



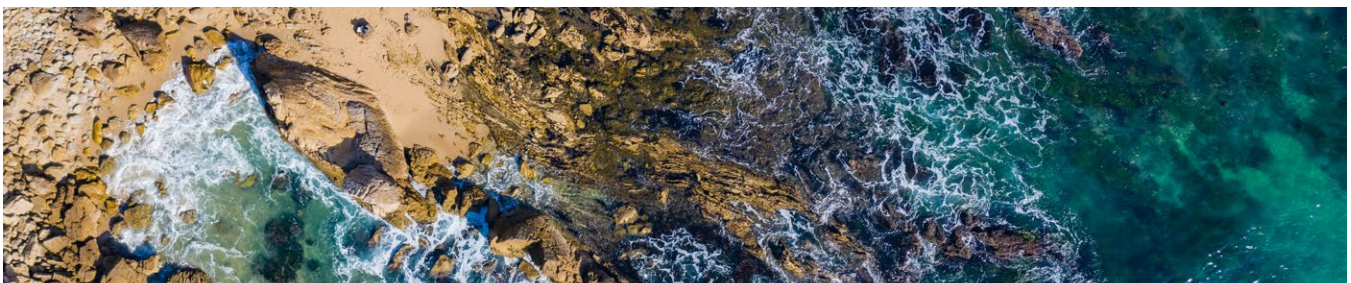
# State Climate Resilience Improvement Plan

FOR TRANSPORTATION

DRAFT SEPTEMBER 2023

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# EXECUTIVE SUMMARY



As part of the Infrastructure Investment and Jobs Act (IIJA, otherwise known as the Bipartisan Infrastructure Law) in 2021, the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Federal Aid Program was created. PROTECT's purpose is to help make surface transportation more resilient to natural hazards, including climate change, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure.

The PROTECT program invites states to create a Resilience Improvement Plan, an optional component that can reduce the state and local cost-share of identified projects by up to ten percent. The State Climate Resilience Improvement Plan for Transportation (SCRIPT) answers that invitation by summarizing the breadth of existing climate adaptation policies, tools, guidance, and activities that

have positioned Caltrans and its partners to take a systemic approach to making immediate and long-range investments resilient to climate change impacts from the onset of IIJA through the aligned effective date of the California Transportation Plan 2050 (2021 – 2050).

The SCRIPT illustrates California's plan for achieving climate resilience in both transportation planning and project delivery by:

- Summarizing the California policy context of the driving legislation, executive orders, policies, and science that have advanced agency planning;
- Sharing existing and planned transportation climate adaptation efforts;
- Explaining the foundation of existing climate resilience planning through previously completed vulnerability and risk-based assessments of the transportation system that have allowed for data-driven investment decisions; and,
- Explaining how the PROTECT program is administered in California, specifically through programs established by Senate Bill 198 (Government Code § 14560).

Lastly, the SCRIPT includes a Project Priority List identifying all projects selected or proposed for PROTECT formula and discretionary investments in California to-date. This list represents a range of transportation climate adaptation needs, from planning studies to capital projects, that are making the multi-modal transportation system safer, more reliable, and more resilient to future climate risks for all users.

## SECTION 1

# INTRODUCTION



California's vast transportation network contains over 220,000 miles of combined roads and highways, including more than 13,000 bridges and tunnels, in addition to 300 airports, 10,000 miles of rail, and an extensive network of seaports that deliver goods across the nation. As the third largest state by land area, California's system traverses a diverse range of geographies including deserts, mountains, coastal areas, and floodplains that experience a range of complex impacts as the climate changes. Climate change is steadily increasing the stress and exposures that this infrastructure is experiencing, requiring more frequent repairs and adaptation improvements. While infrastructure has traditionally been designed to endure a set

of extreme weather events and frequencies, climate change is increasing the severity, frequency, and duration of these events, requiring advanced planning and innovation to adapt to the new norm.

The Governor's Office of Planning and Research (OPR)'s Integrated Climate Adaptation and Resiliency Program (ICARP) defines adaptation to climate change as "an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities." Caltrans is leveraging a combination of the latest available climate science and various state and federal investment programs





to integrate adaptation throughout the Department's operations. The PROTECT Program offers a much-needed investment of \$631 million dollars in federal aid over five years to advance transportation resilience outcomes for Caltrans and local agencies, as integrated into California's existing adaptation framework.

In June 2022, the California Legislature enacted Senate Bill (SB) 198 (Government Code § 14560) establishing two programs to allocate PROTECT Program formula funds. SB 198 ensures state and local spending of PROTECT formula funds will be in alignment with existing state climate change adaptation policy and guidance, including the California Climate Adaptation Strategy.<sup>1</sup> SB 198 focuses California's PROTECT investments on improving the transportation system's resilience to current and future climate change impacts based on the latest available science and tools. The bill also requires the consideration of various eligible co-beneficial project elements for other state goals, including benefits to disadvantaged communities, goods movement, and reductions to greenhouse gases and vehicle miles traveled, among others (for more information on SB 198, see [Section 4](#)). In this first edition of the PROTECT SCRIPT, Caltrans demonstrates how the Department

has responded to the adaptation policy landscape in California by setting up a robust and equitable Adaptation Planning Program. Caltrans has accomplished this by conducting climate change vulnerability assessments that have informed regionally specific adaptation priorities reports across the state transportation system through year 2100. Additionally, the SCRIPT illustrates how Caltrans interfaces with various key partners and stakeholders like OPR, the California Coastal Commission (CCC), the Governor's Office of Emergency Services (CalOES), the California Transportation Commission (CTC), and others while evolving its operations to consider how the transportation system both impacts, and is impacted by, a changing climate in all planning and investment decisions. The SCRIPT closes with an overview of how the PROTECT program is being administered in California, and includes an appendix with key reference documents, as well as a Project Priority List including all selected or proposed PROTECT-funded activities in the state. These projects, combined with previous state and federally funded resilience improvements, will help the state respond promptly to the impacts of weather events and natural disasters and to be prepared for changing conditions, such as sea level rise and increased flood risk.

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<sup>1</sup> California Natural Resources Agency, California Climate Adaptation Strategy: <https://climateresilience.ca.gov/>

SECTION 2

# ADAPTATION & RESILIENCE POLICY LANDSCAPE IN CALIFORNIA

California is a national leader in adopting and implementing comprehensive adaptation and resilience policies through legislation, executive orders, and strategic direction within public agencies. Climate leadership has set the state on a path to prepare for and respond to the worst projected impacts of climate change over the next century. Several California state climate change adaptation policies apply to Caltrans' decision-making. Some of the major Executive Orders (E.O.s) and legislative requirements include:

- **SB 246** (Public Resources Code § 71350 (2015)) - Established the ICARP to be administered by the OPR to coordinate regional and local efforts with State Climate Adaptation Strategies to adapt to the impacts of climate change, as specified; Requires ICARP and CalOES to co-create the Adaptation Planning Guide (APG) for local and regional agencies.<sup>2</sup>
- **Executive Order (E.O.) B-30-15** (2015): Requires the consideration of climate change in all state investment decisions through the use of full life cycle cost

accounting, the prioritization of natural infrastructure solutions and adaptation actions that integrate efforts to mitigate greenhouse gases, attention to the state's most vulnerable populations, and the use of flexible approaches where possible.

