U.S. Department of Transportation
Federal Highway Administration

California Division

650 Capitol Mall, Suite 4-100
Sacramento, CA 95814
(916) 498-5001
(916) 498-5008 (FAX)

January 10, 2024

In Reply, Refer To:
HDA-CA

ELECTRONIC CORRESPONDENCE ONLY

Tony Tavares, Director
California Department of Transportation
P.O. Box 942873, MS-49
Sacramento, CA 94273-0001

Attention: Lucas Sanchez, Climate Change Specialist
Office of Air Quality and Climate Change
Division of Transportation Planning

Subject: State Climate Resilience Improvement Plan for Transportation (SCRIPT)

Dear Mr. Tavares:

The Federal Highway Administration (FHWA) has completed its review of the California Department of Transportation (Caltrans) Resiliency Improvement Plan, formally known as the State Climate Resilience Improvement Plan for Transportation (SCRIPT), submitted by your letter dated December 18, 2023.

Based on the review of the SCRIPT, The FHWA finds that the Caltrans Resiliency Plan complies with the requirements of 23 U.S.C. 176(e). The SCRIPT is incorporated into the California Transportation Plan (C.T.P.) 2050 by addendum, as reflected on the C.T.P. 2050 Webpage and related C.T.P. Implementation Portal.

For the authorization of SCRIPT projects requesting Non-Federal share reductions, please ensure that the project complies with § 11405; 23 U.S.C. 176(e)(1)(B). In addition to regulatory compliance, the request for project approval through the Fiscal Management Information System (FMIS) should include in the FMIS "notes" field a note identifying the projects proposed for reduction, the percentage (3% or 7%), and a reference to the approved and incorporated C.T.P. with the date of approval.

If you have any questions about this approval, please contact Jasmine Amanin, Community Planner, at jasmine.amanin@dot.gov.

Sincerely,

ANTONIO DESHAWN JOHNSON

Digitally signed by ANTONIO DESHAWN JOHNSON
Date: 2024.01.10 14:32:07 -08'00'

Antonio Johnson
Director of Planning, Environment,
& Right of Way
California Division
Federal Highway Administration

TO:

Lucas Sanchez, Caltrans
Lucas.Sanchez@dot.ca.gov

CC: (via email)

Marlon Flournoy, Caltrans
Hannah Walter, Caltrans
Keri Robinson, Caltrans
Rodney Whitfield, FHWA
Chun Guo, FHWA

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California Department of Transportation

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December 18, 2023

Ms. Elissa Konove
Deputy Division Administrator
Federal Highway Administration
650 Capitol Mall, Ste. 4-100
Sacramento, California 95814-4708

Attention: Antonio Johnson, Director, Planning, Environment, & Right-of-Way

Dear Ms. Elissa Konove:

On behalf of the California Department of Transportation (Caltrans), I am pleased to present the State Climate Resilience Improvement Plan for Transportation (SCRIPT). The SCRIPT is the Caltrans version of the Resilience Improvement Plan, described in the Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) program statutes (23 USC 176 (e)). The SCRIPT summarizes 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 to improve the resilience of the multimodal transportation system to climate change impacts, from the onset of Infrastructure Investment & Jobs Act (IIJA) through the aligned effective date of the California Transportation Plan (CTP) 2050 (2021-2050). The SCRIPT is incorporated into the CTP 2050 by addendum, as reflected on the CTP 2050 Webpage and related CTP Implementation Portal. The SCRIPT reflects robust public input gathered from September 28, 2023, through October 30, 2023.

Caltrans requests that the FHWA review the SCRIPT for completeness and satisfaction of all applicable requirements under 23 USC 176 (e) and provide written confirmation of approval.

If you have any questions regarding the SCRIPT, please contact Lucas Sanchez at (916) 698-5690 or lucas.sanchez@dot.ca.gov.

Sincerely,

TONY TAVARES
Director

Enclosure of SCRIPT (PDF)

c: Ann Fox, Acting Deputy Director, Planning & Modal Programs, Caltrans
Marlon Flournoy, Division Chief, Division of Transportation Planning, Caltrans

U.S. Department of Transportation
Federal Highway Administration

California Division

650 Capitol Mall, Suite 4-100
Sacramento, CA 95814
(916) 498-5001
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June 25, 2024

In Reply, Refer To:
HDA-CA

ELECTRONIC CORRESPONDENCE ONLY

Marlon Flournoy, Division Chief
Division of Transportation Planning
California Department of Transportation
P.O. Box 942873, MS-49
Sacramento, CA 94273-0001

ATTENTION: Lucas Sanchez, Climate Change Specialist
Office of Air Quality and Climate Change
Division of Transportation Planning

SUBJECT: State Climate Resilience Improvement Plan for Transportation (SCRIPT) Amendment # 1

Dear Mr. Flournoy and Mr. Sanchez,

The Federal Highway Administration (FHWA) has completed its review of the California Department of Transportation (Caltrans) Resiliency Improvement Plan, formally known as the State Climate Resilience Improvement Plan for Transportation (SCRIPT), Amendment #1 submitted by your letter dated May 28, 2024.

Based on the review of the SCRIPT, the FHWA finds that the Caltrans Resiliency Plan (SCRIPT) Amendment #1 complies with the requirements of 23 U.S.C. 176(e). The SCRIPT is incorporated into the California Transportation Plan (C.T.P.) 2050 by addendum, as reflected on the C.T.P. 2050 Webpage and related C.T.P. Implementation Portal.

For the authorization of SCRIPT projects requesting Non-Federal share reductions, please ensure that the project complies with § 11405; 23 U.S.C. 176(e)(1)(B). In addition to regulatory compliance, the request for project approval through the Fiscal Management Information System (FMIS) should include in the FMIS "notes" field a note identifying the projects proposed for reduction, the percentage (3% or 7%), and a reference to the approved and incorporated C.T.P. with the date of approval.

If you have any questions referenced this approval, please contact Jasmine Amanin, Community Planner, at (916) 498-5038 or Jasmine.Amanin@dot.gov.

Sincerely,

ANTONIO DESHAWN JOHNSON

Digitally signed by ANTONIO DESHAWN JOHNSON
Date: 2024.06.25 15:19:04 -07'00'

Antonio Johnson
Director, Planning, Environment & Right of Way
Federal Highway Administration

TO (via email):

Marlon Flournoy, Caltrans
Lucas Sanchez, Caltrans

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Hannah Walter, Caltrans
Keri Robinson, Caltrans
Emma Maggioncalda, Caltrans
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Rodney Whitfield, FHWA
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5/28/2024

Mr. Antonio Johnson
Director, Planning, Environment, & Right-of-Way
Federal Highway Administration
650 Capitol Mall, Ste. 4-100
Sacramento, California 95814-4708

Attention: Jasmine Amanin, Community Planner, Planning, Environment, & Right-of-Way

Dear Mr. Antonio Johnson:

On behalf of the California Department of Transportation (Caltrans), I am pleased to present Amendment 1 to the State Climate Resilience Improvement Plan for Transportation (SCRIPT) unconstrained Project Priority List (PPL). The SCRIPT PPL Amendment 1 includes minor updates to projects previously included in the PPL as submitted on 12/18/2023, and approved on 1/10/2024, and the addition of new project nominations pursuing near-term and upcoming PROTECT funding opportunities. The projects included in the attachment reflect high priority resilience needs for both Caltrans and regional and local partners. The projects were screened for PROTECT program eligibility and fit, as well as alignment with related federal and state resilience policy and goals, as discussed in detail in SCRIPT Section 2. As a reminder, the SCRIPT is incorporated into the state's long range statewide transportation plan under section 135, the California Transportation Plan (CTP) 2050, by addendum, as reflected on the CTP 2050 Webpage and related CTP Implementation Portal, satisfying 23 USC 176 (e)(1)(B)(ii)(I).

