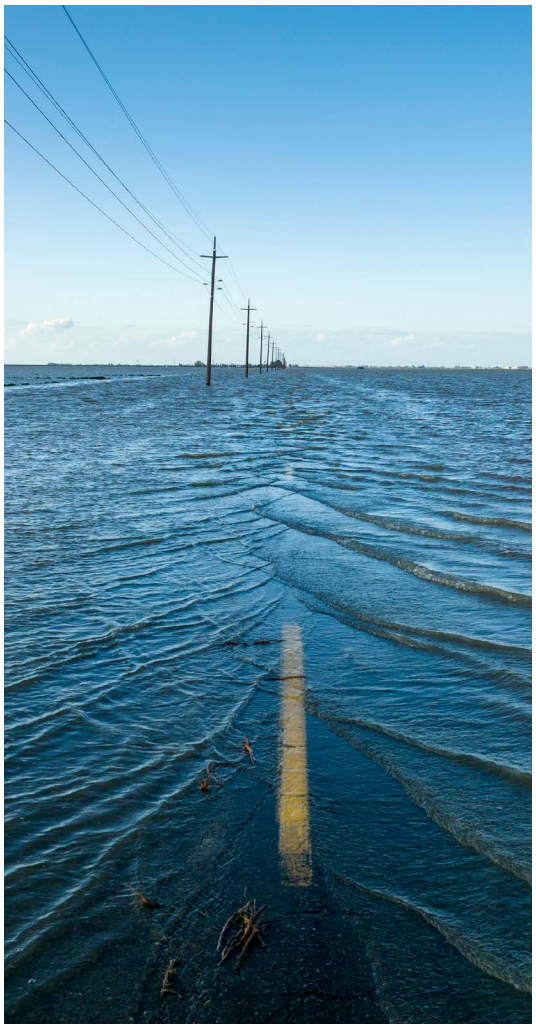
CALIFORNIA
CLIMATE
ADAPTATION
STRATEGY



2023
Implementation Report

The progress outlined in this 2023 Implementation Report is thanks to the insights, experience, and tireless efforts of a diverse, growing, and deeply valued community of leaders, practitioners, experts, and groups across California and beyond. We are deeply grateful for this collective wisdom and shared commitment. This collaboration will be essential to continuing to achieve and realize the priorities of the California Climate Adaptation Strategy.

A copy of this document can be found online at ClimateResilience.ca.gov

California is leading the world in protecting people and nature from the impacts of climate change. Our state is acting swiftly and with innovation to adjust to changes and build resilience to evolving threats.

Unprecedented funding allocated by California's leaders have enabled foundational investments to adjust to climate change and its impact. Over the last three years, over 40 billion dollars have been allocated through state government for projects on the ground that fight the climate crisis and build resilience to the impacts of climate change. This funding is complemented by unprecedented federal investments to confront these threats, which California is securing to protect communities across the state.

Like the 2022 Implementation Report, this report highlights California's progress implementing our Climate Adaptation Strategy (Strategy) over the last year in 2023. The Strategy continues to increase the focus, coordination, and ambition of state leaders and agencies across all sectors to ensure a shared approach to reducing risks and building climate resilience.

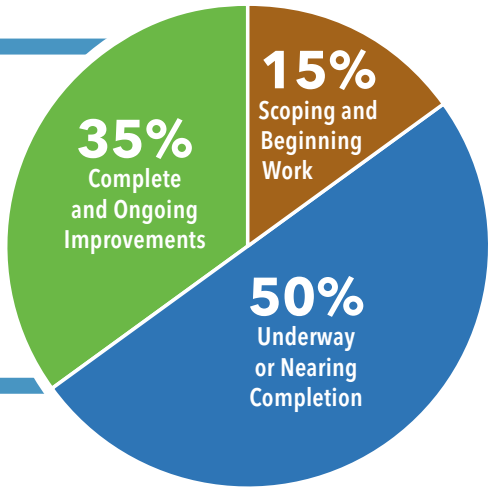
California's Climate Adaptation Strategy encompasses six key priorities that drive all resilience actions in California:

1. Strengthen Protections for **Climate Vulnerable Communities**
2. **Bolster Public Health and Safety** to Protect Against Increasing Climate Risks
3. Build a **Climate Resilient Economy**
4. Accelerate **Nature-Based Climate Solutions** and Strengthen Climate Resilience of Natural Systems
5. Make Decisions Based on the **Best Available Climate Science**
6. **Partner and Collaborate** to Leverage Resources

Across the six priorities, progress continues to be measured and reflected through specific metrics, which were included for the first time in California's 2021 Climate Adaptation Strategy. Progress updates on all the Strategy's metrics can be found here: https://climateresilience.ca.gov/

AT-A-GLANCE

At the start of 2024, 85 percent of the Strategy's 350+ metrics were well underway, completed, or undergoing ongoing advancements. The other 15 percent of the Strategy's metrics are at the stage of organizing or beginning project work, including gathering and integrating community input. Over one third of the Strategy's 350+ metrics are complete with ongoing improvements.



California's Climate Impacts - Year in Review

Climate whiplash. Climate volatility. Those are the words that come to mind when we look back at the climate events in California in 2023.

California's largely mediterranean climate is marked by wet and dry years and annual swings in precipitation. In many parts of the state, we experience wet, mild winters and hot, dry summers. What's different now is that the warming driven by greenhouse gas emissions supercharges these extremes. Our human-driven warming climate is making our floods more flashy, our winter storms more powerful, and increasing weather whiplash and climate volatility.