- **Assembly Bill (AB) 1482** (Public Resources Code § 71150, 75125 (2015)): State agencies and departments must account and prepare for climate change impacts through efforts including: continued collection of climate data, consideration of climate in state investments, adaptation strategies in planning decision-making, and the promotion of reliable transportation strategies.<sup>3</sup> This bill also directs the California Natural Resources Agency to update the California Climate Adaptation Strategy every three years.
- **AB 2800** (Public Resources Code § 7115 (2016)) – Requires state agencies to integrate scientific data and consider projected climate impacts during planning, design, building, operations, maintenance, and investments in

<sup>2</sup> OPR, Adaptation Planning Guide: <https://resilientca.org/apg/>

<sup>3</sup> AB 1482, California Legislative Information, October 8, 2015: [https://leginfo.ca.gov/faces/billTextClient.xhtml?bill\\_id=201520160AB1482](https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB1482)





### **Bomb Cyclone Aftermath**

California's bomb cyclone destroys a road in Santa Cruz, California in January 2023. Editorial Credit: Shutterstock/lv-olga.

infrastructure. It also created a Climate-Safe Infrastructure Working Group consisting of engineers and architects with relevant experience from multiple state agencies, including Caltrans.<sup>4,5</sup>

As an outcome of AB 1482, the California Climate Adaptation Strategy (Strategy) is the umbrella policy document shaping adaptation planning efforts across state agencies. The latest version of the Strategy, released in 2021, summarizes current and future cross-sector efforts to execute the state's six climate resilience priorities. The priorities integrate transportation with other major sectors to build holistic resilience outcomes. The six climate resilience priorities identified in the latest version of the Strategy include:

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 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

The Strategy further informs planning decisions to meet the intent of AB 1482 by

4 AB 2800, California Legislative Information, September 24, 2016: [https://leginfo.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160AB2800](https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB2800)

5 California Natural Resources Agency, Paying it Forward: The Path Toward Climate Safe Infrastructure in California: [https://resources.ca.gov/CNRALegacyFiles/docs/climate/ab2800/AB2800\\_Climate-SafeInfrastructure\\_FinalWithAppendices.pdf](https://resources.ca.gov/CNRALegacyFiles/docs/climate/ab2800/AB2800_Climate-SafeInfrastructure_FinalWithAppendices.pdf)

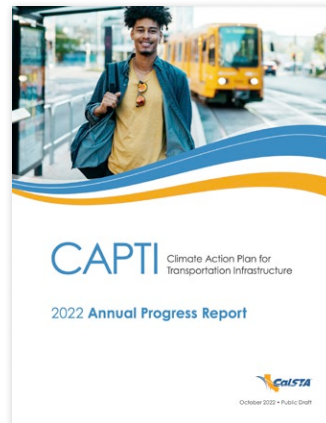
ensuring that state investments consider climate change impacts while promoting the use of both natural systems and structures when developing physical infrastructure to promote resilience.

## 2.1: CALIFORNIA STATE TRANSPORTATION AGENCY & CALTRANS CLIMATE POLICY

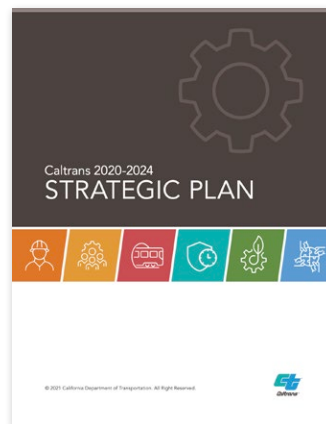
The California State Transportation Agency's (CalSTA) Climate Action Plan for Transportation Infrastructure (CAPTI), Caltrans 2020-2024 Strategic Plan (Strategic Plan), and the California Transportation Plan 2050 (CTP 2050) collectively set the policy framework for Caltrans to advance climate adaptation and respond to the broader whole of government calls to action outlined in the policy summaries above. Below is a summary of these documents and how they inform the implementation of statewide climate adaptation policies in a transportation-specific context:

### CLIMATE ACTION PLAN FOR TRANSPORTATION INFRASTRUCTURE

In response to E.O. N-19-19 and E.O. N-79-20, CalSTA developed CAPTI (adopted in July 2021), laying out the state's recommendations for investing billions of discretionary transportation dollars annually to aggressively combat and adapt to climate change while supporting public health, safety, and equity.<sup>6,7,8</sup> More specifically, CAPTI lays out ten guiding principles, eight strategies, and thirty-one actions for leveraging an annual combined \$5 billion in transportation infrastructure programs to meet climate mitigation and adaptation goals. Strategy five in CAPTI



View the CAPTI 2022 Annual Progress Report



View the Caltrans 2020-2024 Strategic Plan



View the CTP 2050 Implementation Progress Report

6 EO N-19-19: <https://www.gov.ca.gov/wp-content/uploads/2019/09/9.20.19-Climate-EO-N-19-19.pdf>

7 EO N-79-20: <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>

8 CalSTA, Climate Action Plan for Transportation Infrastructure: <https://calsta.ca.gov/-/media/calsta-media/documents/capti-july-2021-a11y.pdf>



is “Support Climate Resilience through Transportation System Improvements and Protections for Natural and Working Lands” with specific actions assigned to Caltrans. Additionally, CalSTA is responsible for releasing an annual progress report on CAPTI implementation.<sup>9</sup> For status on Caltrans’ actions from CAPTI, see [Sections 2.4](#) and [3](#).

### CALTRANS 2020-2024 STRATEGIC PLAN

The Strategic Plan lays out the vision, mission, values, goals, and strategic imperatives that guide the Department’s operations.<sup>10</sup> “Lead Climate Action” is one of six goals set in the Strategic Plan, reemphasizing the importance of prioritizing action in communities that are disproportionately impacted by climate change. Caltrans is leading climate action by standing up programs committed to climate adaptation and mitigation across its functional units. For a full summary of climate adaptation efforts across Caltrans Divisions, see [Section 3.1](#).

### CALIFORNIA TRANSPORTATION PLAN 2050

The CTP 2050 is the state’s long-term vision for California’s multi-modal transportation system and the leading policy document for the development of individual regional transportation plans at the metropolitan planning organization (MPO) level. Again, climate is one of eight key goals discussed in CTP 2050, to “achieve statewide greenhouse gas (GHG) emissions reductions targets and increase resilience to climate change”. CTP 2050, combined with CAPTI and the Strategic Plan, put Caltrans’ various modal plans on the path towards our desired resilience outcomes on a long-range planning horizon, specifically through year 2050. Additionally, CTP 2050 influences



#### Wildfire Along Highway

Vehicles on a rural highway drive past a wildfire in Santa Barbara County, California. *Editorial Credit: Shutterstock/Bill Morson.*

similar policies and actions at the regional level in MPO’s regional transportation plans (RTPs).

