increased temperatures, storms will increasingly fall as rain versus snow. Snowpack will diminish in the region, and seasonal snowmelt patterns will shift to earlier, threatening the region's water supplies.

Earlier spring conditions, wetter winters, and drier summers will continue to contribute to increased large summer and fall wildfires. As experienced during large fire events during the last five years, fires within Sacramento Valley and in other parts of the state impact air quality.

Sea-level rise in the San Francisco Bay Area will contribute to flooding in the Sacramento Valley region, as flood waters are also likely to push ocean water into the fresher waters of the Sacramento-San Joaquin Delta.

[Sacramento Valley 2021 State Adaptation Strategy Workshop Summary](#)

[Sacramento Valley Regional Report](#) in California's Fourth Climate Change Assessment

[Sacramento Valley Regional Climate Resilience Resources & Case Studies](#) in California's Adaptation Clearinghouse

Regional State Agencies:

- [CA Governor's Office of the Tribal Advisor](#)
- [CA Native American Heritage Commission](#)
- [CA State Central Valley Regional Water Quality Control Board](#)
- [CA State Lands Commission- School Lands](#)
- [Delta Stewardship Council](#)
- [Delta Protection Commission](#)
- [Sacramento-San Joaquin Delta Conservancy](#)

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Regional Page Icon: San Diego

Climate Impacts

The San Diego region is known for its mild year-round Mediterranean climate, narrow beaches backed by sea cliffs, low inland mountains, and deserts. Much of its 70 miles of coastline provide recreation and tourism, a key component of the regional economy. The region's agricultural industry includes many small farms and San Diego is also a center of high solar power production. The region has many highly populated urban and suburban cities that house its population of ~3.3 million.

By 2100, temperature is projected to increase substantially by 5 to 10°F. Along with average temperature, the number of heat wave days is projected to increase between 20-50 percent with a temperature increase of 6°F. Higher amounts of warming are expected in inland areas compared to coastal areas.

Precipitation will remain highly variable but will change seasonally, with wetter winters, drier springs, and more frequent and severe droughts. Most models indicate that there will be fewer wet days, but with more intense precipitation. Longer dry, warm seasons with less daytime humidity will cause stronger seasonal dryness of the landscape and more dry years leading to larger water deficits across the landscape.

The threat of wildfire is projected to worsen with increasingly warm and dry landscapes and longer dry seasons, coupled with occasional dry windy weather patterns. Wildfire risk will increase substantially during dangerous fire weather extremes caused by Santa Ana winds.

Sea level along the San Diego County coast is expected to rise approximately 1.2 – 2.0 feet by mid-century, and between 3.6 – 7.1 feet or more by 2100, with the potential for 10.2 feet under the extreme sea level rise scenario. For the next several decades, high tides combined with elevated shoreline water levels and large coastal wave events will drive more extreme flooding onshore.

[San Diego 2021 State Adaptation Strategy Workshop Summary](#)

[San Diego Regional Report](#) in California's Fourth Climate Change Assessment

[San Diego Regional Climate Resilience Resources & Case Studies](#) in California's Adaptation Clearinghouse

Regional State Agencies:

- [CA Governor's Office of the Tribal Advisor](#)
- [CA Native American Heritage Commission](#)
- [CA Coastal Commission](#)
- [CA State Coastal Conservancy](#)
- [CA State Lands Commission- School Lands](#)
- [CA State Lands Commission - Sea Level Rise](#)
- [CA State San Diego Regional Water Quality Control Board](#)

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- [San Diego River Conservancy](#)

Regional Page Icon: San Francisco Bay Area

Climate Impacts

The San Francisco Bay Area region includes San Francisco, Marin, Contra Costa, Alameda, Santa Clara, San Mateo, Sonoma, Napa and the western half of Solano, counties. Its Mediterranean-type climate, characterized by mild, wet winters and warm, dry summers, supports high biological diversity. The Bay Area is well known as the home of a thriving technology industry, wine and dairy industries, as well as a robust recreation industry bolstered by the region's rivers and both bay and coastal waterfronts.