The National Climate Assessment is the U.S. Government's preeminent report on climate change projections, impacts and risks. The fifth Assessment was released in 2023 and found that the U.S. has warmed rapidly since the 1970s. The report ranks California among the top five states suffering economic effects from climate-related natural disasters. The Assessment's Southwest Chapter, which includes California as well as Nevada, Utah, Colorado, New Mexico, and Arizona, outlined current and future changes for the region and the associated likelihood and/or confidence of occurrence:

- Higher temperatures have intensified drought and will lead to a more arid future (very likely, high confidence).
- At the same time, the region is experiencing **more intense precipitation events**, including atmospheric rivers, which contribute to increased flooding (high confidence).
- Large-scale **marine heatwaves and harmful algal blooms** have caused profound and cascading impacts on marine coastal ecosystems and economies (high confidence).
- **Sea level rise**, along with associated impacts such as flooding and saltwater intrusion, will have severe and disproportionate effects on infrastructure, communities, and natural resources (likely, very high confidence).
- **Extreme heat events** will increase animal stress and reduce crop quality and yield, thereby resulting in widespread economic impacts (likely, high confidence).
- In recent years, the Southwest has experienced **unprecedented wildfire events**, driven in part by climate change (high confidence).
- **High-severity wildfires** are expected to continue in coming years, placing the people, economies, ecosystems, and water resources of the region at considerable risk (very likely, high confidence).
- Increases in extreme heat, drought, flooding, and wildfire activity are negatively impacting the **physical health of Southwest residents** (high confidence).

- Individuals particularly vulnerable to increasing climate change impacts include **older adults, outdoor workers**, **and people with low income** (high confidence).

Climate impacts Californians experienced in 2023 include:

Drought and Flooding

The driest three-year period on record in California (2020-22) gave way to a series of atmospheric rivers early in 2023 that pummeled the state. The damage started New Year's Eve 2022 with a Cosumnes River levee break southeast of Sacramento, which, in conjunction with high precipitation, caused three deaths, numerous rescues, evacuation orders, and the closing of State Route 99. In all, from late December to mid-January, California was hit by nine significant atmospheric rivers. Flooding affected 24 counties, and at least 22 people died. The Merced County town of Planada, predominantly Latino and low-income, was evacuated and flooded. The state received about half of its average annual precipitation between December 26 and January 19; the Sierra Nevada snowpack in late January exceeded the average on April 1, when snowpack typically peaks for the year.

The extreme precipitation continued through March 2023. Heavy rain and snow caused prolonged power outages, road closures, levee failures, mudslides, destruction of buildings, and evacuations. In mid-March, flooding displaced more than 3,000 people in the Monterey County farmworker town of Pajaro. Melting of one of the largest snowpacks on record in the southern Sierra Nevada mountains refilled the historic lakebed of Tulare Lake, inundating about 114,000 acres of farmland and threatening – but not overwhelming – the town of Allensworth, California's first community founded, financed, and governed by African-Americans and now populated mostly by Latino farmworkers. In February and April, President Biden declared two separate major disaster declarations for the State of California from these storms. Multiple state emergency proclamations were issued, resulting in most of the state's counties being covered by an emergency proclamation by the end of March.

The parade of storms provided huge water supply benefits, refilling drought-depleted reservoirs and helping local water agencies recharge groundwater. Between late December and June 2023, state regulators authorized the diversion of 1.2 million acre-feet of water – more than enough to fill Folsom Lake – for underground storage, wildlife refuges, and other purposes. The State Water Project and the federal Central Valley Project provided full supplies to their contractors for the first time in years.

The extreme precipitation of 2023 did not end with winter. In late summer, Southern California experienced uncommon activity tied to Tropical Storm Hilary that set new precipitation records and caused widespread local flooding. The storm caused extensive damage in areas such as Coachella Valley and Death Valley, especially to roads and highways.

The year 2023 embodied the weather whiplash that is a hallmark of climate change; the driest consecutive three-year period was ended by one of the snowiest years of record. California

precipitation, always highly variable, is becoming more extreme, with more intense drought and record-breaking rain and snow.

Wildfire

The 2023 fire season in California, marked by proactive management and favorable weather conditions, saw a substantial decrease in both the number of wildfires and the total acreage burned compared to the 5-year average. The total acreage burned was remarkably lower, with approximately 325,000 acres affected, significantly less than the 5-year average of over 2,300,000 acres.

2023 FIRE SEASON BY THE NUMBERS:

594,971 Total Emergency Responses

7,127 Wildfires

324,917 Acres Burned

4 Fatalities: 1 Civilian / 3 Firefighter

71 Structures: 13 Damaged / 58 Destroyed

Like the 2022 fire season, the 2023 fire season was mild due to a wet winter followed by a cool spring and early summer. In August, Tropical Storm Hilary reached the southern coast of California during what is typically the state's driest time of year, and the peak of fire season. This significantly decreased the risk of large fires in southern California and the eastern Sierra region.

Even with favorable weather conditions across much of the state, there were still several notable fires in 2023. The Smith River Complex erupted in mid-August south of the Oregon border in Del Norte County, which was among the few places in California still suffering from drought conditions. The fire closed roads, forced power outages, delayed the start of the school year for roughly 4,000 students in Del Norte County's public schools, and resulted in prolonged toxic air quality. Also notable, the Emerald Fire in Mendocino County, which despite its rapid spread, was contained effectively without major structural damages or casualties.

In 2023, improved resource management and community preparedness, helped mitigate the severity and spread of wildfires when they did start. The California Department of Forestry and Fire Protection completed more than 250,000 defensible space inspections to help the public understand how to boost resilience and improve wildfire prevention and prescribed burns were completed on at least 126,000 acres. The widespread adoption of preventive measures, such as controlled burns and vegetation management, contributed to the overall reduction in fire severity and scale. This year serves as a testament to the effectiveness of strategic planning and collaborative efforts in wildfire management.

Extreme Heat

Globally, it was the warmest year on record by a large margin, with average annual temperatures between 1.34 degrees C and 1.54 degrees C above pre-industrial levels. In the summer of 2023, the world witnessed Earth's highest temperatures on record. Despite California experiencing a comparatively cooler summer than recent years, soaring temperatures still prevailed at different points throughout the state. Between July 1 and July 28, 117 highest max temperature records were tied, and 241 highest max temperature records were broken, totaling 358 across California. California cities where temperature records were broken included Anaheim, Sacramento, Redding, Merced, and Palm Springs.

Ocean and Coastal Changes

In late August, Tropical Storm Hilary made landfall in Southern California. Such storms rely on warm ocean water to maintain their energy and moisture and typically run out of power when hitting the cold waters off the coast of California. The unseasonably warm sea surface temperatures resulted in the National Hurricane Center issuing a tropical storm watch for parts of southern California (later changed to a warning) as the system approached the coast. Hilary was the first tropical storm to pass over California since 1997. Despite the unusual nature of this storm, emergency response and preparation along with plenty of advanced warning, expert analysis, and public messaging about the storm's likely path and intensity resulted in no lives being lost.