Importantly, the resilience planning practices represented in the SCRIPT are incorporated into CTP 2050 and subsequent Implementation Progress Report by including the Department actions summarized in Table 1.<sup>11</sup> Through strategic alignment with the long-term resilience policy goals outlined

9 CalSTA, CAPTI 2022 Draft Annual Progress Report: [https://calsta.ca.gov/-/media/calsta-media/documents/capti-2022-annual-report-single\\_p2\\_a11y.pdf](https://calsta.ca.gov/-/media/calsta-media/documents/capti-2022-annual-report-single_p2_a11y.pdf)

10 Caltrans, Caltrans 2020-2024 Strategic Plan: <https://dot.ca.gov/-/media/dot-media/programs/risk-strategic-management/documents/sp-2020-16p-web-a11y.pdf>

11 Caltrans, 2021 CTP 2050 Implementation Progress Report: <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/state-planning/ctp-2050-implementation-progress-report-2020-2021-a11y.pdf>

**Table 1:** Status of Climate Resilience Actions in the CTP 2050.

Action	Status
Enhancing transportation system resiliency by identifying and prioritizing deployment of resiliency strategies in the state's most vulnerable communities.	Ongoing
Enhancing transportation system resiliency by integrating natural land, resource, and ecosystem protection strategies into resiliency planning.	Ongoing
Update the Caltrans Vulnerability and Risk Assessments.	In Progress
For the SHSMP 2023, include a stronger emphasis on creating a climate resilient transportation system that reduces GHG emissions, while also reducing risk to state transportation assets.	Complete
Develop a Caltrans System Investment Strategy (CSIS) to guide the project nomination and selection process to align with CAPTI (including resilience elements) for State-Sponsored Non-SHOPP PIDs and various state and federal discretionary fund programs.	Complete

in the CTP 2050, as well as the near-term climate resilience investments for asset and system management in the State Highway System Management Plan 2023 (SHSMP, see [Section 3.1](#) for more information), the SCRIPT's effective dates are 2021 through 2050.<sup>12</sup>

## 2.2: KEY CLIMATE ADAPTATION GUIDANCE FOR STATE AGENCIES

### STATEWIDE GUIDANCE

In response to EO B-30-15, OPR released "Planning and Investing for a Resilient California: A Guidebook for State Agencies" (2017), which introduced a four-step process for building resilience and a set of

resilient decision-making principles for state agencies when identifying climate-informed infrastructure investments.<sup>13</sup> These steps include identifying how climate change could affect a project or plan, conducting an analysis of climate risks, making a climate-informed decision, and tracking and monitoring progress. To date, Caltrans has developed innovative applications of these guiding principles across functional units to improve and increase climate resilience considerations in all Department plans and projects.

### SEA LEVEL RISE GUIDANCE

Building on the framework established by the "Planning and Investing for a Resilient California" Guidebook, the California Ocean Protection Council (OPC) developed state guidance on sea level rise for use in planning,

<sup>12</sup> Caltrans, State Highway System Management Plan: <https://dot.ca.gov/programs/asset-management/state-highway-system-plan>

<sup>13</sup> OPR, Planning and Investing for a Resilient California: <https://resilientca.org/projects/aafbf831-a4f0-47a6-8064-c6009a2f2c35/>

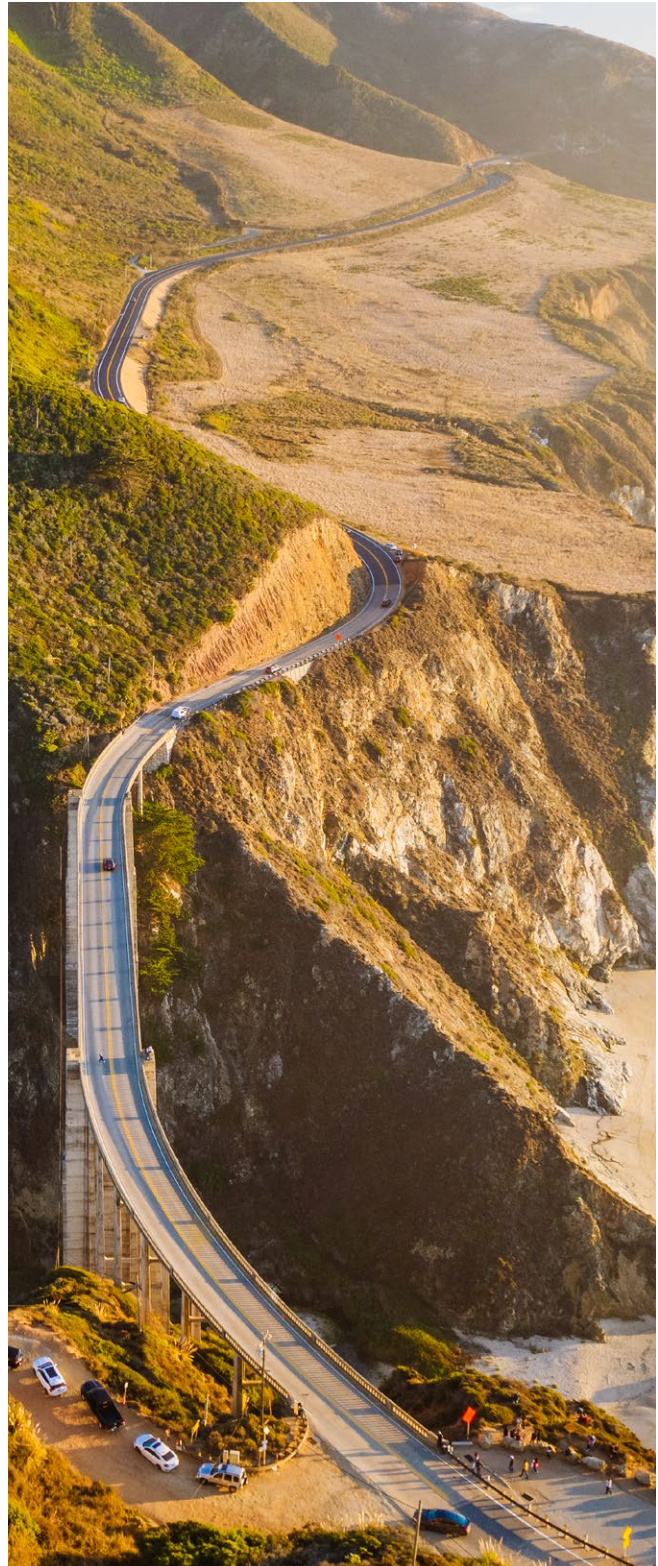


permitting, and project development.<sup>14</sup> The guidance provides a synthesis of the best available science on sea-level rise projections and rates for California; a stepwise approach for state agencies and local governments to evaluate those projections and related hazard information in decision-making; and preferred coastal adaptation approaches.

All Caltrans projects in the Coastal Zone must meet the requirements of the California Coastal Act provisions (Public Resources Code § 30000).<sup>15</sup> In partnership with coastal cities and counties, the CCC plans and regulates the use of land and water in the Coastal Zone. Certain development activities within coastal zones require a coastal permit from either the CCC or the local government.<sup>16</sup> The Coastal Act includes specific policies that address transportation projects in Coastal Zones.