The region is expected to warm by 3-4.5°F by 2050 and between 5.5-8°F by 2100. Warming average temperatures, regardless of total precipitation level changes, will cause droughts to become longer and more severe and, coupled with development in the wildland-urban interface, increased fire risk.

Current year-to-year variability in precipitation is expected to continue, with fluctuation between very wet and very dry years. Approximately 60% of region's water supply is sourced in the Sierra Nevada and Sierra snowmelt provides 40% of the annual water to the San Francisco Bay Delta, which is expected to be impacted by warming temperatures and changes in precipitation. The Bay Area region's characteristic wet winter will bring more intense and damaging winter storms, and, as surface temperatures continue to rise, the historic location of the freezing line in mountains will move upslope, causing more storms to fall as rain rather than snow.

The Bay Area will be severely impacted by sea-level rise and, when combined with high tides and storms, extreme flooding. By mid-century, the region is projected to see between 1.1 – 1.9 ft of sea level rise by 2050, and between 3.4 feet and 6.9 feet by 2100, with the possibility of 10.2 feet under the extreme sea level rise scenario.

[San Francisco Bay Area 2021 State Adaptation Strategy Workshop Summary](#)

[San Francisco Bay Area Regional Report](#) in California's Fourth Climate Change Assessment

[San Francisco Bay Area Regional Climate Resilience Resources & Case Studies](#) in California's Adaptation Clearinghouse

Regional State Agencies:

- [CA Governor's Office of the Tribal Advisor](#)
- [CA Native American Heritage Commission](#)
- [CA Coastal Commission](#)
- [CA State Coastal Conservancy](#)
- [CA State Lands Commission - School Lands](#)
- [CA State Lands Commission - Sea Level Rise](#)

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- [CA State San Francisco Bay Regional Water Quality Control Board](#)
- [San Francisco Bay Conservation and Development Commission](#)

Regional Page Icon: San Joaquin Valley

Climate Impacts

The San Joaquin Valley comprises the southern portion of California's Central Valley, and includes San Joaquin, Stanislaus, Merced, Kings, and the western parts of Madera, Fresno, Tulare and Kern counties. These counties are home to ~4 million people with Merced County ranking as the fastest growing county in the state. The region's primary economic driver and land use is agriculture, making it the most productive agricultural region in the United States. The Valley's climate is characterized by hot, dry summers and foggy, rainy winters.

The San Joaquin Valley region has already experienced increased temperature over the last 70 years and will continue to face rising temperatures. The annual average maximum temperature is projected to increase 4 °F to 5 °F by mid-century, and 5 °F to 8 °F by 2100. As ecosystem conditions change with the rising temperatures, the agricultural industry will face new pests, changing cropping patterns, and increasing frequency and intensity of extreme heat events.

Additionally, snowpack decline in the Sierra Nevada is increasing water scarcity in the San Joaquin Valley, which exacerbates ongoing dry wells, groundwater overdraft, and subsidence challenges. These will have dramatic impacts on the agricultural sector, as well as drinking water supplies, especially in the face of future drought. Faster snowmelt will threaten dam stability in the region, increasing the risk of catastrophic flooding. This region will also experience longer dry seasons, as precipitation patterns change.

Like other regions, the San Joaquin Valley will likely experience more frequent wildfire, which will further threaten drinking water supplies and increase soil erosion.

Although not a coastal region, sea level rise is also a concern, as sea level rise in coastal regions will travel through the Delta and threaten Delta communities, including San Joaquin County, through increased flooding.