Like 1997, 2023 was a strong El Niño year. El Niño is characterized by above-average sea levels and ocean temperatures along the equatorial Pacific. This can accelerate coastal erosion, worsen flooding and intrusion of saltwater into freshwater aquifers, decrease public access to coastal spaces and lead to a loss of habitat for plants and animals. Throughout 2023, several periods of unseasonably large and more frequent waves drove coastal flooding, erosion, and damaged infrastructure. For example, 20-foot-high waves in Santa Cruz washed away protective barriers, showcasing the immense power of the storm surge and its impact on coastal defenses.

The early January atmospheric rivers caused a series of landslides across Highway 1, closing sections of the iconic scenic route through Big Sur. In one section, an estimated 500,000 cubic yards of slide material covered the roadway. The landslide caused not only the closure of the highway but ultimately required the redesign and restructuring of that section of Highway 1. These intense precipitation events also exacerbated transboundary pollution flows into the Tijuana River Valley, causing water and air quality concerns and leading to beach closures in the Southern California region.

In late Spring, a Marine Heat Wave (MHW) formed off California's coast reaching its peak coverage and intensity in early fall and then retreating. A MHW called "the blob" first appeared in the Pacific at the end of 2013. It persisted along the West Coast for nearly two years, disrupting marine ecosystems. Since then, a MHW has appeared in approximately the same place every year (except for 2017 and 2018). The 2023 MHW is the 4th largest by area and ranks within the top 20 in

duration. MHWs often lead to Harmful Algal Blooms (HAB) and this year was no exception. From May – July of 2023, a Pseudo-nitzschia bloom in southern California caused a mass stranding event involving approximately 1,000 marine mammals. HABs impact shellfish harvesting opportunities and recreational coastal use and can increase marine mammal mortality and ocean acidification.

2023 Climate Adaptation Action – Key Highlights

As Californians face more severe climate impacts, we continue to see an uptick in adaptation action at the state level that can reduce risks for our communities, ecosystems, and infrastructure across the state.

According to the National Climate Assessment, California has outpaced the rest of the country in adaptation action at the state and local level while driving down emissions. From our very own state climate assessments that help identify the precise severity of risks, to record levels of support for planning and implementation at the local level to state agency climate action, 2023 marked a year of significant climate adaptation progress.

Below are specific success stories across California that illustrate the state's overall progress, in line with the Climate Adaptation Strategy's six climate resilience priorities:

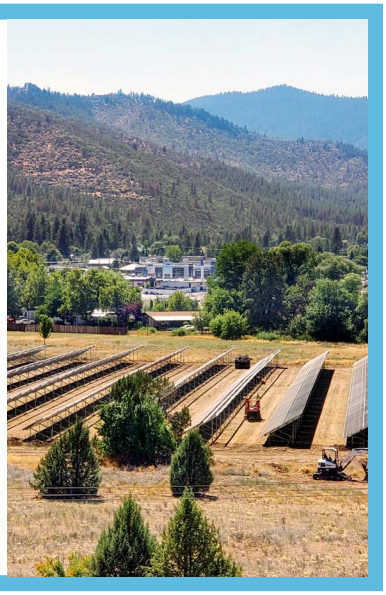
Strengthen Protections for Climate Vulnerable Communities

- Distributed nearly $1.2 billion between July 1, 2022 and June 30, 2023 to water systems and communities to bolster supplies, expand groundwater recharge and improve access to safe drinking water. Over $200 million will support clean water projects through water recycling, stormwater capture and groundwater recharge as described in the 2022 Water Supply Strategy. When complete, the projects funded during this period will sustain 486,000 households annually and more than half of the funding supports drinking water and wastewater projects in small or disadvantaged communities (State Water Resources Control Board).
- Awarded $144 million to local communities to implement over 110 projects to address regional water supply challenges and build climate resilience. These projects construct new water infrastructure and address multiple needs, supporting groundwater recharge, strengthening flood management, increasing water conservation, and improving water quality, while leveraging local, federal, and other state dollars to ensure water security for all Californians is affordable. (Department of Water Resources)
- Allocated $200 million to build community resilience centers to protect people from extreme heat and other climate-driven extreme weather. These resilience centers will distribute resources, provide shelter during climate events, and provide a community meeting space year-round. (Strategic Growth Council, California Department of Food and Agriculture)
- Awarded $116.8 million through the Sustainable Agricultural Lands Conservation grants to conserve approximately 50,500 acres of agricultural and working lands. This funding will

provide pathways to land ownership and agricultural land access for disadvantaged farmers and ranchers and support California tribes with land acquisition. (Strategic Growth Council)

- The Transformative Climate Communities grants awarded $98.1 million to 11 community led climate resilience projects in disadvantaged, unincorporated, and tribal communities. Combined, the projects from this funding round will reduce greenhouse gas emissions by 36,647 metric tons, which is equivalent to taking 8,155 gasoline-powered passenger vehicles off the road for one year. (Strategic Growth Council)
- Over 1,800 wildfire resilience projects are underway across the state that reduce catastrophic wildfire risks and protect communities vulnerable to wildfire. (California Department of Forestry and Fire Protection, State Conservancies, and other departments)
- Allocated $15 million in state funding via the PrepareCA JumpStart Initiative to spur resilience planning and activities in eligible, socially vulnerable, and high-risk communities. This funding supports cities, counties, non-profits, and tribal governments across the state to invest in infrastructure improvements that protect people and property from climate impacts. (Governor's Office of Emergency Services)

CASE STUDY: In April 2023, the California Public Utilities Commission adopted rules for the Microgrid Incentive Program (MIP), which directs the utility companies to provide competitive financial incentives to develop community microgrids in disadvantaged and vulnerable communities, including California Native American tribes, that are at higher risk of power outages. This program is budgeted for $200 million and aims to build microgrids that serve multiple customers and can operate independently from the overall grid for longer time periods. This aims to advance microgrid resiliency technology, distribute system benefits of microgrids equitably across vulnerable communities, and provide insights for future regulatory actions that can enhance the resilience of the power system to benefit all customers.