Project development in the Coastal Zone combines engineering, resource protection, and aesthetic considerations to be evaluated by Caltrans and the CCC. The CCC built upon the OPC sea level rise guidance to produce guidance for infrastructure development and permitting – “Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone”.<sup>17</sup> Caltrans must abide by this guidance in developing projects in the Coastal Zone and has its own guidance on incorporating sea level rise (undergoing update in 2023-2024 timeframe).

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- 14 California Ocean Protection Council State of California Sea-Level Rise Guidance: [https://opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20180314/Item3\\_Exhibit-A\\_OPC\\_SLR\\_Guidance-rd3.pdf](https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf)
- 15 California Coastal Commission, Coastal Zone Boundary Maps by County: <https://www.coastal.ca.gov/maps/czb/>
- 16 Laws and Regulations of the Coastal Act: <https://www.coastal.ca.gov/laws/>
- 17 California Coastal Commission, Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone: [https://documents.coastal.ca.gov/assets/slr/SLR%20Guidance\\_Critical%20Infrastructure\\_12.6.2021.pdf](https://documents.coastal.ca.gov/assets/slr/SLR%20Guidance_Critical%20Infrastructure_12.6.2021.pdf)



### Coastal Cruising

Aerial view of Big Creek Bridge in Big Sur, California at sunset.

Caltrans follows all state and federal guidance when developing plans and projects in areas vulnerable to sea level rise.

## 2.3: CLIMATE SCIENCE IN CALIFORNIA – CLIMATE CHANGE ASSESSMENTS

California's climate change assessments are foundational to the state's climate leadership, furthering actionable science to inform proactive climate change policy. California has completed four comprehensive climate change assessments since 2006 that assess climate impacts and risks to inform policy solutions, plans, programs, and guidance. Collectively, these assessments have been central in promoting effective and integrated action to safeguard the state from climate change impacts.

California's climate change assessments downscale the larger U.S. National Climate Assessment (NCA) and global climate projections from the Intergovernmental Panel on Climate Change (IPCC) for state and regional use. These assessments utilize a mix of global climate models to estimate climate change impacts under a range of future emission scenarios. The California Climate Change Assessment also includes a set of state-funded, sector-specific research reports to help answer policy-driven questions.

California's latest Fourth Climate Change Assessment, released in 2018, advanced the state's foundational understanding of how climate change is impacting various sectors now and through the end of the century.<sup>18</sup> California's Fifth Climate Change Assessment is under development through 2026 to reflect scientific and methodological updates.

California's Climate Change Assessment data serves as the baseline for the Caltrans District Climate Vulnerability Assessments and Adaptation Priorities Reports. Caltrans is undertaking a Climate Vulnerability and Risk Assessment update through 2025 to reflect and apply the latest available climate science in a multimodal transportation system context (see [Section 3.2](#) for more information).

## 2.4: EQUITY & CLIMATE JUSTICE IN ADAPTATION & RESILIENCE PLANNING

Equity is woven throughout state and Caltrans policy and is foundational to climate mitigation and adaptation efforts. CAPTI, the Strategic Plan, and CTP 2050 all emphasize the importance of investing and administering state transportation resources in a way that recognizes past, stops current, and prevents future harm from Department actions (for Caltrans' full equity statement, see footnote 19).<sup>19</sup> The Strategic Plan connects climate and equity with the following strategy: "Engage with communities most vulnerable to climate change impacts to inform development and implementation of Climate Action activities". The table below summarizes some examples of equity-centered actions across adaptation policy documents within and beyond the transportation sector.

### CALTRANS TRANSPORTATION EQUITY INDEX

Caltrans is currently developing a Transportation Equity Index (EQI). The EQI is a screening tool that uses transportation-specific and socioeconomic indicators to identify priority populations at the census

18 California's Fourth Climate Change Assessment Statewide Summary Report: [https://www.energy.ca.gov/sites/default/files/2019-11/Statewide\\_Reports-SUM-CCCA4-2018-013\\_Statewide\\_Summary\\_Report\\_ADA.pdf](https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf)

19 Caltrans, Equity Statement: <https://dot.ca.gov/about-caltrans/equity-statement>



**Table 2:** Examples of Equity-Centered Actions in Transportation Climate Policy

Document	Year	Equity-Centered Actions
California Adaptation Strategy	2021	<ul style="list-style-type: none"> <li>■ Support California Native American tribes' development of climate change and health equity resilience planning tools and capacity.</li> <li>■ Support state resources and promote partnerships to expand the capacity of under-resourced communities, including California Native American tribes, to lead and implement climate change mitigation, adaptation, and resilience plans, programs, and projects.</li> <li>■ Prioritize social equity, tribal nations, and disadvantaged communities in climate adaptation planning and strategies.</li> </ul>
CAPTI	2021	<ul style="list-style-type: none"> <li>■ Establish the Transportation Equity Advisory Committee.</li> <li>■ Develop and Utilize Equity Index to Assist in Evaluation or Prioritization of Caltrans Projects.</li> </ul>
Caltrans 2020-2024 Strategic Plan	2021	Prioritize transportation funding in historically harmed and segmented communities. ("Benefits to disadvantaged communities" is a key evaluation criterion for various competitive programs).
CTP 2050	2021	Identify and prioritize deployment of resiliency strategies in the state's most vulnerable communities.

block level. The EQI is a spatial analysis that overlays demographic information with exposure to traffic, crashes, and access to destinations. Caltrans plans to integrate climate vulnerability data into the EQI to be used as yet another tool to help prioritize adaptation investments. Evaluating potential projects with lenses like the EQI will help Caltrans meet the intent of the federal Justice40 Initiative as well as the state's own ambitious equity policies.

As Caltrans has developed its climate adaptation program, the Department and its local and regional partners have utilized

several other tools to identify and prioritize investments, from PROTECT or otherwise, in disadvantaged communities.<sup>20</sup> For a table of the disadvantaged community identification and mapping tools used in PROTECT program implementation, see [Appendix D](#).

<sup>20</sup> Federal definition of disadvantaged communities: "disadvantaged communities are those that are marginalized, underserved, and overburdened by pollution" as defined by EO 14008 (86 FR 7619) and referenced in PROTECT Guidance.

SECTION 3

# CALTRANS CLIMATE ADAPTATION EFFORTS



Caltrans is organized into twelve districts or regional entities, predominantly defined by county boundaries, and a Headquarters that operates in the state's capital, Sacramento. Caltrans Headquarters is responsible for setting Department-wide policies, and issuing guidance, tools, and training to advance climate adaptation for on-the-ground transportation planning and project delivery taking place in the twelve Caltrans Districts around the state.

This section includes an overview of climate adaptation planning and implementation efforts in various Caltrans Headquarters Divisions and provides insight on cross functional roles and responsibilities as climate

resilience has proliferated as a strategic priority for the Department. The combination of these products and services, and how they have influenced Department plans and projects, have collectively helped fulfill strategies and actions outlined in the CAPTI, the Strategic Plan, and CTP 2050, and have enabled Caltrans to move resilience planning forward into project implementation.