[San Joaquin Valley 2021 State Adaptation Strategy Workshop Summary](#)

[San Joaquin Valley Regional Report](#) in California's Fourth Climate Change Assessment

[San Joaquin Valley Regional Climate Resilience Resources and Case Studies](#) in California's Adaptation Clearinghouse

Regional State Agencies:

- [CA Governor's Office of the Tribal Advisor](#)
- [CA Native American Heritage Commission](#)
- [CA State Central Valley Regional Water Quality Control Board](#)
- [CA State Lands Commission - School Lands](#)

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- [CA State Lands Commission - Sea Level Rise](#)
- [Delta Stewardship Council](#)
- [Delta Protection Commission](#)
- [San Joaquin River Conservancy](#)
- [Sacramento-San Joaquin Delta Conservancy](#)

Regional Page Icon: Sierra Nevada

Climate Impacts

The Sierra Nevada region is known for its mountains, deserts, alpine lakes and rivers, and recreation destinations, including many of California's iconic landmarks and unique species and ecosystems. The mostly forested region is characterized by broad geographic, ecological, and climatological diversity. Its watersheds provide around 60% of the State's developed water supply. The region's natural resource-dependent economic and cultural activity, such as agriculture, seasonal tourism, and wood-based industries, are strongly linked to the impacts of local climatic conditions on snowpack, streams and lakes, and forest health.

Historically, the Sierra Nevada region has experienced cool, wet winters, and dry, warm summers, with the Northern region typically wetter on average than the Southern region. By the end of this century, the Sierra region is expected to warm by 5-9°F on average; warming has already led to extreme drought impacts. Severe drought and extreme heat increase stress in trees, leaving them more susceptible to diseases and pests such as bark beetles, which have devastated millions of trees since 2010. With increasing temperatures, shifting weather patterns, longer dry seasons, and more dry fuel loads, the frequency of large wildfires and area burned is expected to increase.

Wildfire behavior is also becoming more extreme and burning at higher intensity, resulting in greater risk to communities and forest ecosystem structure and function.

Warming will have impacts on precipitation at certain elevations-- more will fall as rain where it has historically fallen as snow. Average projected precipitation will mostly increase throughout the range, with more increase in the Northern Range, especially at the higher elevations. Precipitation extremes are projected to increase as both rain/snow and drought, which will likely lead to more frequent flood-generating conditions. Due to warming, the region's snowpack is projected to decline by 60% with snow eradicated below 6,000 feet in elevation.

[Sierra Nevada 2021 State Adaptation Strategy Workshop Summary](#)

[Sierra Nevada Regional Report](#) in California's Fourth Climate Change Assessment

[Sierra Nevada Regional Climate Resilience Resources and Case Studies](#) in California's Adaptation Clearinghouse

Regional State Agencies:

- [CA Governor's Office of the Tribal Advisor](#)

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- [CA Native American Heritage Commission](#)
- [CA State Lahontan Regional Water Quality Control Board](#)
- [CA State Lands Commission- School Lands](#)
- [Sierra Nevada Conservancy](#)
- [Tahoe Conservancy](#)

Landing Page Icon: A Timeline of California's Climate Adaptation Policy

[Note to Readers – when the final Strategy website is released, the timeline information will be reflected as visual/graphic]