- Under AB 2238 (Rivas, 2022), advanced the development of the Extreme Heat Ranking System to better forecast and warn against excessive heat in communities statewide, with diverse and targeted messaging to California's most climate-vulnerable communities. The initial version of California's Extreme Heat Ranking System is due January 1, 2025, and the state will ultimately create a mobile application to transmit localized information to users across the state. (California Environmental Protection Agency, California Office of Environmental Health Hazard Assessment, Governor's Office of Land Use and Climate

Innovation, Formerly the Governor's Office of Planning and Research, California Department of Public Health, Department of Insurance)

- Provided $1 million in funding to support small, underserved farmers through integrated pest management technical assistance, advancing California's commitment to sustainable pest management and climate-driven pest pressure. This funding builds on the Sustainable Pest Management Roadmap, which was released in January 2023, and brings together a vision for promoting human health and safety, ecosystem resilience, agricultural sustainability, and economic vitality in a changing environment. (California Department of Food and Agriculture, California Department of Pesticide Regulation, California Environmental Protection Agency)
- Led the implementation of the Statewide Action Plan to Prevent and End Homelessness, which supports communities in developing plans to address disaster preparedness and embeds the inclusion of people experiencing homelessness into local emergency preparation, response, and recovery. The state continues to coordinate closely to ensure emergency responses are tailored to people experiencing homelessness. (Department of Housing and Community Development, California Interagency Council on Homelessness)
- Hosted a virtual symposium series exploring the effects of heat on children and during pregnancy and strategies to combat health impacts. (Office of Environmental Health Hazard Assessment)
- Developed a tool to include California cultural heritage values in climate vulnerability assessments. (California Office of Historic Preservation, Department of Parks and Recreation)

CASE STUDY: To date, the California Department of Housing and Community Development (HCD) has funded the creation of over 15,000 homes that will help 163,000 Californians exit homelessness. Californians experiencing homelessness are extremely vulnerable to climate risks. For people to exit homelessness they need housing, and Homekey is an important program that ensures the most vulnerable Californians are given access to safe, affordable homes in sustainable communities. A portion of this funding is set aside for tribal governments to serve their unhoused populations and build more resilient communities. In the latest round of the Homekey Program, HCD engaged with tribal governments statewide to design a specific program for tribes, allowing for additional technical assistance and reduction of identified barriers in the design of the program.

Bolster Public Health and Safety to Protect Against Increasing Climate Risks

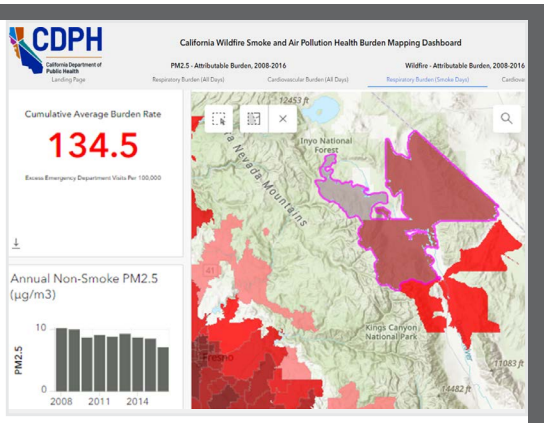
- Granted $120 million in Green Schoolyards awards to address the challenges posed by extreme heat in underserved K-12 public educational facilities. This program helps schools convert pavements to green spaces, trees, and vegetation, create drought-tolerant natural areas on school grounds, and helps children connect to nature. (California Department of Forestry and Fire Protection)
- Helped communities recover after major disasters by administering federal Community Development Block Grant-Disaster Recovery funding from Presidentially declared disasters. For example, to date, the state has committed $739,776,192 in CDBG-Disaster Recovery and Mitigation funds in response to the 2017 and 2018 fires and mudslides. (Department of Housing and Community Development)
- Utilized state-of-the-art predictive modeling to prepare and respond to major atmospheric river storms and Tropical Storm Hilary that hit the state in 2023, pre-positioning thousands of personnel and millions of dollars in equipment to protect vulnerable communities. (Governor's Office of Emergency Services, Department of Water Resources)
- Implemented the Facility Ignition Prevention Program, a multi-divisional program that prioritizes and funds structure hardening of State Parks buildings at risk of wildfire, and invested over $2 million in upgrades. (Department of Parks and Recreation)
- Launched the "Heat Ready" website to help educate Californians on extreme heat preparedness and safety. (Governor's Office of Land Use and Climate Innovation, Formerly the Governor's Office of Planning and Research, Office of Community Partnerships and Strategic Communications)
- Responded to flooding of the Tulare Lake Basin, collaborating with local agencies and vendors to secure equipment for diverting and directing flood flows to recharge areas, maximizing flood diversions and reducing flood risk while facilitating groundwater recharge. (Department of Water Resources)
- Improved management of energy demand at state facilities to maximize benefits to the grid during extreme heat events. (Department of General Services)
- Supported and participated in four cultural burn awareness trainings, which included over 300 people at the four events in Blue Lake, Mariposa, Woodland, and La Jolla. (California Department of Forestry and Fire Protection)
- Established a program to build resilient renewable microgrids at critical state facilities. (Department of General Services)

- Reviewed Department of Water Resources employee heat illness prevention actions to ensure sufficient protection from heat-risk, researched policies and proposed heat-related actions to ensure staff safety under a changing climate. (Department of Water Resources)
- Conducted outreach with diverse stakeholders through the Health Effects and Tracking (HEAT) Program to address occupational heat-related illness. The HEAT Program analyzed administrative data to identify patterns in occupational heat-related illness emergency department visits and workers' compensation insurance claims. The HEAT Program is now working with the University of California system to deliver trainings and develop educational materials on heat-related illness for the most vulnerable workers. (California Department of Public Health)

CASE STUDY: The California Office of Emergency Services launched a course, "Climate Change and Emergency Management: A California Perspective," designed for emergency professionals. This training explores the intersection of climate change and its impact on emergency management strategies. Participants gain in-depth knowledge of California-specific climate trends, projections, and role-specific scenarios through immersive simulations and data analysis using tools like Cal-Adapt and findings from the California Climate Change Assessments. The initial pilot course fostered collaboration, gathered feedback to refine the course, and equipped emergency management professionals with the critical knowledge and tools to navigate climate-driven emergencies effectively. This innovative training program marks a significant leap forward in California's preparedness for a changing climate.