Caltrans requests that the FHWA review the SCRIPT PPL Amendment 1 for satisfaction of all applicable requirements under 23 USC 176 (e) and provide written confirmation of approval.

If you have any questions regarding the SCRIPT PPL Amendment 1, please contact Lucas Sanchez at (916) 698-5690 or lucas.sanchez@dot.ca.gov.

Sincerely,

MARLON FLOURNOY
Division Chief, Division of Transportation Planning

Attachment of SCRIPT PPL Amendment 1

c: Ann Fox, Acting Deputy Director, Planning & Modal Programs, Caltrans

State Climate Resilience Improvement Plan

FOR TRANSPORTATION

JULY 2024

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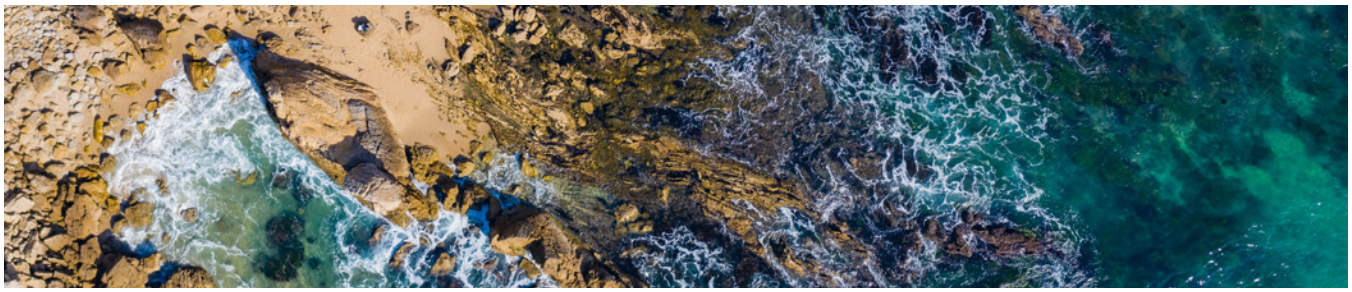


EXECUTIVE SUMMARY

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 certain 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 projects selected or proposed for PROTECT formula and discretionary investments in California. This list represents a range of transportation climate adaptation needs, from planning studies to capital projects, that are making the multimodal 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,

Transportation Options

Bus and light rail routes in busy downtown Long Beach, California. *Editorial Credit: Shutterstock/Sheila Fitzgerald*

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.[1] 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 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.

1 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.[2]
- **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.[3] 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

2 OPR, Adaptation Planning Guide: https://resilientca.org/apg/
3 AB 1482, California Legislative Information, October 8, 2015: https://leginfo.legislature.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.[4,5]

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.legislature.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

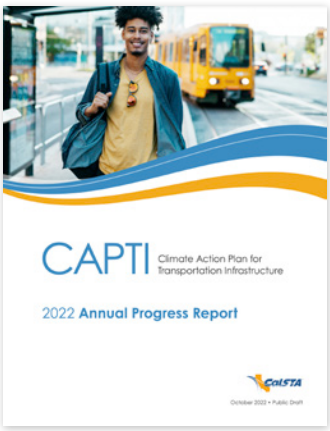
ensuring that state investments consider climate change impacts while promoting the use of both natural systems and structures when developing physical infrastructure to promote resilience.

2.1: CALIFORNIA STATE TRANSPORTATION AGENCY & CALTRANS CLIMATE POLICY

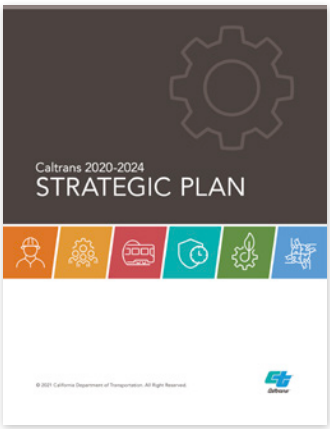
The California State Transportation Agency's (CalSTA) Climate Action Plan for Transportation Infrastructure (CAPTI), Caltrans 2020-2024 Strategic Plan (Strategic Plan), and the California Transportation Plan 2050 (CTP 2050) collectively set the policy framework for Caltrans to advance climate adaptation 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

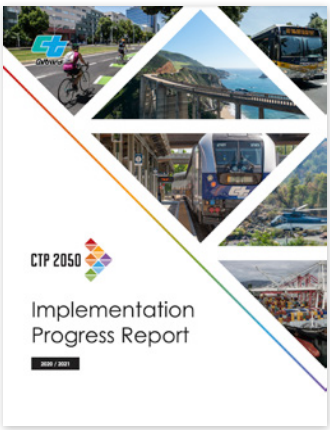
In response to E.O. N-19-19 and E.O. N-79-20, CalSTA developed CAPTI (adopted in July 2021), laying out the state's recommendations for investing billions of discretionary transportation dollars annually to aggressively combat and adapt to climate change while supporting public health, safety, and equity.[6,7,8] 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.[9] 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.[10] "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 articulates the state's long-term vision for California's multimodal transportation system. 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 similar policies and actions at the regional level in metropolitan planning organization's (MPOs) regional transportation plans (RTPs).

Wildfire Along Highway

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

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.[11] Through strategic alignment with the long-term resilience policy goals outlined in the CTP 2050, as well as the near-term

9 CalSTA, CAPTI 2022 Draft Annual Progress Report: 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**

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.[12]

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.[13] 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,

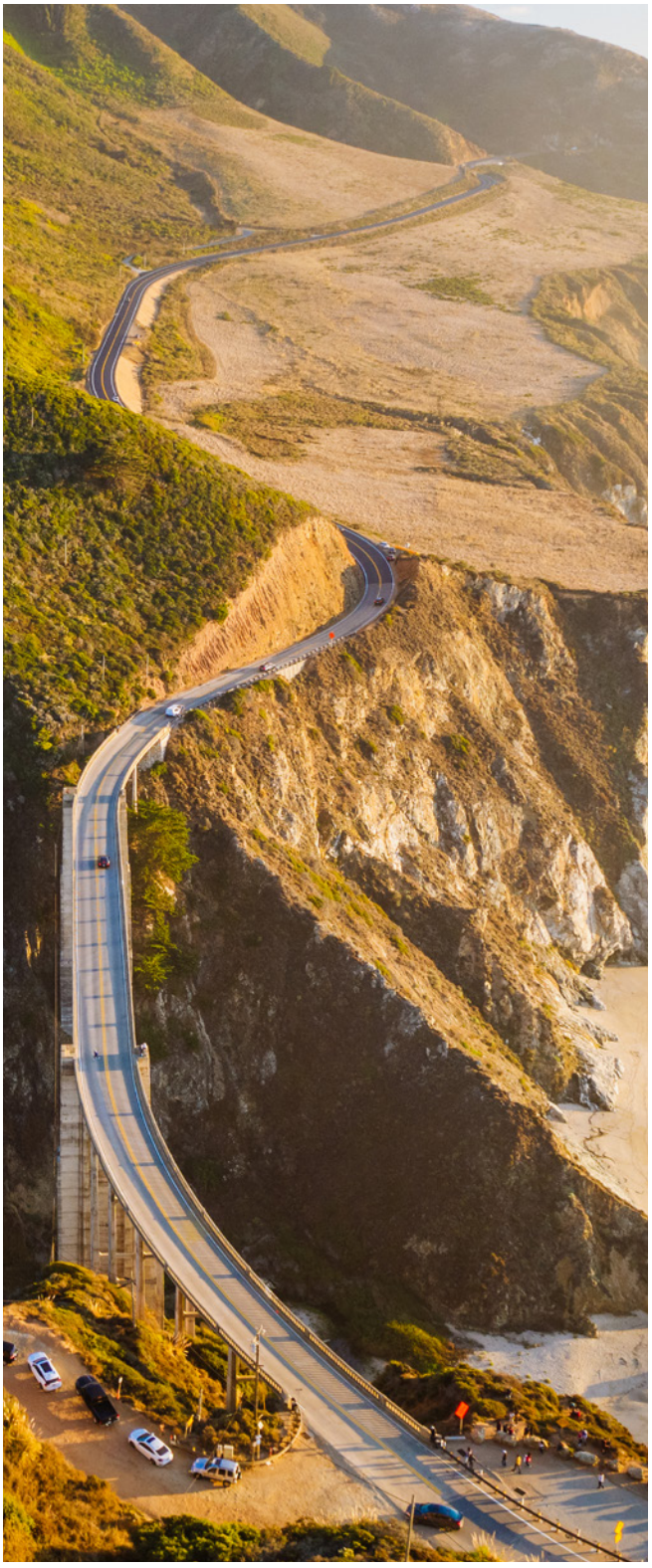
12 Caltrans, State Highway System Management Plan: https://dot.ca.gov/programs/asset-management/state-highway-system-plan

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

permitting, and project development.[14] 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).[15] 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.[16] 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."[17] Caltrans must consider 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).