Note that while these overviews focus on climate adaptation and resilience activities representing the Department's leadership on climate action, Caltrans' broader goals also include increasing safety, enhancing and connecting the multimodal transportation network, and



advancing equity and livability in all communities. Therefore, Caltrans recognizes the opportunities for all plans and projects to provide co-benefits to help meet state and federal policy goals regarding equity, health, livability, greenhouse gas emissions and vehicle miles travelled reductions, and goods movement (among others).

For example, the Caltrans Asset Management Program includes performance targets for bicycle and pedestrian facilities, and new guidance for Complete Streets components is in development. Additionally, Caltrans is working to advance equity and livability in all communities by developing policy, processes, and guidance for early and continual community input beginning in pre-planning and continuing through project development to ensure that transportation facilities support vibrant livable places, with a focus on addressing the needs and concerns of underserved communities.

### 3.1: CLIMATE ADAPTATION EFFORTS BY DIVISION

#### DIVISION OF TRANSPORTATION PLANNING

Caltrans' Division of Transportation Planning (DOTP) articulates a long-term vision for California's transportation system and implements statewide transportation policy through partnerships with state, regional, and local agencies. The Division provides planning products (including the CTP 2050), services, and information to support and guide multi-modal transportation investment decisions. DOTP is the Department lead for the Adaptation Planning Program,

as supported by the various policies and initiatives described above. DOTP has created guidance for every phase of the pre-project planning process to ensure the consideration of climate risk and integration of adaptation measures early. To date, DOTP has laid a key technical foundation to support adaptation planning through the development of the following products:

- Caltrans Statewide Climate Change Vulnerability Assessments and Adaptation Priorities Reports (see [Section 3.2](#) and [Appendix A](#) and [B](#))
- Caltrans Climate Change Adaptation Strategy Report (see [Appendix C](#))
- Caltrans Corridor Planning Guidance: Climate Change Emphasis Area Guide<sup>21</sup>
- Transportation Planning Scoping Information Sheets Template Guidance Update for Climate Change
- Project Initiation Document Template and Guidance Update for Climate Change
- Climate Change Communication Guide<sup>22</sup>

Through these and other guidance, technical resources, tools, and trainings, DOTP supports Caltrans climate planners' growing capacity and expertise for implementing climate adaptation best practices. To this end, DOTP is working to standardize the process of identifying and prioritizing climate adaptation location-based needs and potential projects for future investment.

#### DIVISION OF ENVIRONMENTAL ANALYSIS

The Caltrans Division of Environmental Analysis (DEA) leads the Department's

<sup>21</sup> Caltrans, Climate Change Emphasis Area Guidance for Corridor Planning: <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/cc-ea-guide-for-corridor-planning-march2022-a11y.pdf>

<sup>22</sup> Caltrans, Climate Change Communication Guide: <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/caltransclimatecommunicationguidepdf-a11y.pdf>

compliance with state and federal environmental laws and permitting requirements, typically outlined in various levels of project-level National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) documentation. DEA accomplishes this by encouraging the public to participate in the environmental evaluation process; determining the environmental consequences of Department activities; proposing prudent, feasible and cost-effective strategies and alternatives to avoid or minimize adverse impacts of the Department's activities; and, ensuring the mitigation selected is appropriate.

Caltrans project-level environmental review includes both analysis of a project's impact on long-term climate change (i.e., operational greenhouse gas emissions), as well as risks associated with physical climate change impacts on the functions of the system or assets themselves (i.e., flooding roadways associated with extreme precipitation events). Project adaptation analysis includes consideration of how future changes in sea level rise, precipitation and flooding, wildfire, and temperature could affect the project, and what project features, minimization or mitigation measures, and standard practices and specifications will protect the asset or reduce the long-term risk to the finished project. DEA assists Caltrans Districts in their adaptation analyses by providing an annotated outline for NEPA/CEQA documentation, with instructions and references to the latest available climate science, tools, and guidance to fit project-specific needs.

In partnership with California Coastal Commission staff and coordination with sister Caltrans Divisions (including DOTP, Asset Management, Design, and others), DEA has also established a Coastal Program that provides resources, trainings, and support for Caltrans staff working on projects in the Coastal Zone. With respect to climate change and sea level rise, the Coastal Program supports standard consideration of climate hazards including sea level rise – as well as adaptation strategies – in conformance with federal, state, and local regulations throughout all phases of planning and project delivery. The DEA Coastal Program provides an orientation on sea level rise which can be found here: Sea Level Rise and the Transportation System in the Coastal Zone.<sup>23</sup>

Development in California's Coastal Zone typically requires a Coastal Development Permit (CDP) issued by the CCC or a local agency with a Coastal Commission-certified Local Coastal Program (LCP). The CCC and local agencies with certified LCPs evaluate how sea level rise was analyzed throughout the Caltrans project development process to meet CDP requirements. The coastal review process has its own environmental review that is parallel to, but independent of, NEPA and CEQA environmental review requirements. CDPs are based on policies requiring protection of life, property, and coastal resources and are complimented by other statutes such as AB 2800, SB 12030(e), and SB 743 directing the transportation system to mitigate, minimize, and adapt to climate change.<sup>24,25</sup>

## DIVISION OF DESIGN

The Division of Design provides policies, procedures, guidance, technical assistance,

23 Caltrans, Sea Level Rise and the Transportation System in the Coastal Zone: <https://dot.ca.gov/programs/environmental-analysis/coastal-program/coastal-act-policy-resource-information/coastal-hazards/sea-level-rise>

24 Senate Bill 1, see section (e): [https://leginfo.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180SB1](https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1)

25 Senate Bill 743: [https://leginfo.ca.gov/faces/billNavClient.xhtml?bill\\_id=201320140SB743](https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743)

training, and equipment needed to develop and maintain a safe, sustainable, integrated, and efficient transportation system. The Division of Design has and will continue to develop design guidance related to climate change following Federal Highway Administration (FHWA) and other federal and state agency policies. Much of the guidance developed to date has focused on sea level rise and precipitation.

The Office of Hydraulics and Stormwater Design (OHSD) has or is currently developing the following guidance related to climate change:

- The Design Manual for Hybrid Coastal Protection Strategies which includes analysis for climate change, sea level rise, coastal protection structures, nature-based and hybrid strategies, design examples and environmental and permitting considerations.<sup>26</sup>
- Caltrans is currently developing rainfall intensity-duration-frequency (IDF) curves that include changes in precipitation due to climate change. This data will provide precipitation intensity factors under different emission scenarios which can be applied to National Oceanic and Atmospheric (NOAA) Atlas 14 IDF values to compute future precipitation data for design.
- Caltrans OHSD also updates Chapters 800-890 in the Highway Design Manual (HDM), which follows various FHWA and California State guidance to inform:
  - Policies and best practices in drainage (and related infrastructure) design features that consider long term changes in precipitation, wildfire and subsequent soil erosion, and ocean tides.

- Policies and best practices for engineers working in the coastal environment by discussing design high water, design wave height, shore protection (rock slope protection), and sea level rise. Also included is step by step guidance for selecting a value for sea level rise based on OPC 2018 Guidance by evaluating the project lifespan, looking at emission scenarios, and risk aversions.
- Policies and best practices in storm water management including management strategies and design considerations.