- Required electrical utilities to incorporate community vulnerability into their risk modeling efforts. To do so, held a public meeting to begin to identify the disproportionate impacts of wildfire on socially vulnerable communities and to incorporate these factors into electrical corporations' wildfire mitigation planning. (Office of Energy Infrastructure Safety)

CASE STUDY: The [California Wildfire Smoke and Air Pollution Health Burden Mapping Dashboard] was developed by the California Department of Public Health. The dashboard highlights the health impacts of particle pollution from wildfire smoke, focusing on fine particulate matter and its effects on respiratory and cardiovascular health on days affected by wildfire smoke. Users can explore data on excess emergency room visits attributed to particle pollution exposure from 2008 to 2016, sorted by zip code, race/ethnicity, age group, poverty level, and urban/rural status. Additionally, users can access live air quality data, historical fire locations, and the locations of schools, health care facilities, and lands associated with federally recognized Native American tribes, including tribal reservations and other federally designated lands. The dashboard helps communities understand how pollution affects health across different locations and populations, facilitating informed decision-making to protect public health.

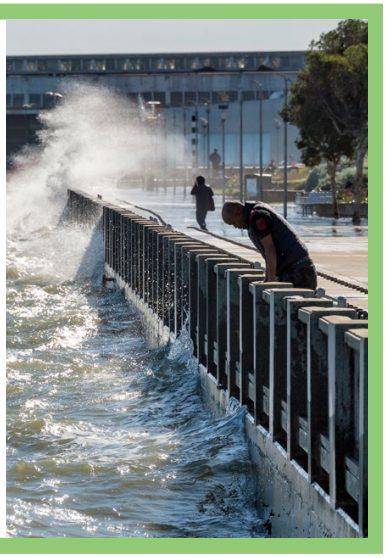


Build a Climate Resilient Economy

- [Invested over $750 million] through the Affordable Housing and Sustainable Communities grant program. This funding will deliver more than 2,500 affordable homes, 150 new zero-emissions buses, over 50 miles of new bikeways, and improve miles of sidewalks in communities across the state, reducing greenhouse gas emissions, strengthening the economy, and improving public health and the environment. (Department of Housing and Community Development, California Strategic Growth Council)
- Invested federal Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) funding in over forty projects, the benefits of which include: (1) ~220 miles of roadway materials made more resilient to wildfire, (2) ~65 upsized culverts to accommodate for increased peak flows, (3) ~35 shade structures added as complete streets features to protect users from extreme heat in disadvantaged and low-income communities, (4) Four projects address sea level rise and cliff retreat on Highway 1. (California Department of Transportation)
- Leveraged federal PROTECT funds to provide competitive grants to local agencies for the development and implementation of capital projects adapting transportation infrastructure to climate change. Initial funding is supporting 15 projects at over $300 million in disadvantaged communities, including two passenger rail projects and other projects with multi-modal benefits. (California Transportation Commission)

- Awarded $21.7 million for 10 planning grants and 6 implementation grants through the Regional Resilience Grant Program, allocating 86% of funding to regional partnerships benefiting disadvantaged communities and tribes, and $8 million in awards to 14 projects through the Adaptation Planning Grant Program. Both programs take a community centered approach to enhance climate change resilience at a regional and local level through diverse partnerships and sound planning and implementation. (Governor's Office of Land Use and Climate Innovation, Formerly the Governor's Office of Planning and Research)
- Provided $13.2 million to 103 Conservation Agriculture Planning Grant projects. Project awardees will work with farmers and ranchers to develop plans for carbon farm management, agricultural energy design, comprehensive nutrient management, pollinator habitat, organic transition, soil health management, grazing management, and fish and wildlife habitat. (California Department of Food and Agriculture)
- Supported 10 projects with $12.5 million to plant pollinator habitat and implement management practices that support pollinators through the Pollinator Habitat Program. (California Department of Food and Agriculture)

CASE STUDY: Protecting the San Francisco Bay Area from sea level rise and storm surge by 2050 is estimated to cost $110 billion, according to a first-of-its-kind report released by the San Francisco Bay Conservation and Development Commission (BCDC), the Metropolitan Transportation Commission and the Association of Bay Area Governments in 2023. While the cost is significant, failing to adapt would result in a much larger deficit. The report offers potential solutions, including how local and regional revenue can be raised most equitably, as well as possible paths to distribute new funds for sea level rise adaptation. Through BCDC's Bay Adapt program, Bay Area leaders are using this report to develop new approaches to prioritizing investments to meet this need.



- Distributed block grants to 14 organizations that will work with farmers in their local areas to implement healthy soils practices on their land, prioritizing socially disadvantaged farmers and ranchers. (California Department of Food and Agriculture)
- Announced eight demonstration projects related to healthy soils practices. These practices help farmers and ranchers adapt to climate change by increasing the ability of soil to hold water, providing pollinator habitat, reducing farming inputs and reducing costs, improving water efficiency, and other benefits. (California Department of Food and Agriculture)

- Approved $1.5 million to establish an Ocean Corps Pilot Program, in collaboration with local conservation corps and partners, to enhance coastal climate resilience and provide equitable opportunities for young adults. (Ocean Protection Council and California Conservation Corps)

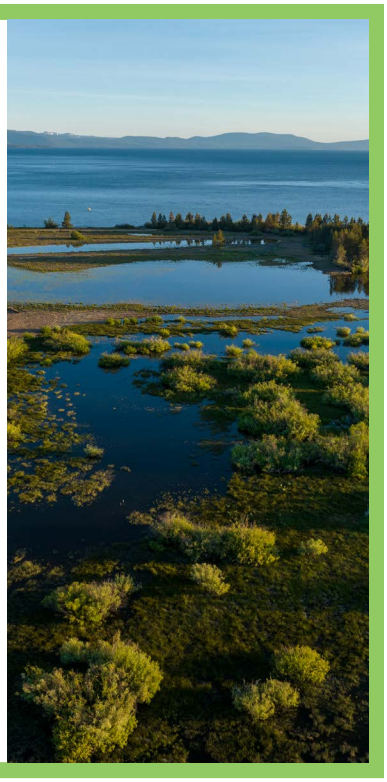
CASE STUDY: In 2023, the Infrastructure and Economic Development Bank's (IBank) board approved $25 million in California Climate Catalyst Revolving Loan Fund's Forest Biomass Utilization & Management program funds, designed to jumpstart shovel-ready projects in the forestry sector through accessible, affordable financing and support the expansion of critical businesses in the sector and attract private capital investors to maximize the impact of state funds.