Coastal Cruising

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

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

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

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 global climate projections from the Coupled Model Intercomparison Project Phase 6 (CMIP6) used by the U.S. National Climate Assessment (NCA) and Intergovernmental Panel on Climate Change (IPCC) for state and regional use. These downscaled climate projections use hybrid statistical Localized Constructed Analogs 2 (LOCA2) and dynamical Weather Research Forecasting (WRF) modeling approaches to provide foundational data that can support efforts to estimate climate change impacts under future emission scenarios. The California Climate Change Assessment also includes a set of state-funded 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.[18] 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).[19] 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." Table 2 summarizes some examples of equity-centered actions across adaptation policy documents within and beyond the transportation sector.

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

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[20]	2021	■ Support California Native American tribes' development of climate change and health equity resilience planning tools and capacity. ■ 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. ■ Prioritize social equity, tribal nations, and disadvantaged communities in climate adaptation planning and strategies.
CAPTI[21]	2021	■ Establish the Transportation Equity Advisory Committee. ■ Develop and Utilize Equity Index to Assist in Evaluation or Prioritization of Caltrans Projects.
Caltrans 2020-2024 Strategic Plan[22]	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[23]	2021	Identify and prioritize deployment of resiliency strategies in the state's most vulnerable communities.

20 California Natural Resources Agency, California Climate Adaptation Strategy 2022 Implementation Report: https://climateresilience.ca.gov/overview/docs/20240405-Climate_Adpatation_Strategy_Report_2023.pdf
21 California State Transportation Agency, CAPTI 2022 Annual Progress Report: https://calsta.ca.gov/-/media/calsta-media/documents/capti-2022-annual-report-a11y.pdf
22 Caltrans, Mile Marker Latest Issues: https://dot.ca.gov/programs/public-affairs/mile-marker
23 Caltrans, California Transportation Plan Updates (see "CTP Implementation" for annual Progress Reports): https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/state-planning-equity-and-engagement/california-transportation-plan

Wildfire Evacuation Route

A wildfire evacuation route sign along a two-way rural road in California.

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 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.[24] For a table including some key examples of the disadvantaged community identification and mapping tools used in PROTECT program implementation, see Appendix D.

24 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 multimodal 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[25]
- 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[26]
- Adaptation Strategies for Transportation Infrastructure: Educational Resource[27]

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.

25 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

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

27 Adaptation Strategies for Transportation Instrastructure: Educational Resource: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/adaptation-strategies-transportation-infrastructure-a11y.pdf

DIVISION OF ENVIRONMENTAL ANALYSIS

The Caltrans Division of Environmental Analysis (DEA) leads the Department's 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 CCC staff and in coordination with sister Caltrans Divisions (including DOTP, Headquarters 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.[28]

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, SB1 2030(e), and SB 743 directing the transportation system to mitigate, minimize, and adapt to climate change.[29,30]

28 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

29 SB 1, California Legislative Information, April 28, 2017, see section (e): https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1

30 SB 743, California Legislative Information, September 27, 2013: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743

DIVISION OF DESIGN

The Division of Design provides policies, procedures, guidance, technical assistance, 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.[31]
- 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

31 Caltrans, Design Manual for Hybrid Coastal Protection Strategies. Document available upon request at resilience.improvement@dot.ca.gov.

efficiently. Maintenance includes a vegetation and wildfire management function that is co-leading climate action in the Department by scaling up the 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.

HEADQUARTERS ASSET MANAGEMENT

Caltrans' Headquarters 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 draft 2023 SHSMP proposes a $1.8 billion dollar, five-year 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

Multi-modal Transportation

Walking and biking lanes alongside traffic lanes on California Incline in Santa Monica, California. *Editorial Credit: Shutterstock/ Steve Cukrov*.

integrating climate equity considerations into all planning processes and guidance. 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.[32] 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

32 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.[33] 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.

33 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.[34] 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

34 SB 198, California Legislative Information, June 30, 2022: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220SB198

PROTECT program for both the 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.

Flooded Roads

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

Caltrans implemented the STCAP in alignment with both SB 198 and PROTECT program 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 over forty 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

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.[35] 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. To view individual STCAP and Adaptation Planning Study projects, see Appendix F.

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, see section 14564 of SB 198, footnote 34):

- 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

35 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.[36] All eligible LTCAP nominated projects are included in Appendix F.

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.[37] 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 collective long term resilience goals through continued coordination with all stakeholders.

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.

36 CTC, Local Transportation Climate Adaptation Program: https://catc.ca.gov/programs/local-transportation-climate-adaptation-program

37 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

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)

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: Sample of Equity Tools for Adaptation Planning and Program Implementation

Title	Year	Owner	Description
Climate and Economic Justice Screening Tool	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.
CalEnviroScreen 4.0	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.
Healthy Places Index 3.0	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).[38] 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.[39] Hazard mitigation is one component of climate change adaptation, and the SHMP provides a framework for integration with other state

38 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/

39 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

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
State Agency Adaptation Planning (Action 2018-051)	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.	• Goal 1, Objectives 1, 4, 5 • Goal 2, Objectives 1, 3, 4, 5, 6 • Goal 3, Objective 3 • Goal 4, Objectives 2, 3
Tree Mortality Assessment (Action 2018-095)	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.	• Goal 2, Objectives 2, 4, 5 • Goal 3, Objectives 2, 3, 4 • Goal 4, Objectives 1, 2, 3, 4, 5

F. PROTECT PROJECT PRIORITY LIST

STCAP PROJECTS

The projects in the following four tables reflect high-priority climate resilience needs for Caltrans and its local and regional partners. Each project was vetted by Caltrans to determine PROTECT Program eligibility, level of urgency, and overall federal and state climate resilience policy alignment. The latest updates to this list were approved by FHWA, California Division on 6/25/2024. Project inclusion in the SCRIPT Project Priority List does not guarantee PROTECT formula or discretionary funding, nor a reduction in non-federal cost match requirements. For more information, see the formal correspondence attached at the beginning of this document.

Note: Table 5 only reflects STCAP projects that have been approved by the CTC as of March, 2024. Additional projects will be reflected in future Project Priority List updates.