Additionally, the discipline of landscape architecture is founded on principles and methodologies that help address climate change. Caltrans landscape architects help deliver projects that minimize the impact of the transportation system on the natural and built environment through installation of green infrastructure. “Green infrastructure” describes the use of native and augmented soils, and climate-appropriate trees and plants. Green infrastructure enhances ecological health, sequesters carbon, improves air and water quality, reduces heat island effects, minimizes erosion, and supports pollinators.

## DIVISION OF MAINTENANCE

Caltrans' Division of Maintenance protects public safety and preserves California's highways by maintaining and repairing the system. The Maintenance team also responds to emergencies, including natural hazards and extreme weather events, so travelers and goods reach their destination safely and efficiently. Maintenance includes a vegetation and wildfire management function that is co-leading climate action in the Department by scaling up the

26 Caltrans, Design Manual for Hybrid Coastal Protection Strategies: [https://design.onramp.dot.ca.gov/downloads/design/files/Design%20Manual%20for%20Hybrid%20Coastal%20Protection%20Strategies\\_Mar2022-a11y.pdf](https://design.onramp.dot.ca.gov/downloads/design/files/Design%20Manual%20for%20Hybrid%20Coastal%20Protection%20Strategies_Mar2022-a11y.pdf)



Vegetation Management Program for wildfire adaptation. Maintenance coordinates with local fire officials and environmental practitioners to make data-driven decisions on contract scopes to reduce wildfire risk. Fuel reduction is the extensive thinning of vegetation (grasses, shrubs, and trees) within the right of way. Fuel reduction is prescriptive (custom to the highway segment) and not a routine maintenance activity. Maintenance aims to hit a completion of 260 miles of fuel reduction in high priority corridors every two years, as well as completing 50,000 acres of vegetation management each year.

Additionally, Maintenance represents Caltrans on the Governor's "California Wildfire and Forest Resilience Task Force." Caltrans has a key role in the 2021-2026 California Wildfire and Forest Resilience Action Plan and has been engaged in advancing specific actions within Task Force Goal 2: Fire Adapted Communities and Fire-Safe Roadways. Fire safe roadways are generally described as defensible space through fuel reduction and expanded vegetation management.

## **DIVISION OF ASSET MANAGEMENT**

Caltrans' Division of Asset Management ensures the Department and its partners continue to make the best use of resources by carefully balancing multiple competing needs for infrastructure preservation and improvement. In addition to the condition of physical assets, Asset Management is increasing focus on low or zero emission transportation options to reduce emissions and improve transportation access to people of all means. As the modal options expand in California, the breadth of the asset management plan will need to expand to reflect the new system components.

Asset Management coordinates with the Divisions of Maintenance, Design, and Planning in leading the Department's

integration of climate adaptation and resilience work in the State Highway Operation and Protection (SHOPP) Program through the SHS Management Plan (SHSMP). The SHOPP is the State Highway System's (SHS) "fix-it-first" program that funds the repair and preservation, emergency repairs, safety improvements, and some highway operational improvements on the SHS. The SHSMP integrates the maintenance, rehabilitation, and operation of the SHS into a single plan and enables Caltrans to meet state and federal asset management requirements, while aligning transportation investments with priority climate, health, and social equity goals. The plan maintains its focus on a "fix-it-first" approach to meet defined condition targets, while placing an even stronger emphasis on creating a climate resilient transportation system that also reduces greenhouse gas emissions, thereby reducing risk to state transportation assets in alignment with CAPTI.

The SHSMP addresses the primary climate impacts posing risks to Caltrans' infrastructure: changes in temperature, changes in precipitation, wildfire risk, and sea level rise. These impacts affect the state's transportation system differently and require a variety of strategies to increase resilience to identified risks. Most recently, the 2023 SHSMP proposes a \$1.7 billion dollar investment in sea level rise and cliff retreat projects.

## **3.2: CALTRANS STATEWIDE VULNERABILITY & RISK ASSESSMENTS & ADAPTATION PRIORITIES REPORTS**

Over the last decade, Caltrans has made great strides in the Department's goals of advancing climate action and integrating climate equity considerations into all planning processes and guidance.



### Flooded Roads & Farmland

Flooding beside the Russian River in Healdsburg, California in February 2019. *Editorial Credit: Shutterstock/Gibson Outdoor Photo.*

Foundational to this is the Department's assessment of the impacts of climate change on the state's transportation system. The assessment of climate vulnerability and associated risk has allowed the Department to advance climate adaptation planning by providing the bedrock data needed to assess planning priorities and project needs.

Caltrans conducted the **Caltrans Climate Change Vulnerability Assessments** for the entire State Highway System (SHS) in 2019.<sup>27</sup> In this study, Caltrans coordinated with various state and federal agencies and academic institutions to obtain the best available climate data for California, which was used to analyze the potential climate impacts to the SHS. Discussions with professionals from various engineering disciplines helped

identify how changing climate hazards may affect highways, including their design, under various emissions scenarios through 2085. The Vulnerability Assessments furthered Caltrans's understanding of how climate change may affect the highway and identified a subset of SHS assets on which to focus future efforts. The Vulnerability Assessments produced location-specific data on the following climate stressors:

- Sea level rise
- Storm surge
- Cliff retreat
- Wildfire
- Precipitation
- Temperature

<sup>27</sup> Caltrans, 2019 Climate Change Vulnerability Assessments: <https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/air-quality-and-climate-change/2019-climate-change-vulnerability-assessments>

The Vulnerability Assessments found that statewide by the end of the century, 160 miles of the SHS is predicted to be inundated by sea-level rise. Almost 8,000 miles of the SHS is predicted to be at risk of wildfire at some point throughout the century, and California was found to be at risk to all six climate stressors studied.

Subsequently, Caltrans completed **Adaptation Priorities Reports (APRs)** in 2020 that build on the results of the Vulnerability Assessments to prioritize potentially exposed assets in each Caltrans District by conducting a more robust risk assessment including other risk metrics on top of climate vulnerability.<sup>28</sup> The prioritization methodology in these reports considers, amongst other things, the timing of the climate impacts, their severity and span, the condition of each asset (a measure of the sensitivity of the asset to damage), the number of system users affected, and the level of network redundancy in the area. Prioritization scores are generated for each potentially exposed asset based on these factors and used to rank them. Caltrans also incorporated local knowledge, working with Caltrans Districts to ensure prioritizations were adjusted to account for local data or maintenance issues that were not captured in the analysis. The APRs found that statewide there are thousands of high priority assets, including roadways, bridges, and culverts, that are at risk to climate change using the methodology explained above. The APR analysis and findings serve as the foundation for identifying high priority adaptation project needs on the SHS.

The Vulnerability Assessments and Adaptation Priorities Reports serve as the data-driven foundation for adaptation

planning at Caltrans, setting direction for priority investments. These two efforts combined meet the key provisions under 23 USC 176(e)(2)(A-C) for Resilience Improvement Plan Contents in the PROTECT Program statutes, including the required temporal scale of analysis, alignment with the State Hazard Mitigation Plan, and the need for risk-based assessments of vulnerabilities of transportation assets and systems to current and future weather events and natural disasters.