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- 2005** – First Climate Change Assessment: California's climate change assessments explore how climate change is projected to impact the state in the future based on best available science. California's first assessment confirmed that lower GHG emissions could significantly reduce climate change impacts on our state. This seminal assessment contributed to the passage of the California Global Warming Solutions Act (AB-32) later that year.
- 2008** – Executive Order S-13-08: Governor Arnold Schwarzenegger issued the state's first executive order on climate change adaptation, directing the Natural Resources Agency to produce a state climate adaptation strategy and called for state agencies to address sea-level rise.
- 2009** – Indicators of Climate Change in California: The Office of Environmental Health Hazard Assessment researches and presents indicators in periodic reports describing how California's climate is changing and how these changes are affecting the state. Indicators are scientifically-based measurements that track trends in various aspects of climate change.
 - Second Climate Change Assessment: Explored the economic impacts of climate change; findings led to California committing to produce a statewide adaptation strategy every three years.
 - First California Climate Adaptation Strategy: The Natural Resources Agency coordinated the state's first adaptation strategy, which identified 345 goals across seven sectors for state agencies to improve the state's resilience to climate change.
- 2010** – State of California Sea-Level Rise Guidance: The Ocean Protection Council released guidance to help state agencies incorporate sea-level rise impacts into their planning, permitting, and investment decisions.
- 2011** – Cal-Adapt: The California Energy Commission debuted the Cal-Adapt.org platform to provide a view of how climate change might affect California and connect Californians with tools, data, and resources to inform their climate adaptation actions. Cal-Adapt provides access to the state's downscaled climate projection data that serve as the foundation to the CA Climate Change Assessments.
- 2012** – First California Adaptation Planning Guide: The Natural Resources Agency and Emergency Management Agency published guidance on creating climate vulnerability assessments and adaptation strategies for local decision makers.
 - Third Climate Change Assessment: Increased understanding of climate vulnerabilities in natural and human systems, and supported passage of new climate adaptation laws.
- 2013** – Indicators of Climate Change in California: Presented 36 indicators tracking trends in atmospheric gases that influence climate, changes in the state's climate, and the impacts of climate change on California's environment and people.
 - Preparing California for Extreme Heat: Provides guidance for incorporating extreme heat projections into planning and decision making in California.
- 2014** – Second California Climate Adaptation Strategy: Provided policy guidance for state decision-makers across nine sectors and included updated information on climate vulnerabilities and state agency actions to address them.

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- 2015** – Climate Change Research Plan: Outlined a comprehensive cross-sector set of climate research priorities in California. This effort resulted in the first comprehensive climate change research plan developed by any State.
 - Executive Order B-30-15: Highlighted the need for climate adaptation action, and directed state government to (a) incorporate climate change impacts into the state's Five-Year Infrastructure Plan (b) update the state climate adaptation strategy to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change (c) factor climate change into state agencies' planning and investment decisions; and (d) implement measures under existing agency and departmental authority to reduce greenhouse gas emissions.
 - SB 246 (Wieckowski): Established the Integrated Climate Adaptation and Resiliency Program (ICARP) at the Governor's Office of Planning and Research to coordinate local and regional efforts with state climate adaptation strategies. ICARP convenes a Technical Advisory Committee to advance climate adaptation coordination. ICARP also maintains the Adaptation Clearinghouse, California's one-stop-shop for resources to support local, regional and statewide climate adaptation efforts.
 - SB 379 (Jackson): Requires local jurisdictions to include climate adaptation and resilience strategies in the safety elements of their general plans.
 - AB 1482 (Gordon): Requires California to release a State Climate Adaptation Strategy every three years.
- 2016** – AB 2800 (Quirk): Requires all state agencies to consider current and future impacts of climate change in all aspects of infrastructure planning, investment, and maintenance, and directed the Natural Resources Agency to convene the Climate-Safe Infrastructure Working Group.
- 2017** – AB 398 (Garcia): Identifies climate adaptation and resilience as an ongoing prioritized cap-and-trade auction revenue expenditure category.
 - General Plan Guidelines Update: Provided guidance to jurisdictions on how to integrate climate change adaptation and mitigation throughout their general plans.
 - Cal-Adapt 2.0: Expanded the original platform to provide new climate projections, more powerful visualizations, improved access to data, and more.
 - Planning and Investing for a Resilient California: A Guidebook for State Agencies: Provided high level guidance on what future climate conditions State agencies should plan for and how State agencies should approach planning differently to adapt to a changing climate.
- 2018** – Indicators of Climate Change in California: Compiled 36 indicators grouped into four categories: human-influenced drivers of climate change, such as greenhouse gas emissions; changes in the state's climate; impacts of climate change on physical systems, such as oceans and snowpack; and impacts of climate change on biological systems – humans, vegetation and wildlife.
 - Sea-Level Rise Guidance Document Update: Updated previous guidance to support state agencies and local governments in addressing sea level rise based on best available science.