Table 5: STCAP Projects

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
1	Caltrans	MCOG	Mendocino	Booneville Capital Preventive Maintenance (CAPM)	MEN-128: 17.9 / 30.663	Wildfire resiliency - upgrade existing wood guardrail posts to steel, install minor concrete vegetation control.
1	Caltrans	MCOG	Mendocino	Covelo Pavement	MEN-162: 0 / R25.7	Wildfire resiliency - upgrade existing wood guardrail posts to steel, install minor concrete vegetation control.
1	Caltrans	MCOG	Mendocino	Longvale Rehab	MEN-101: 55.0 / 64.9	Wildfire resiliency - upgrade existing wood guardrail posts to steel, install minor concrete vegetation control.
1	Caltrans	MCOG	Mendocino	Oilwell Class I Pavement	MEN-101: 48.96 / 55.06	Wildfire resiliency - upgrade existing wood guardrail posts to steel, install minor concrete vegetation control.
1	Caltrans	HCAG	Humboldt	Hartsook Creek Culvert	HUM-101: 0.88	Upsize existing concrete box culvert with a bottomless culvert with engineered streambed material or a single span bridge.
1	Caltrans	MCOG	Mendocino	Ukiah Rehab	MEN-101: 21.0/28.6	Wildfire resiliency - upgrade existing wood guardrail posts to steel, install minor concrete vegetation control.

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
1	Caltrans	MCOG	Mendocino	Cook's Valley Capital Preventive Maintenance (CAPM)	MEN-101: T91.32/ T106.8	Wildfire resiliency - upgrade existing wood guardrail posts to steel, install minor concrete vegetation control.
1	Caltrans	Lake CCAPC	Lake	Twin Lakes CAPM	LAK-29: 11.9/23.6	Wildfire resiliency - upgrade existing wood guardrail posts to steel, install minor concrete vegetation control.
2	Caltrans	STRA	Shasta	Lake Blvd Rehab	SHA-273: 18.5/18.7 and SHA-299: 24.1/30.3	Installation of three shade structures along transit routes to alleviate discomfort from extreme temperatures.
2	Caltrans	Trinity CTC	Trinity	Del Loma Pavement	TRI-299: 15.0/25.7	Historic fire area: Increase size of culverts to address expected future climate change storm intensity increases and future post fire debris. This will include some new culverts not currently in project and upsizing culverts already planned in project.
2	Caltrans	Lassen CTC	Lassen	139 Susanville Paving	LAS-139: 0.74/11.0	Increase size of culverts to address expected future climate change storm intensity increases. This will include some new culvert not currently in project and upsizing culverts already planned in project.
2	Caltrans	Plumas CTC	Plumas	Crescent Mills CAPM	PLU-89: 12.9/20.0, 20.6/21.0	Add two shade structures along transit routes to alleviate impacts of extreme temperatures.
2	Caltrans	Tehama CTC	Tehama	Vina Plans 2	TEH-99: 0.0/12.5	Within Los Molinos urban Area: Installation of trees to alleviate discomfort from extreme temperatures.
2	Caltrans	Siskiyou CTC	Siskiyou	Somes Bar CAPM	SIS-96 PM R0.0/ R16.01	Historic slide area that closes highway: Need to perform geotechnical analysis to verify proposed strategy, which is Soldier Pile wall with Ground Anchors (SPGA) wall.
3	Caltrans	SACOG	Placer	Monte Vista Pavement Rehabilitation	PLA-80 PM: 42.70 / 49.30	Replace various existing pipe culverts of different diameters with steel pipe liner instead of rehabilitating with Cured-in-Place-Pipe (CIPP) Lining.
3	Caltrans	SACOG	El Dorado	El Dorado 50 Culvert Replacement	ED-50 18.7 / 21.9	Replace forty culverts with concrete, install metal guardrail posts.

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
3	Caltrans	SACOG	El Dorado	El Dorado 50 Ice House Road Culvert Replacement	ED-50 39.7 / 58.854	Replace twenty-four culverts with concrete, install metal guardrail posts.
3	Caltrans	SACOG	Placer	Alta CAPM	PLA-80 PM 33.30 / 44.90	Replace with reinforced concrete pipe (RCP) culverts instead of rehabilitating the existing culverts with CIPP lining.
3	Caltrans	SACOG	Placer	Drum Forebay Drainage Restoration	PLA-80 PM 49.3R / R58.7R	Replace with RCP culverts instead of rehabilitating the existing culverts with CIPP lining, invert paving, and replace with steel pipes of various sizes.
4	Caltrans	MTC	Marin	Marin City Flooding and Sea Level Rise Mitigation Project - Secondary Culvert	MRN-101 PM 3.5 / 3.65	Construct a secondary culvert across U.S 101 to increases hydraulic conveyance for immediate flooding reduction in the area.
4	Caltrans	MTC	Marin	SR-37 in Marin County between US-101 and Atherton Avenue (previously known as Segment A)	MRN-37 PM: 11.2 / 13.7	Reconstruct Novato Creek Bridge to build resiliency to the effects of projected year 2130 sea level rise (SLR).
4	Caltrans	MTC	San Mateo & Santa Clara	SM 280 Culvert Rehab	SM-280 PM: 9.1/12.9	Replace and remediate exisiting aging culverts and repair slope erosions.
4	Caltrans	MTC	Alameda	Storm Damage - Permanent Restoration	ALA-580 PM: 4.3/4.3	Restore eroded embankment slope and install erosion control measures.
4	Caltrans	MTC	San Mateo	Peek A Boo Soldier Pile Wall	SM-84 PM: 6/6	Construct soldier pile wall.
4	Caltrans	MTC	Napa	Storm Damage - Permanent Restoration	NAP-29 PM: 11.6/13	Injection grouting and culvert repair at slip out.
4	Caltrans	MTC	Santa Clara	Route 101/680 - Drainage Pump Plants	SCL-101 PM: 18.7/18.7	Upgrade pump plants and increase storm water storage at the Alum Rock Pump Plant.

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
5	Caltrans	SCCRTC	Santa Cruz	Scott Creek Coastal Resiliency Project	SCR-1 PM 31.55	Integrated ecosystem and infrastructure project that will both restore 40 acres of Scott Creek Lagoon complex (including the nearby lagoon, wetland, beach, and dunes) and replace the Highway 1 bridge at Scott Creek Lagoon. This project will result in removal of all the fill placed in the historic estuary to build Highway 1 and result in the construction of a significantly higher bridge deck and inland alignment to accommodate future sea level rise (both 6.9' in 2100 as well as extreme risk in the H++ scenario of up to 16'), coastal erosion, tsunami risk, wave run-up, fluvial flood risk, and create room for a mosaic of coastal ecosystem to respond to changing marine, fluvial, and terrestrial conditions. These efforts will maximize the climate resilience of the highway, restore the ecological function, and improve climate resilience of the 666+ ecosystems. This segment of Route 1 is listed as "Bike Accessible" and is used frequently for recreational purposes, as it is part of the California Coastal Trail.
6	Caltrans	KCOG	Kern	Transit Stop Improvements in State Highways - Delano	KER-155 PM R0.04 / R1.3	Shade structures along transit routes to alleviate impacts of extreme temperatures, street trees (including watering infrastructure).
6	Caltrans	MCTC	Madera	Transit Stop Improvements in State Highways - Madera	MAD-145 PM 8.1 / 12.2	Shade structures along transit routes to alleviate impacts of extreme temperatures, street trees.
6	Caltrans	KCOG	Kern	Kern 33 Culvert repair and replace	KER-33 PM 21.8 / 39.8	Increase size of culverts to address expected future climate change storm intensity increases as well as impacts from wildfires.
6	Caltrans	KCOG	Kern	Kern Grapevine Rehab	KER-5 PM 4.4/10.2	Change in pavement material selection to improve resilience due to projected climate risks.
7	Caltrans	SCAG	Ventura	Ventura 1: Slope Rehabilitation	VEN-1 PM: 6.58/7.23	Scale slope, remove loose rocks/ debris, repair/reconstruct cable net slope protection.