### **UPDATE TO CALTRANS CLIMATE CHANGE VULNERABILITY AND RISK ASSESSMENTS**

Caltrans launched an update to the Vulnerability Assessments in June 2023 that will also include application of risk metrics, similar to the Adaptation Priority Reports. This effort is aligned with the release of new climate data from the IPCC, the National Climate Assessment, and the State of California's Fifth Climate Change Assessment, and should conclude in 2025. Furthermore, the updated Caltrans Climate Change Vulnerability and Risk Assessments reflect updated strategic priorities for Caltrans by incorporating multimodal considerations for transit, rail, and active transportation, as well as a focus on equity and integration of Caltrans' Transportation Equity Index into the analysis. The results of the updated analysis will contribute to future prioritization of adaptation projects and identification of funding needs, advancing and accelerating Caltrans' adaptation planning and implementation of climate-resilient transportation projects statewide.

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28 Caltrans, 2020 Adaptation Priorities Reports: <https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/air-quality-and-climate-change/2020-adaptation-priorities-reports>



SECTION 4

# HOW THE PROTECT PROGRAM IS ADMINISTERED IN CALIFORNIA



SB 198 (Government Code § 14560) directs the use of PROTECT Program funds to ensure alignment with existing state climate adaptation policy and guidance, including additional requirements around consideration of climate risk and alignment with California's Climate Adaptation Strategy.<sup>29</sup> Importantly, SB 198 focuses the use of PROTECT funds only on projects that address physical climate risks, versus all natural hazards.

## 4.1: SENATE BILL 198

SB 198 established two programs to allocate the state's implementation of PROTECT formula funds: the State Transportation Infrastructure Climate Adaptation Program (STCAP) and the Local Transportation Climate Adaptation Program (LTCAP). The intent of SB 198 is to provide funding by leveraging existing state programs and the new federal PROTECT program for both the

<sup>29</sup> SB-198 Transportation (2021-2022): [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=202120220SB198](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB198)

identification and assessment of climate vulnerabilities and associated risks, and the planning, development, and implementation of transportation projects that adapt to those risks and support holistic and comprehensive resilience outcomes.

## 4.2: STATE TRANSPORTATION INFRASTRUCTURE CLIMATE ADAPTATION PROGRAM

The STCAP (Government Code § Section 14563) is administered by Caltrans for the purposes of utilizing 60% of PROTECT formula funds for planning, developing, and implementing state system projects that assist in adapting transportation infrastructure to climate change. SB 198 requires projects funded by the STCAP to consider all of the following:

- The 2020 and 2021 APR or any subsequent updates.
- The degree of risk for recurring damage or asset failure due to climate threats.
- The benefits of the project to preserving or enhancing regional or statewide mobility, economy, goods movement, and safety, and other benefits associated with protecting the asset.
- The benefits of the project to preserving or protecting adjacent communities, the environment, and other critical infrastructure.
- The degree to which the project incorporates environmental equity, protects vulnerable and under-resourced communities, and provides benefits to underserved communities, consistent with the California State Adaptation Strategy.
- As secondary factors, co-benefits including reductions in emissions of greenhouse gases and vehicle miles traveled.

Caltrans implemented the STCAP in



### Flooded Roads

Flooded road sign in Pescadero, San Mateo County, California.

alignment with both SB 198 and PROTECT requirements listed above, including the Justice40 requirement. Caltrans is increasing the resilience of projects in the SHOPP Program by funding the addition of climate resilience improvements to 42 SHOPP projects throughout the state. Improvements include, but are not limited to:

- ~220 miles of roadway materials made more resilient to wildfire
- ~65 upsized culverts to accommodate for increased peak flows
- ~35 shade structures added as complete streets features to protect users from extreme heat in disadvantaged and low-income communities
- Four projects address sea level rise and cliff retreat on Highway 1

STCAP projects are listed in the Project Priority List in [Appendix F](#). [Note: to be added in final draft]. Projects were initially screened

using the APR data as a starting point. All projects advancing are vulnerable to climate impacts and include prioritized assets in the APRs or through a robust screening using other available climate change data such as Cal-Adapt.<sup>30</sup> Additional considerations in selecting projects for funding include:

- Consistency with state and local permitting agency requirements
- Alignment with State, local, and regional goals
- Alignment of proposed scope changes with existing project documentation
- Alignment of project schedule with funding schedule for the federal PROTECT formula program

Additionally, Caltrans is also allocating 2% of the PROTECT formula funds to advancing adaptation planning needs. These planning “set-aside” funds help fill funding gaps for various early adaptation planning studies that are essential for initiating the long-term development of projects that will help the state meet its target resilience outcomes.

Importantly, the planning studies funded with the set-aside allow Caltrans Districts to further investigate vulnerabilities of prioritized assets identified in their respective APRs and identify potential solutions, including nature-based solutions. These projects are also listed in [Appendix F](#). [Note: to be added in final draft].

### 4.3: LOCAL TRANSPORTATION CLIMATE ADAPTATION PROGRAM

The LTCAP (Government Code § Section 14564) is administered by the CTC for the purposes of allocating 40% of PROTECT

formula funds on a competitive basis for the development and implementation of projects that adapt local transportation infrastructure to climate change and natural hazards. The Legislature also allocated an additional one-time \$148 million dollars from state funding appropriation into the program to augment the PROTECT funds in Fiscal Year 2022/2023. In addition to considering the same components outlined for the STCAP, SB 198 requires projects funded by the LTCAP to meet the following criteria (for the full list of provisions, please reference the appropriate section of SB 198, see footnote 29):

- The project increases climate resiliency and protects at-risk transportation infrastructure using California's climate projections, as specified in Planning and Investing for a Resilient California: A Guidebook for State Agencies.
- The project is consistent with state, regional, or local climate adaptation reports, plans, and the Adaptation Planning Guide, including meeting the climate resiliency goals of the region where the project is located.
- The local agency conducts outreach to under-resourced and vulnerable communities related to the proposed project, consistent with the California State Adaptation Strategy.
- The project incorporates environmental equity, protects vulnerable and under-resourced communities, and provides meaningful benefits to underserved communities, consistent with the California State Adaptation Strategy.

The CTC's 2023 LTCAP Guidelines harmonize project eligibility (including natural infrastructure and system resilience elements) and scoring criteria to the goals of the PROTECT program

30 California Strategic Growth Council, et. al., Cal-Adapt: <https://cal-adapt.org/>



and existing state adaptation policy. The CTC reviewed the Cycle One project nominations using the evaluation criteria defined in the 2023 LTCAP Guidelines.

Staff recommendations for Cycle One were released in fall 2023, and the program of projects were adopted in fall/winter 2023. LTCAP awarded projects, including all MPO and Rural Transportation Planning Agency awarded projects, are included in Project Priority List in [Appendix F](#). [Note: to be added in final draft].