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- Third California Climate Adaptation Strategy: Identified over 1000 actions and next steps for the State to address climate risk, bolster resilience to climate impacts, and advance climate justice across 11 sectors.
- Fourth Climate Change Assessment: Outlined projected climate change impacts on all regions in the state, providing actionable science for local and regional decision makers for the first time. This assessment also explored issues of urgent and statewide interest, such as environmental justice and sea level rise, as well as the inaugural Tribal and Indigenous Communities Report.
- Climate-Safe Infrastructure Working Group Recommendations: Identified key opportunities to safeguard California from climate change through integrating climate science in infrastructure design.
- Department of General Services Sustainability Roadmap: Identified state facilities most vulnerable to climate change impacts and outlined a plan to incorporate climate resilience measures for new construction, repairs or retrofits.
- SB 1035 (Jackson): Requires local jurisdictions to include and update climate adaptation and resilience strategies in accordance with housing or safety element updates, but no less frequently than every eight years.
- SB 30 (Lara, 2018): Requires the Department of Insurance convene a working group to recommend risk transfer market mechanisms that (1) promote investment in natural infrastructure to reduce the risks of climate change related to catastrophic events, (2) create incentives for investment in natural infrastructure to reduce risks to communities, and (3) provide mitigation incentives for private investment in natural lands to lessen exposure and reduce climate risks to public safety, property, utilities, and infrastructure.
- SB 901 (Dodd, 2018): Enacts a number of initiatives to support the state's adaptation and resilience to increasingly frequent and extreme wildfires, including changing forest management practices, allocating funding to reduce fuels and improve forest health, and establishing a process for utilities to recoup wildfire-related costs from ratepayers over time.
- 2019** – Department of Transportation Climate Change Vulnerability Assessments: Twelve district-based Climate Change Vulnerability Assessment Reports completed to help the department assess physical climate risk to the transportation system and work towards becoming more resilient.
- Executive Order N-19-19: Calls for embedding physical climate risk into state asset decision making, for State-owned infrastructure, transportation investments, and on investment portfolios. Required the Department of Finance work with the State Pension Funds to create a Climate Investment Framework, including a strategy to align the state's \$700 billion investment portfolio toward industries and sectors that contribute to the reduction of carbon emissions and increased resilience to the impacts of climate change.
- 2020** – Adaptation Planning Guide Update: Provided a streamlined approach to Adaptation Planning, in line with national practice; added as an interactive, online feature to the State Adaptation Clearinghouse.

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- Strategic Plan to Protect California's Coast and Ocean: Sets out critical new actions the State will take to protect our coast and ocean and offers four goals — addressing Climate Change, Equity, Biodiversity, and a Blue Economy—to guide California's efforts over the next five years to collaboratively catalyze, coordinate, and align key statewide policies, plans, and targets.
 - Water Resilience Portfolio Initiative: Serves as California's roadmap to building water resilience through a diverse set of actions that will prepare our water systems to support our growing state in a warmer, more variable climate.
 - Department of General Services Sustainability Roadmap: The 2020-2021 sustainability roadmap includes climate change adaptation, zero-emission vehicles, energy, water efficiency and conservation, and green operation results and planning for future years.
 - Executive Order N-82-20: Directs the State to accelerate nature-based climate solutions that build resilience and contribute to carbon neutrality.
 - SB 1320 (Stern): Directs the Governor's Office of Planning and Research, in coordination with the Strategic Growth Council, the California Natural Resources Agency, and the California Energy Commission to develop the California Climate Change Assessments every 5 years.
- 2021** - Wildfire and Forest Resilience Action Plan: Outlines a comprehensive approach to reduce wildfire risk for vulnerable communities, improve the health of forests and wildlands and accelerate action to combat climate change.