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
7	Caltrans	SCAG	Los Angeles	Major Slope Stability	LA-405 PM: 48/48.54	Remove debris, replace slope protection.
7	Caltrans	SCAG	Los Angeles	Pacific Coast Highway Malibu Slope Repair	LA-1 PM: 42.4/42.4	Permanent slope restoration – installation of secant pile wall along southbound Pacific Coast Highway in Malibu.
7	Caltrans	SCAG	Los Angeles	I-5 North County Drainage Project/Sand Shed	LA-5 PM: R60/R75	Replace/repair separated joints and holes of drainages.
8	Caltrans	SCAG	San Bernardino	Big Bear Lake CAPM	Near Big Bear Lake, from 1.4 miles south of Baldwin Lake Road to Camp Rock Road.	Either bridge replacement or channel lining and upsize culvert to accommodate high peak flow.
8	Caltrans	SCAG	San Bernardino	Repair Slope/ Embankment	SBD-18 PM: 20.61/ 20.92	Repair embankment slopes, remove & replace walls with side hill viaduct and concrete barrier railing.
8	Caltrans	SCAG	San Bernardino	SBD 138 Correct vertical and horizontal curves in SBD near Hesperia	SBD-138 PM T16.25/17.3	Upsize culvert to accommodate high peak flow and install Rock Slope Protection to stabilize slope.
10	Caltrans	Calaveras COG	Calaveras	Cal 26 Slope Stabilization	CAL-026: 21.8/30.0	Reduce sediment discharges to surface waters to establish consistency with Storm Water Management Plan (SWMP); further flattening of some cut slopes; refilling fill slopes and installation of retaining wall at one location.
11	Caltrans	SANDAG	San Diego	San Diego Rte 67 Drainage Rehabilitation	SD-67 PM R4.1/15.9	Replace/rehabilitate culverts.
11	Caltrans	SANDAG	San Diego	I-5 North Coast Corridor Final Construction Manager/ General Contractor Package (Agua Hedionda)	SD-5 PM 37.4/52.6	Reconstruct and armor slopes, replace culvert.

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
11	Caltrans	SANDAG	San Diego	San Diego Rte. 78 Pavement Rehabilitation	SD-78 PM 37.2/60.0	Replace/rehabilitate culverts.
12	Caltrans	SCAG	Orange	SR 241 - Post-Silverado Fire Project	ORA-241 PM 24.4 / 35.8	Drainage and guardrail upgrades. Replace Metal Beam Guardrails to Midwest Guardrail System (MGS) guardrails. Use steel posts with upgraded MGS. Replace plastic culverts with RCP culverts.

STCAP 2% PLANNING SET-ASIDE ADAPTATION PLANNING STUDIES

Table 6: STCAP 2% Planning Set-Aside Adaptation Planning Studies

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
1	Caltrans	N/A	Humboldt	Highway 101 Eureka/ Arcata Corridor Climate Adaptation Implementation Plan Assessment	Eureka / Arcata Corridor	The adaptation planning study will contribute to advancing a climate resilient planning approach for the Eureka-Arcata Corridor in Humboldt County. The study will include a robust technical analysis of existing and anticipated climate change impacts in the location and analyze various climate change adaptation options for the transportation system, with a focus on sea level rise, shoreline modeling, and wind wave runup/hightides (and other technical areas as required by the California Coastal Commission).
1	Caltrans	MCOG	Mendocino	MEN 128 Flood & Resilience Study	Near the mouth of the Navarro River at the Pacific Ocean where SR1 & SR128 Intersect (PM: 0.0 – 11.6)	The adaptation planning study will contribute to advancing a climate resilient approach along State Route (SR) 128 at the junction of SR 1. SR 128 is regularly impacted by flooding, storm surge, and sea level rise (SLR). There have been approximately 16 closures in the last 5 years for an average duration of 28 hours (2.8 closures per year). Climate stressors are anticipated to compound existing concerns exponentially over the coming years. SR 128 is not only the primary route for access to medical care, employment, and educational needs, but is the primary evacuation route for the rural community located along it. The study will evaluate feasible adaptation strategies and will incorporate nature-based solutions in close coordination with stakeholders, regulatory agencies, and governments (tribal, local, state, and federal).

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
1 & 2	Caltrans	Humboldt CAG & Siskiyou CLTC	Humboldt & Siskiyou	Humboldt-Siskiyou Tribal Territory Climate Adaptation Technical Feasibility Study	In Humboldt & Siskiyou Counties, SR 96: 0/103.9	The adaptation planning study will advance climate resilience within Caltrans Districts 1 and 2 along State Route 96 by identifying and analyzing climate adaptation needs and solutions to address climate-related hazards such as landslides, floods and wildfires along this multi-tribe community corridor. The study will identify existing climate-related hazards (resulting in frequent road closures that land-lock vulnerable residents and cause significant and lengthy detours), evaluate existing conditions, with a focus on geotechnical and hydrologic assessments to address complex hazard locations, assess potential solutions to address these issues, identify and study various alternatives, and develop conceptual climate adaptation project scopes, schedules and budgets for the top priority locations. The study will include a robust analysis of existing and anticipated climate change-related events and the potential impacts to identified vulnerable assets, develop a geodatabase to support planning efforts, conduct outreach and engagement with agency partners and multiple tribal communities that depend on this lifeline route for accessing critical services and emergency egress, consider nature-based solutions that align with tribal community values, and develop a funding strategy for priority projects.
4	Caltrans	MTC	Marin	Highway 1 Sea Level Rise Adaptation Planning Study	Along the eastern shoreline of Bolinas Lagoon, between Stinson Beach and Woodville (MRN-1 PM 17.6/12.21).	The adaptation planning study will contribute to advancing a climate resilient approach for Highway 1 along the eastern shoreline of Bolinas Lagoon in Marin County. The study will include a robust technical analysis of existing and anticipated climate change impacts in the location and analyze various climate change adaptation options for the transportation system, with a focus on sea level rise, shoreline modeling, sediment conveyance, and wind wave runup/hightides (and other technical areas as required by the California Coastal Commission).

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
4	Caltrans	MTC	Marin	Marin 101 Adaptation Planning Study	Along US 101 North in Marin County from Marin City to San Rafael (MRN-101 PM 3.3./11.0)	The adaptation planning study will contribute to advancing a climate resilient planning approach for the US 101 corridor in Marin County. This corridor-level adaptation study will apply a combination of sea level rise analysis/alternatives assessment work with public engagement/ outreach, implementing these two activities strategically - either independently or in tandem - at specific locations through the larger corridor-level study area. These tasks will be performed within the study area, from the US 101 bridge crossing over San Rafael Creek down to the Donahue St. on/off ramps in Marin City. Study activities will be coordinated concurrently with a TAM-led transportation infrastructure resiliency study underway.
5	Caltrans	SLOCOG	San Luis Obispo	Toro Creek Coastal Hazards Analysis and Adaptation Planning	Toro Creek, in San Luis Obispo County, north of the community of Morro Bay, CA on State Route 1	The adaptation planning study will contribute to advancing a climate resilient planning approach for the State Route 1 Corridor north of Morro Bay in San Luis Obispo County. The study will include a robust technical analysis of existing and anticipated climate change impacts in the location, analyze various climate change adaptation options for the transportation system, with a focus on sea level rise, tides, storm surge, wave run-up, erosion, creek flooding, and tsunamis (and other technical areas as required by the California Coastal Commission).
7	Caltrans	SCAG	Ventura	Rincon Beach Sea Level Rise Adaptation Study	4.28-mile coastal segment of Rincon Parkway (VEN-1 PM 21.3/28.4)	The adaptation planning study will contribute to advancing a climate resilient planning approach for the State Route 1 corridor along Rincon Parkway in Ventura County. The study will include a robust technical analysis of existing and anticipated climate change impacts in the location and analyze various climate change adaptation options for the transportation system, with a focus on shoreline modeling and wave runup studies (and other technical areas as required by the California Coastal Commission).