## 4.4: LOOKING FORWARD, THE FUTURE OF RESILIENCE IMPROVEMENT PLANNING

State transportation leadership is committed to improving the resilience of the multimodal transportation system to climate change as an ongoing strategic goal. As illustrated in

this first edition of the SCRIPT, California has made significant progress in implementing effective climate adaptation policies and practices for state and federal transportation investments. The planning processes outlined above have positioned Caltrans and its partners to maximize the benefits of various dedicated state and federal climate resilience investments, including PROTECT. However, billions of dollars in identified climate adaptation needs remain.<sup>31</sup> The continuity of PROTECT in future federal infrastructure bills has the potential to solidify the role of the Resilience Improvement Plan as a central piece of the statewide, regional, and local adaptation planning process. As Caltrans develops District-specific Adaptation Planning Investment Strategies, standardizing the process of project needs identification and funding options, future PROTECT investments and similar funding programs will be essential to meeting the state's long term resilience goals.



### Wildfire Aftermath

Destroyed wooden sign on road damaged by wildfire along Highway 33 in Ojai, California.



### Landslide Detour

Storm related landslide blocking Santa Susana Pass Road in Los Angeles, California.

31 Metropolitan Transportation Commission/Association of Bay Area Governments and the San Francisco Bay Conservation and Development Commission, Sea Level Rise Adaptation Funding and Investment Framework Final Report: [https://mtc.ca.gov/sites/default/files/documents/2023-07/SLR\\_Framework\\_Final\\_Report.pdf](https://mtc.ca.gov/sites/default/files/documents/2023-07/SLR_Framework_Final_Report.pdf)



# APPENDIX

## A. STATEWIDE VULNERABILITY ASSESSMENT SUMMARY REPORT & DISTRICT VULNERABILITY ASSESSMENTS

- [Vulnerability Assessment Statewide Summary Report \(PDF\)](#)
- [2019 Climate Change Vulnerability Assessments](#)

## B. DISTRICT ADAPTATION PRIORITIES REPORTS

- [2020 Adaptation Priorities Reports](#)

## C. CALTRANS CLIMATE CHANGE ADAPTATION STRATEGY REPORT

- [Caltrans Climate Change Adaptation Strategy Report \(PDF\)](#)

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### **The Bay Bridge**

The Bay Bridge in San Francisco, California. Editorial Credit: Shutterstock/kropic1.

## D. LIST OF EQUITY TOOLS FOR ADAPTATION PLANNING AND PROGRAM IMPLEMENTATION

**Table 3:** List of Equity Tools for Adaptation Planning and Program Implementation

Title	Year	Owner	Description
<a href="#">Climate and Economic Justice Screening Tool</a>	2022	Council on Environmental Quality	Mapping tool that identifies disadvantaged and partially disadvantaged communities by census tract, including tribal nations, as defined by the Federal Justice40 Initiative.
<a href="#">CalEnviroScreen 4.0</a>	2022	California Office of Environmental Health Hazard Assessment	Mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects.
<a href="#">Healthy Places Index 3.0</a>	2022	Public Health Alliance of Southern California	Open and accessible data and policy platform created to advance health equity for various governmental and non-governmental users.

## E. CONSISTENCY WITH THE STATE HAZARD MITIGATION PLAN

The State Hazard Mitigation Plan (SHMP) seeks to meet Federal Emergency Management Agency (FEMA) expectations for all types of hazards as directed by section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5165).<sup>32</sup> Importantly, the SHMP considers all hazards, natural or otherwise, including hazards not related to climate change (for a full list please reference the SHMP).

The SHMP describes climate change adaptation as measures taken to address the projected impacts on all aspects of community function that may result from climate change, including flood, wildfire, drought, and severe storms.<sup>33</sup> Hazard mitigation is one component of climate change adaptation, and the SHMP provides a framework for integration with other state

32 Governor's Office of Emergency Services, Mitigation Planning Webpage: <https://www.caloes.ca.gov/office-of-the-director/operations/recovery-directorate/hazard-mitigation/state-hazard-mitigation-planning/>

33 California Emergency Management Agency & California Natural Resources Agency, California Adaptation Planning Guide: [https://resources.ca.gov/CNRALegacyFiles/docs/climate/01APG\\_Planning\\_for\\_Adaptive\\_Communities.pdf](https://resources.ca.gov/CNRALegacyFiles/docs/climate/01APG_Planning_for_Adaptive_Communities.pdf)



actions. At the regional level, the 2023 update to the Regional Transportation Plan Guidelines for MPOs encourages MPOs to coordinate with cities and counties responsible for local hazard mitigation planning to identify synergistic investments for improving the performance of evacuation routes during emergency events.

The SHMP highlights much, but not all, of the climate mitigation and adaptation work the state has accomplished in the last five years, while not duplicating the efforts of the California Climate Adaptation Strategy. With the passage of Senate Bill SB 246 (2015) and SB 379 (2015), and regular updates of the California Climate Adaptation Strategy, hazard mitigation is explicitly integrated into state agency climate change adaptation efforts. This is reflected in Caltrans' actions that are included in both the SHMP and the California Climate Adaptation Strategy.

The latest version of the California SHMP was released in 2023 by CalOES, representing the state's primary hazard mitigation guidance document. The SHMP contains extensive input from members of the State Hazard Mitigation Team and stakeholders. Caltrans is identified as a key infrastructure sector coordinating partner that provides feedback and information on mitigation progress in the Department's activities. Caltrans' adaptation and resilience efforts complement and are consistent with the 2023 SHMP, with Caltrans actions reflected in the SHMP itself.

Below is a table summarizing the current status of Caltrans actions that address goals and objectives included in the SHMP.

**Table 4:** Multi-Agency Mitigation Action Matrix from the 2023 SHMP

Program Area	Mitigation Action	Progress Reported in 2023 SHMP	2018 SHMP Goals & Objectives Addressed
<b>State Agency Adaptation Planning (Action 2018-051)</b>	Assess vulnerability of state assets to sea-level rise and develop adaptation strategies to address potential impacts.	Caltrans completed Climate Change Vulnerability Assessments for the entire State Highway System in 2019, and subsequent Adaptation Priority Reports in 2020.	<ul style="list-style-type: none"> <li>• Goal 1, Objectives 1, 4, 5</li> <li>• Goal 2, Objectives 1, 3, 4, 5, 6</li> <li>• Goal 3, Objective 3</li> <li>• Goal 4, Objectives 2, 3</li> </ul>
<b>Tree Mortality Assessment (Action 2018-095)</b>	Reduce the risk to the public and infrastructure by identifying and removing dead and dying trees.	Task Force Action Plan identified ten high hazard zones where tree mortality coincides with critical infrastructure. Caltrans worked with landowners to perform tree removal work.	<ul style="list-style-type: none"> <li>• Goal 2, Objectives 2, 4, 5</li> <li>• Goal 3, Objectives 2, 3, 4</li> <li>• Goal 4, Objectives 1, 2, 3, 4, 5</li> </ul>

## F. PROTECT PROJECT PRIORITY LIST

### **STCAP PROJECTS**

### **STCAP 2% PLANNING SET-ASIDE PROJECTS**

### **LTCAP PROJECTS**

### **FHWA DISCRETIONARY GRANTS PROJECTS**



STATE CLIMATE RESILIENCE IMPROVEMENT PLAN FOR TRANSPORTATION  
CALIFORNIA DEPARTMENT OF TRANSPORTATION

**SEPTEMBER 2023**

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