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

- Added nearly 1,000 square miles of protected areas to our 30x30 initiative, reaching 24.4% of lands conserved. (California Natural Resources Agency and departments)
- Awarded nearly $78 million for 34 projects to protect and restore coastal lands, increase coastal resilience to climate change, improve public access to the coast, and reduce the impact of wildfire on coastal lands. Of the funding, $4,500,000 is for the Hoopa Valley Tribe to acquire approximately 10,300 acres in the Klamath River watershed to protect and restore water quality, anadromous fish habitat, wildlife habitat, wildlife connectivity, and forest health, and for tribal and public access. (State Coastal Conservancy)
- Invested $19 million for tribally led wildfire resiliency and forest health projects, including the planning and application of Traditional Ecological Knowledge practices and cultural fire. (California Department of Forestry and Fire Protection)
- Incentivized the construction of facilities that allow the production of marketable compost, providing over $67 million for projects to fund the expansion of compost production. (Department of Resources Recycling and Recovery)
- Explored the intersection of marine protected areas (MPAs) and climate change through investing $2.4 million in projects that will result in a suite of management strategies to strengthen climate resilience of MPAs, identify climate vulnerability of fishing communities, explore how MPAs can support improved ocean access for populations historically burdened by environmental injustice, and forecast climate-driven changes that may impact highly sensitive ecosystems. (Ocean Protection Council)

- Advanced the Tribal Nature-Based Solutions Conservation Corps Program to further the objectives of Executive Order N-82-20 and the State's 30x30 climate goals while providing educational and career opportunities for tribal youth to engage in natural resource management and conservation in a manner that preserves traditional and cultural resources on tribal lands. (California Natural Resources Agency, California Conservation Corps)
- Allocated $10 million in grant funding exclusively available to California Native American tribes to establish tribal youth conservation corps programs. (California Conservation Corps)
- Implemented wildfire resiliency treatment activities on over 100,000 acres across state lands over the past year. Direct actions include creating defensible space, prescribed burns, invasive species removal, and vegetation management to restore fire resilience across fire adapted ecosystems. The state has also evaluated relative wildfire risk across the state to help prioritize these activities. (Department of Fish and Wildlife, Department of Parks and Recreation, and other departments)

CASE STUDY: The California Tahoe Conservancy constructed the Upper Truckee Marsh Project from 2020 to 2022. The project aims to increase the resilience of the watershed to climate change by restoring natural hydrology, improving water quality entering Lake Tahoe, enhancing wildlife habitats and biodiversity, creating equitable public access, and increasing long term soil carbon storage. Key features of the project include the construction of new stream channels that spread water across more than 250 acres of wetland, completing an accessible to all shared-use trail to Lake Tahoe, and restoring 12 acres of wetland from an artificial lagoon and historic wetlands filled by development. The Conservancy filled the lagoon and revegetated the new 12-acre wetland with over 70,000 native plants. In 2023, the Conservancy replanted additional native plants where needed and removed invasive weeds. The large winter of 2022-23 resulted in river flows entering the new wetland. The new wetland is currently inundated, the vegetation is growing successfully, and the trail remains accessible to the public.

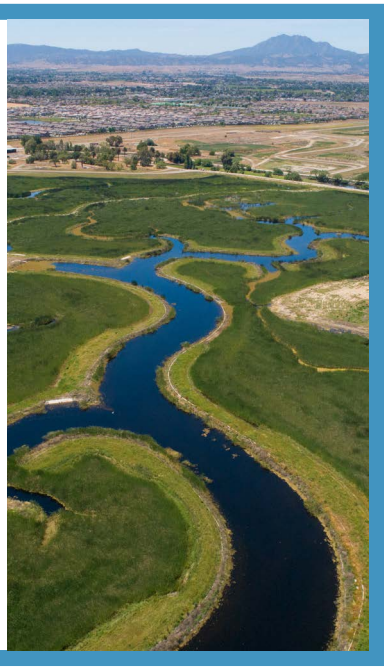


- Funded the acquisition of the 2,285-acre Fay Creek Ranch, adjacent to the Sequoia National Forest in Kern County. Fay Creek Ranch was the last large private holding in a vast swath of protected land and provides critical stopover habitat for migratory birds and animals during spring and fall migrations. Over half of Fay Creek Ranch was transferred to the Tübatulabal

Tribe for long-term stewardship as a working ranch, the first time culturally significant land has been returned to the tribe. (Sierra Nevada Conservancy, Wildlife Conservation Board)

- Funded 4 projects in the deeply subsided region of the Delta that will result in 11,000 acres of conversion to rice cultivation and managed wetlands to stop subsidence and associated carbon emissions of approximately 110,000 tons of CO2 per year. (Sacramento-San Joaquin Delta Conservancy)
- Reconnected 300 acres of former industrial salt ponds to the tides and currents of San Francisco Bay, which is part of a larger effort to restore and enhance over 15,000 acres of historic wetlands, helping to protect the south bay from rising sea levels. (State Coastal Conservancy)
- Acquired a 31.2-acre area of environmentally sensitive land in South Lake Tahoe, which marks one of the last stretches of private land along the Upper Truckee River as it nears Lake Tahoe and is adjacent to a 560-acre Upper Truckee Marsh state property. (California Tahoe Conservancy)

CASE STUDY: The Department of Water Resources Dutch Slough Tidal Marsh Restoration Project, through its completion of the first 700 of its 1,200 acres in 2021, is already providing environmental benefits in addition to other project benefits to flood protection, water supply reliability, and recreation. The project functions as a living laboratory, where scientists are monitoring how much carbon is being stored. The 2023 results from this monitoring show that the project is storing carbon in the top 1% of thousands of wetland sites that are monitored worldwide. The success of the carbon sequestration is related to the design approach to provide appropriate elevations, tidal conveyance, and extensive revegetation prior to site breaching to accelerate plant establishment. The rapid habitat establishment has also shown early benefits to species diversity for both aquatic and terrestrial species.