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
9	Caltrans	KCOG	Kern	Greater Tehachapi Area Evacuation Model & Plan	Along 22 mile+ segment of State Route 58 & entirety of State Route 202.	The adaptation planning study focuses on enhancing the safety and resilience of the region's transportation infrastructure against climate-induced emergencies. This study aims to develop a predictive evacuation capacity model and a comprehensive evacuation plan to improve emergency responses, particularly for extreme climate events and wildfires exacerbated by climate change. The study will address the capacity of key routes, specifically State Routes 58 and 202, as well as the local road network, to facilitate the safe evacuation of residents and ensure emergency responder access. Additionally, it will identify and prioritize future projects to increase the region's resilience to climate change, improve incident management, and maintain critical transportation routes during adverse conditions.
10	Caltrans	SJCOG	San Joaquin	District 10 Climate Adaptation Implementation Plan: Sacramento-San Joaquin Delta Focus Area	Multiple segments/ locations in greater Delta region; Routes 4, 5, 12, 120, & 205	The adaptation planning study will contribute to advancing a climate resilient planning approach by developing comprehensive, corridor-level strategies that can be implemented to improve climate resilience for the transportation network situated in Western San Joaquin County within the ecologically complex regional boundaries of the Sacramento-San Joaquin Delta (Legal Delta). This adaptation implementation plan will expand and complement previous efforts to go beyond identification of exposure to climate stressors to develop a comprehensive adaptation pathway that includes feasible short-, medium-, and long-term strategies to address identified climate vulnerabilities on the state highway routes and assets within the Sacramento- San Joaquin delta region. With engagement from key partners, the plan will aid in ensuring long term resilience of the transportation network to identified climate hazards and impacts such as subsidence, sea-level rise, storm surge/flooding, precipitation changes, wildfire, and temperature increases.

District	Agencies	MPO/RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
11	Caltrans	SANDAG	San Diego	SR-75 Sea Level Rise Adaptation Planning Study	Along a 7.31 mile segment (SD-75: 11.2/18.51) of Silver Strand Boulevard (SR-75) between the cities of Imperial Beach and Coronado.	The adaptation planning study will contribute to advancing a climate resilient planning approach for SR-75 in San Diego County. This study will complete a coastal hazards assessment (required for a California Coastal Commission Coastal Development Permit) and identify feasible design alternatives to combat impacts from sea level rise and storm surge.
11	Caltrans	SCAG	Imperial & Riverside	Salton Sea West Tribal Flooding	In Imperial & Riverside Counties along multiple segments of State Routes 78 & 86.	The adaptation planning study will contribute to advancing a climate resilient approach for SR-86 along the Western shore of the Salton Sea, portions of SR-78, and extend 10-miles into Riverside County to address transportation improvements within tribal lands. The study will include a robust technical analysis of existing and anticipated climate change impacts in the location, analyze various resilient climate change adaptation options for the transportation system, and focus on identifying sustainable/nature-based designs to proactively combat washouts and flooding events within the study area.
12	Caltrans	SCAG	Orange	Bolsa Chica & Crystal Cove Feasibility Study	In Orange County along multiple segments of State Route 1.	The adaptation planning study will contribute to advancing a climate resilient planning approach for critical locations along Pacific Coast Highway in Huntington Beach and unincorporated Orange County. The study will include a robust technical analysis of current conditions and analysis of future sea level rise, storm surge, cliff retreat, and erosion stressors as a result of climate change. An alternatives analysis for suitable adaptation applications for the study location will be performed.

LTCAP PROJECTS

Table 7: LTCAP Projects

District	Agencies	MPO/ RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
1	Mendocino County	MCOG	Mendocino	Mendocino Brooktrails Second Access	Off System	Emergency Evacuation Resiliency - PA&ED and PS&E phases to develop approximately 2 miles of a two-lane arterial local road and bridge to provide secondary access to emergency evacuation route.
1	Mendocino County Department of Transportation	MCOG	Mendocino	Brooktrails Second Access	Off System	Emergency Evacuation Resiliency - The Brooktrails Second Access Project provides for the construction of a new two-lane arterial local road with paved shoulders and a new local bridge structure over Upp Creek, in order to provide a secondary route for egress and ingress during emergencies.
1	Mendocino County Department of Transportation	MCOG	Mendocino	Redemeyer Road Extension	Off System	Emergency Evacuation Resiliency - The Redemeyer Road Extension Project entails the construction of a two-lane arterial local road with paved shoulders and a new local bridge structure across the Russian River, in order to provide a secondary route for egress and ingress during emergencies.
3	Town of Paradise	BCAG	Butte	Town of Paradise Roe Road Phase 2	Off System	Emergency Evacuation Resiliency - Constructs 1.2 miles of road and Class 1 bicycle path to create a secondary access to Clark Road / State Route 191 evacuation route.
3	El Dorado County Transportation Commission	SACOG / EDCTC	El Dorado	EDCTC US 50 Trip to Green	ED 50 17.469 to 18.085	Emergency Evacuation Resilience - Installs ITS equipment, automated barriers, barricades, and channelization of movements to prioritize traffic movement through the City of Placerville.

District	Agencies	MPO/ RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
3	Nevada County Transportation Commission	NCTC	Nevada	NCTC SR 49 Grass Valley Wildfire Evacuation Route	NEV 49 2.1 to 9.8	Wildfire and Emergency Evacuation Resiliency - Constructs 15.4 miles of Class III bike routes (7.7 miles of 8' shoulders NB and 7.7 and miles of 12' shoulders SB) along SR 49, including 7.7 miles of a two-way left turn lane, to increase safety and reduce emergency evacuation times by enabling emergency contra flow operations. Replaces 7,385 linear feet of corrugated steel pipe culverts with reinforced concrete pipe culverts.
3	City of Sacramento	SACOG	Sacramento	Floodgate Modernization and Resilience Project	Off System	Flooding Resiliency - Upgrades ten critical floodgates to meet modern best practices and engineering design standards.
3	City of West Sacramento	SACOG	Yolo	Enterprise Corridor and Bridge Crossing Project	Off System	Flood/Fire Evacuation Resiliency - Pre-engineering, Project Approval & Environmental Document (PAED), and plans, specifications, and estimates (PS&E), to construct 2.25 miles of roadway resiliency enhancements with an elevated bridge to prevent network failure during future emergency events, ship channel levee flood reinforcement improvements, accessible sidewalks, and Class I & II bike lane improvements from Southport to Interstate 80 to strengthen critical evacuation routes and alleviate traffic congestion.
4	Metropolitan Transportation Commission Service Authority for Freeways and Expressways (MTC-SAFE)	MTC	Sonoma / Solano	Resilient SR 37 Sears Point to Mare Island Improvement	SON 37 0.00 to 7.4; SON 37 2.9 to 6.2; SOL 121 0.00 to 0.200	Replaces and lengthens Tolay Creek bridge to reduce flooding vulnerability to rising water and increases in tidal flows and implements natural infrastructure enhancements to the aquatic Strip Marsh.
4	San Francisco Bay Area Rapid Transit District	MTC	Contra Costa	BART Expansion and Contraction of Steel Rail in Contra Costa County	Off System: Rail	Extreme Heat Resiliency - Destresses 20 miles of legacy steel rail tracks.

District	Agencies	MPO/ RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
5	Santa Cruz County Regional Transportation Commission	AMBAG	Santa Cruz	Climate Resiliency for the Zero Emission Passenger Rail and Trail Project	Off System: Rail	Erosion & Flooding Resiliency - PA&ED for four locations along the Zero Emission Passenger Rail and Trail project to mitigate for slope erosion and flooding vulnerability.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Stormwater Drainage Capacity Improvement at El Monte Transit Center	Off System	Stormwater drainage capacity improvements for Terminal 19 to withstand severe storms.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Stabilize Erosion Hazard Areas at the Echo Park Terminal and along the Metro A Line	Off System	Hillside stabilization of erosion hazard areas, specifically along the A (Blue) Line & Terminal 42 (Echo Park) to better withstand heavy rains.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Hillside Slope Stabilization along the A and E Lines	Off System	Hillside stabilization to prevent repeated slides into LA Metro Gold Line ROW near Highland Park and South Pasadena.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Improved Flood Management Systems Along the B Line	Off System	Install 75hp sump pump to prevent flooding in system at MRL CP39A.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Reconstructing Cross Passages to Reduce Flooding on the B, A and E Lines	Off System	Demolish, resurface and treat cross passages to prevent water intrusion at 60+ Red Line cross passages and 6 on Gold Line (MRL/PGL).
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Slope Stabilization Improvements near Elysian Park	Off System	Improve slope stabilization at Division 21 and Division 10.

District	Agencies	MPO/ RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Improved Flood Management Systems in the Downtown Los Angeles Station Metro Bus Maintenance Facility	Off System	Install sump pumps with generator back-up to avoid flooding at ground and subterranean levels of Division 13.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Resilient Power Systems Through Backup Generators at Monrovia Yard	Off System	Install a backup generator at Division 24 – Monrovia Yard for the ability to power the yard and facilities in the event of long -term power loss.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Heat Resilient Light Rail Systems for the C, A and E lines	Off System	Replace Gold, Green, Blue, and Expo Line overhead catenary systems with spring tensioner system to address issues related to extreme heat.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Mitigating the Urban Heat Island Effect for the LA Metro Service Region	Off System	Support regional multi-jurisdictional infrastructure to alleviate the impacts of extreme temperature across LA Metro's service region through solutions tailored to the community and asset type; examples include bus shelters and shade, improved facility and vehicle ventilation systems, shading at railway stations, HVAC improvements, and other urban heat island mitigation strategies.
8	Coachella Valley Association of Governments	CVAG	Riverside	Addressing Climate Change, Emergencies, and Sandstorms (ACCESS)	Off System	Flood Resiliency - Replace two at-grade crossings over Whitewater River and Canyon Creek with elevated bridges, including two miles of sand fencing and elevated and solar-shaded Class IV bike path.
8	City of Menifee	SCAG	Riverside	Bradley Road Bridge Over Salt Creek	Off System	Flood Resiliency - Project replaces existing crossing over Salt Creek with a 12' raised bridge, including two 12' travel lanes, 8' shoulders to accommodate Class II bike lane, and 5' sidewalks.

District	Agencies	MPO/ RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
8	City of Moreno Valley	SCAG	Riverside	Moreno MDP Line K and Reche Canyon Detention-Debris Basin	Off System	Flood Resiliency - Construct 8,000 feet of underground drainage system, 240,000 square foot detention-debris basin to accommodate 100-year storm events, 12 catch basin and connecting drainage pipes.
8	City of Riverside	Riverside CTC	California	14th Street Underpass Storm Water Pump Station Replacement	Off System	Improve pumping capacity for discharging storm water resulting from heavy storm events to increase safety and prevent flooding within underpass.
10	Mariposa County	MLTC	Mariposa	Mariposa County Fournier Road	Off System	Flooding Resiliency - Replacement of at-grade creek crossing with an elevated bridge, enhanced with active transportation improvements.
12	Orange County Transportation Authority	SCAG	Orange	Coastal Rail Infrastructure Resiliency	Off System: Rail	PA&ED and preliminary engineering for the Los Angeles - San Diego - San Luis Obispo (LOSSAN) Rail Corridor intercity rail service; protection of track in place from storms, sea level rise, and climate change.
12	City of Laguna Niguel	SCAG	Orange	Laguna Niguel La Paz Road	Off System	Erosion Resiliency - Slope erosion mitigation of the existing roadway, road diet, and lane reconfiguration of La Paz road to accommodate Class IV protected bikeways.
12	City of Stanton	SCAG	Orange	Citywide Drainage Improvements	Off System	The project would include drainage improvements Citywide for various locations susceptible to flooding.
12	City of Huntington Beach	SCAG	Orange	Huntington Beach Bluff Top Trail Stabilization	Off System	Implementation of bluff top trail stabilization addressing sea level rise for two vulnerable bluff locations within the 4,200 feet of coastline between Goldenwest Street and Seapoint Street, covering multiple acres in Huntington Beach, CA.

FHWA DISCRETIONARY GRANTS PROJECTS

Table 8: FHWA Discretionary Grants Projects

District	Agencies	MPO/ RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
1	Caltrans	HCAG, Siskiyou CLTC	Humboldt and Siskiyou	California North Coast Tribal Wildfire and Evacuation Route Preparedness	Multiple: State Routes (SR) 96 and 169 in Humboldt: Multiple	Develop corridor level plans identifying evacuation route improvements for SRs 96 and 169 focusing on resilience elements against wildifre, extreme weather impacts, and other climate related events.
1	County of Humboldt	HCAOG	Humboldt	Scenic Drive	Off System	Climate/evacuation resiliency addressing erosion and flooding along 3.3 miles of Scenic Drive in Humboldt County. Route provides critical access to Trinidad Rancheria and public access to the coast including the CA Coastal Trail.
1	Caltrans	HCAOG	Humboldt	South Bay, Hookton Slough Resiliency	HUM-101: 68/77	The South Bay, Hookton Slough Resilience project will study flooding, sea level rise, storm surge, and groundwater intrusion while using nature based solutions, and/or a hybrid solution that protects the Humboldt Bay National Wildlife Refuge and a crucial access point on US 101 that is subject to repeated flooding.
1	Caltrans	MCOG	Mendocino	Van Damme Living Shoreline	MEN-1: 48	The project will incorporate nature based solutions to explore a living shoreline that includes beach nourishment, maintains coastal access, and creates resiliency against storm surge, sea level rise, and riverine flooding.

District	Agencies	MPO/ RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
1	Caltrans	HCAOG	Humboldt	SR 254 Resiliency Improvements	HUM-254: 0/43	Construct climate resiliency improvements in response to increased precipitation, erosion and flooding including emergency evacuation resiliency on SR 254 in Humboldt County. Construct improvements to 43 miles of SR 254 in Humboldt County providing critical access improvements between the communities located between Miranda and Pepperwood.
1	Caltrans	HCAOG	Humboldt	SR 101 Resiliency Improvements	HUM-101: 56.6/137.1	Construct climate resiliency improvements in response to increased precipitation, erosion and flooding through drainage improvements. Improvements will promote emergency evacuation resiliency between communities located along 80.5 miles of US 101 in Humboldt County.
2	Tehama County Public Works	Tehama CTC	Tehama	Lake California Drive Emergency Access Project	TEH-5: 41.509/ 41.615	Widening and repaving of Lake California Drive to accommodate installation of a fire lane for emergency personnel ingress & response during a fire or other hazardous incident. Outside of emergency events, the fire lane will be used as a multi-use path for recreation and active transportation purposes. Project also includes reconfiguration or traffic control upgrades at the intersection of I-5, including siren alert systems and new emergency wayfinding signage.
2	Siskiyou County Local Transportation Commission	Siskiyou CLTC	California	Siskiyou County Evacuation and Preparedness Plan	Off System	Siskiyou County Evacuation and Emergency Preparedness Plan to develop evacuation routes improvements, identify vulnerable transportation assets, and promote emergency preparedness.