Make Decisions Based on the Best Available Climate Science

- Incorporated California's leading framework on climate adaptation, along with the most up-to-date information, into the updated State Hazard Mitigation Plan (SHMP). This integration ensures that the plan reflects the latest in climate science and effective adaptation strategies. The state is now working on a training and outreach plan to socialize the SHMP with state and local partners. (California Governor's Office of Emergency Services)

- Released adaptation guidance to inform transportation investments, specifically (1) Adaptation Strategies for Transportation Infrastructure that provides an initial look into how to consider project-level strategies to adapt to more extreme risk, and (2) Corridor Planning Guidance: Climate Change Emphasis Area Guide, which is a major milestone in integrating climate adaptation considerations into early system planning. (California Department of Transportation)

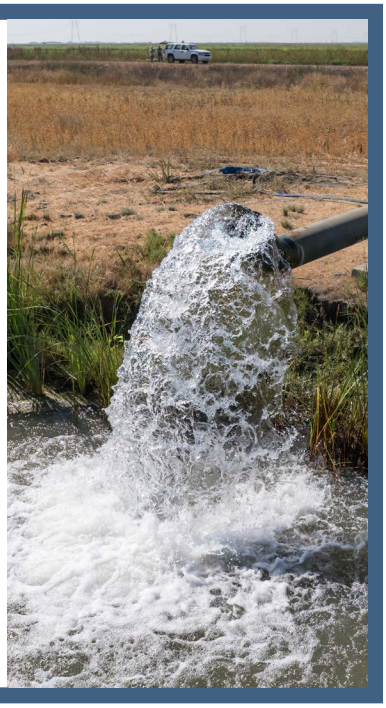
CASE STUDY: California's Climate Change Assessments contribute to the scientific foundation of climate-related vulnerability throughout California and support on-the-ground implementation and decision-making at local, regional, tribal, and state levels. California's Fifth Assessment, a multiyear and multiagency effort including the Governor's Office of Land Use and Climate Innovation, Formerly the Governor's Office of Planning and Research, the California Natural Resources Agency, the California Energy Commission, and the Strategic Growth Council, progressed substantially in 2023. New downscaled climate change projections and scenarios, specific to California, are available via the Cal-Adapt Analytics Engine. The continued development of these projections and climate data are integral to uplifting the best available science to understand the impacts of climate change across California. The scope of the Fifth Assessment's research products was developed through a robust engagement process with experts, communities, and decision-makers across the state, resulting in 26 Climate Research Topics that represent gaps in research or existing knowledge. In response, the Fifth Assessment team awarded fifteen proposals from across the state to close many of these gaps. The team also advanced frameworks for nine Regional Synthesis Reports and a collection of Statewide Topical Synthesis Reports through extensive outreach and community partnerships. In 2023, the Tribal Research Program established a Tribal Advisory Group, and announced Round 1 awards for tribally-led climate change research. The complete suite of Fifth Assessment products will be available to the public in 2026.

- Advanced data, modeling, and tools to maximize sustainable groundwater management such as collecting airborne and ground-based data to assist local water managers in characterizing

their aquifer systems and developing useful tools for estimating the potential hydrologic effects of proposed water management activities. (Department of Water Resources)

- Established long-term climate and biodiversity monitoring plots on wildlife areas and ecological reserves across California, including 118 biological survey plots, 15 towers for tracking wildlife movement, and 35 weather stations. The data collected will help quantify climate impacts to wildlife and be used to support risk-based decision-making regarding land management and conservation planning. (Department of Fish and Wildlife)
- Advanced and made publicly available forecasting modeling to better simulate snowmelt processes and updated the California Water Watch to present graphics of hydrologic conditions across the state and communicate monthly hydrometeorological conditions. (Department of Water Resources)
- Issued the Shoreline Adaptation and the Public Trust report which prioritizes nature-based solutions to minimize sea level rise impacts and climate risks for communities and protect public access along coastal shorelines. Building on the several leases approved for nature-based solutions and habitat strategies in 2023, this report will further guide the State Land Commission's shoreline protective structure leasing practices and its management of coastal state lands as sea levels rise. (State Lands Commission)

CASE STUDY: In 2021, the State Water Board (Board) initiated the Updating Water Rights Data for California (UPWARD) project to improve the way the state collects and manages its water rights data, which includes information on water use, demand, and when and how water is diverted from streams and rivers. This type of information is critical for data-driven water management decisions and building California's long-term water resilience in the face of climate change. The UPWARD project is working to remedy the impacts of the state's aging water rights data system, improve data processes, and advance the Board's ability to collect, manage, and provide water rights data to the public, as called for by the California Water Resilience Portfolio and the California Water Supply Strategy. In 2023, the Board formed the UPWARD Advisory Group and began developing the new data system. An initial demonstration of the system will occur in 2024 and the data system will be public in 2025.



- Released the Delta Levees Investment Strategy, which sets strategic priorities for critical state investments in the maintenance, operations, and improvements of levees, and directs funding of improvement projects on Delta levees based on greatest to least risk. (Delta Stewardship Council)
- Developed an interactive dashboard to identify and prioritize contaminated sites most vulnerable to sea level rise and issued a draft sea level rise guidance to help project managers best address sea level rise across all phases of a cleanup project life cycle. (Department of Toxic Substances Control)
- Assessed the vulnerability of all state facilities to climate risks in biennial Sustainability Roadmaps. (Department of General Services)

Partner and Collaborate to Leverage Resources

- Advanced opportunities for co-management of park lands with California Native American tribes through the signing of six Memorandum of Understanding (MOU) in 2023, bringing the total number of MOUs with tribes to 10. This marks continued progress in tribal land stewardship and the incorporation of tribal knowledge into decision making, which has proven invaluable in the face of increased wildfire risks and the biodiversity crisis. (California State Parks)
- Launched a subnational partnership focused on climate resilience and joined the Global Offshore Wind Alliance at the UN Climate Conference, COP28, in Dubai. The Mediterranean Climate Action Partnership (MCAP) includes 15 jurisdictions across 5 continents that share a mediterranean climate, experience a common set of climate challenges and will work together to adapt to drought, wildfire, and heat. (California Natural Resources Agency, California Energy Commission)
- Catalyzed the formation of the North Yuba Forest Partnership which resulted in a landscape plan to reduce fuels across 275,000 acres in the north Yuba watershed. This prompted the U.S. Forest Service to select the North Yuba Forest Partnership as one of the 10 priority landscapes in the U.S.F.S. Wildfire Crisis Strategy and invest $160 million dollars toward implementing the plan. (Sierra Nevada Conservancy)
- Collaborated with partners across the state to outline a path to a healthier, thriving salmon population in California in the face of climate change-related stressors. The California Salmon Strategy for a Hotter, Drier Future: Restoring Aquatic Ecosystems in the Age of Climate Change contains goals that resulted from extensive collaboration among state and federal agencies, California Native American tribes, commercial and recreational anglers, industries, environmental and conservation organizations. (California Department of Fish and Wildlife, State Water Resources Control Board, Department of Water Resources, Wildlife Conservation Board, California Department of Transportation, State Conservancies)

- Stood up the Emergency Forest Restoration Teams (EFRTs) to assist Plumas and El Dorado County small landowners that were impacted by the Caldor and Dixie Fires with funding from the state and federal government, as well as private industry. The EFRTs are led by the El Dorado and Feather River Resource Conservation Districts (RCDs), and comprised of state and federal agency representatives, non-governmental organizations, and private individuals. They include input from local, regional, county entities as well as restoration work performed by local contractors and experts. (California Department of Forestry and Fire Protection)
- Initiated a monthly Community of Practice working group for local health jurisdictions (LHJs) working to address the health and equity impacts of climate change and hosted monthly "office hours" for LHJs to receive in-depth technical assistance on climate change and heath equity-related data and programs. These events have been enthusiastically attended by representatives from over 37 (of 61) LHJs. (California Department of Public Health)

CASE STUDY: The state is working closely with tribal governments, conservation partners, and federal agencies on the historic removal of four dams on the Klamath River. In fall of 2023, the first dam removal was successfully completed, with the remaining three dams scheduled for removal in 2024. This project will result in the restoration of 400 miles of habitat for salmon and steelhead trout, supporting the recovery of salmonid populations in the state. Improving habitat quality and connectivity will create a landscape that is more resilient to impacts of climate change, such as altered streamflow regimes and increasing water temperatures, providing salmon and other imperiled aquatic species with a better chance for survival.

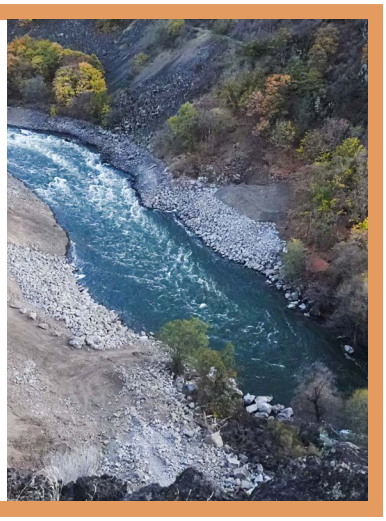


PHOTO COURTESY SWIFTWATER FILMS

- Increased climate-related service opportunities by scaling the California Climate Action Corps Fellowship to approximately 345 full-time fellows per year. During the 2022-23 fellowship year (September 2022 – September 2023), among many other outcomes, fellows planted 6,056 trees and donated 7,830 trees to community members, providing temperature reduction and other benefits in areas prone to extreme heat. (California Volunteers)
- Hosted the 4th Tribal Water Summit, "The Waters that Connect Us", which builds on the legacy and critical importance of tribal governments for the wise management of water in California. As a follow-up to the Summit, a tribal chapter was included in the update to the California Water Plan for the first time to incorporate recommendations from tribes and tribal perspectives of water management in California. (Department of Water Resources)

- Increased climate-related volunteer opportunities to more than 22,000 volunteer shifts through California Climate Action Corps programming during the 2022-23 program year, including participation in Community Climate Action Days, co-sponsored events, and fellow-led events. (California Volunteers)

CASE STUDY: In 2023, California Volunteers' new Neighbor-to-Neighbor program, focused on building up neighborhood networks and engaging volunteers on hyperlocal efforts, engaged over 5,000 volunteers in seven different communities: Fresno, Oakland, San Francisco, El Dorado County, Lake County, Cupertino, and San Jose. California Volunteers is currently in the process of awarding $5.6 million that will fund cities, counties, and special districts to lead neighborhood resiliency programs.

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Conclusion & Looking Ahead

Even as California and the world race towards slashing greenhouse gas emissions, the impacts of climate change will continue to intensify over the near term. In response, we must continue to increase our efforts to help Californians adapt to climate impacts.

To do so, California state agencies remain focused on implementing the following goals to the extent existing resources allow in 2024 to ensure we are building a California that is resilient and thriving for all:

1. Capture and apply lessons learned from recent climate disasters and events.
2. Embed the latest tools, data, and training into disaster management, long-term resilience planning, and investment decisions.
3. Incorporate diversity and equity considerations into all aspects of climate adaptation planning and execution.
4. Balance multiple planning goals to improve long-term resiliency, and help local communities as they do the same.
5. Efficiently deploy state and federal funding to implement the Climate Adaptation Strategy and other state climate roadmaps to create a more resilient and climate ready state.
6. Provide technical assistance, foster coordination and communication, and facilitate capacity building at the local level.
7. Embed tribal partnerships into our work including continued early and meaningful tribal government consultation, engagement, and coordination.
8. Accelerate implementation of climate solutions at scale by speeding infrastructure solutions to worsening climate threats.
9. Deepen our partnerships with governments and communities around the world.
10. Advance original research and science so we continue to root our decisions in the best available science.
11. Improve our understanding of the role of traditional knowledge and cultural heritage in accelerating and scaling climate adaptation action.
12. Inform our climate adaptation efforts through early and meaningful engagement with Californians to deliver more holistic outcomes.
13. Continue improving our approach to monitoring, evaluating and communicating our collective progress in building resilience to climate change.