District	Agencies	MPO/ RTPA	County	Project Title	Location (County-Route: Post Miles)	Scope of Work
2	Caltrans	Siskiyou CLTC	Siskiyou	Karuk Tribal Territory - Rattlesnake Landslide Climate Adaptation Project (Project)	SIS-96: 36.6/37.5	The Project proposes to identify and develop resilience improvements to address landslides, flooding, and other natural hazards induced by extreme weather events and climate change at this location. The Project will permanently address longstanding geotechnical issues, reduce road closures to improve travels along a rural interregional corridor (where detours can exceed eight hours), improve tribal access to critical services, decrease maintenance needs, improve user and worker safety, and improve climate resiliency on a regional and local level.
2	Caltrans	Siskiyou CLTC	California	Whitney Creek Mudflow Climate Adaptation Project	SIS-97: 8.5 - 9.8	The Whitney Creek Mudflow Adaptation Project (project) proposes to identify and develop resilience improvements along this US interregional route to address mudflows, flooding, and other natural hazards induced by extreme weather events and climate change at this location. The project will permanently address longstanding geotechnical and hydrologic issues, reduce road closures that impact freight and goods movement, improve low-income, disadvantaged communities' access to critical services, decrease maintenance needs, improve user and worker safety, and improve climate resiliency on a regional and local level.

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2	Caltrans	Plumas CTC	Plumas	Little Indian Creek Flooding Adaptation Project	PLU 70 13.9 - 14.49	The Little Indian Creek Flooding Adaptation Project proposes to identify and develop resilience improvements to address flooding, debris plugs and other natural hazards induced by extreme weather events and climate change. The project will reduce road closures, improve low-income, disadvantaged communities' access to critical services, decrease maintenance needs, improve user and worker safety, and improve climate resiliency on a regional and local level.
2	Caltrans	Lassen CTC	Lassen	Dry Creek Mudflow Adaptation Project	LAS 36 0.68 - 0.70	The Dry Creek Mudflow Adaptation Project proposes to identify and develop resilience improvements to address flooding, debris plugs and other natural hazards induced by extreme weather events and climate change at this location. The project will permanently address longstanding geotechnical and hydrologic issues, reduce road closures, improve low-income, disadvantaged communities' access to critical services, decrease maintenance needs, improve user and worker safety, and improve climate resiliency on a regional and local level.
3	SacDOT	SACOG	Sacramento	Rancho Murieta Resilience Plan	SAC-16 and Off System: Multiple	Develop a community informed city level plan to identify transportation infrastructure needs for the Rancho Murieta community, which will best prepare the community for wildfires and flooding events. Provide a roadmap to prevent bottlenecks and obstacles for first responders during flooding and wildfire events while ensuring the community evacuation routes.

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3	Sacramento County	SACOG	Sacramento	Wilton Area Roadway Resiliency Project	Off System: Multiple	Pre-engineering, Project Approval & Environmental Document (PAED), and plans, specifications, and estimates (PS&E), for providing roadway resiliency enhancements to prevent network failure during future emergency flood events, including enhanced drainage.
3	Caltrans	SACOG	Sacramento	Sacramento Valley Interstate 5 Flood Risk and Evacuation Route Project	SAC-5: 0.21/4.63	Raise the profile of ~four mile segment of Interstate 5, including the interchange at Twin Cities Road, and install additional drainage to prevent flooding during anticipated significant rainfall events. Additional improvements include crack seat & overlay, hot mix asphalt (HMA) overlay and drainage rehabilitation, CMS & lighting upgrades.
3	Caltrans	SACOG	Sacramento	Sacramento State Route 99 Flood Risk Mitigation Project	SAC-99: 5.5/7.75	Raise the roadway profile of State Route 99 and provide drainage improvements in order to minimize flooding during significant rainfall events. Additional work includes rehabilitating pavement, adding safety features such as maintenance vehicle pullouts, improving traffic operations by upgrading traffic management systems, and performing structural improvements related to profile raise work.
4	Caltrans and Sonoma-Marin Area Rail Transit (SMART)	MTC	Marin, Sonoma, Napa, Solano	SMART Resilient Passenger Rail Development - Environmental Phase	Off System: Rail	Environmental clearance for improvements addressing flooding and sea level rise for future passenger rail service and freight operations between Novato and Fairfield-Suisun City on SMART and Union Pacific Railroad lines.
4	Caltrans	MTC	San Francisco, Contra Costa, Marin, Santa Clara, San Mateo, Solano, Sonoma	Culvert Data Gaps in Climate Vulnerable Corridors Study	Multiple segments of Routes 1, 4, 37, 80, 82, 92, 101, and 280 in the San Francisco Bay Area	Identify culvert data gaps in high priority climate vulnerable corridors in the bay area. The culverts in the identified areas will be inventoried, inspected, and maintained to mitigate highway infrastructure and environmental damage due to future major climate events.

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4	City of Berkeley	MTC	Alameda	Berkeley Aquatic Park Tide Tubes Renovation	ALA-80 near Aquatic Park Lagoon	Design phase for renovations to existing tide tube system underneath I-80 that convey stormwater and Bay water between Berkeley Aquatic Park on the east side and the San Francisco Bay on the west side of the interstate.
4	City of Berkeley	MTC	Alameda	Berkeley Waterfront University Avenue Shoreline Protection	Off System, University Ave at Berkeley Waterfront	Design phase for installation of levee and living shoreline to protect the University Ave essential transportation corridor at the Berkeley Waterfront from rising sea levels due to climate change.
4	San Francisco Municipal Transportation Agency (SFMTA)	MTC	San Francisco	Eastern Waterfront Mobility Resilience Plan	Off System: Multiple	Development of a Resilience Plan identifying an actionable set of strategies to ensure a connected, safe, and resilient transportation system that includes four bridges and multimodal transit routes facing threats from sea level rise.
4	San Mateo County Transit District (SamTrans)	MTC	San Mateo	North Base Sea Level Rise and Erosion Mitigation Project	Off System: Transit Facility	Construct a levee/breakwater protection system around the perimeter of North Base to mitigate the impacts of sea level rise and erosion. North Base is a critical facility for San Mateo County transit users. The Project will protect North Base from worsening climate change impacts and ensure continuation of SamTrans service, while providing regional benefits to nearby agencies, infrastructure assets, businesses, and neighborhoods negatively affected by climate hazards.

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4	San Francisco Municipal Transportation Agency (SFMTA)	MTC	San Francisco	Embarcadero Mobility Resilience Plan	Off System: Multiple	The objective of this planning process is to develop, through an inclusive and collaborative process, a list of major capital improvements that respond to anticipated sea level rise, earthquakes and other climate related events to be delivered in phases over the next few decades, for the Embarcadero's multimodal network and waterfront corridors, with particular focus on mobility and economic recovery work in the Financial District and adjacent neighborhoods.
4	San Francisco Municipal Transportation Agency (SFMTA)	MTC	San Francisco	Mission Bay Mobility Resilience Plan	Off System: Multiple	The objective of this planning process is to develop, through an inclusive and collaborative process, a list of major capital improvements that respond to anticipated sea level rise, earthquakes and other climate related events to be delivered in phases over the next few decades, for the Mission Bay's multimodal network and waterfront corridors.
4	San Francisco Municipal Transportation Agency (SFMTA)	MTC	San Francisco	Islais Creek Mobility Resilience Plan	Off System: Multiple	The objective of this planning process is to develop, through an inclusive and collaborative process, a list of major capital improvements that respond to anticipated sea level rise, earthquakes and other climate related events, to be delivered in phases over the next few decades, for the multimodal network and waterfront corridors both north and south of Islais Creek.
4	MTC	MTC	Sonoma, Napa, Solano	SR 37 Sears Point to Mare Island Improvement Project	SR-37 from 1.0 mile west of Route 121 at Sears Point to Napa River Bridge in Vallejo	Construction of resiliency features of a larger 10 mile HOV lane/multimodal project. Resilience features include raising the road elevation in low elevation segments prone to flooding and constructing slope protection and reinforcement to address roadway subsidence.

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4	County of Marin	ABAG	Marin	Bolinas Road Rehabilitation and Resiliency Project	Off System	Bolinas Road Rehabilitation and Resiliency Project will fortify a critical and vulnerable regionally significant 6.5-mile stretch of roadway against intensifying climate change impacts, including atmospheric rivers, floods, watershed erosion, extreme wildfire, landslides and road damage. Comprehensive slope stabilization, drainage improvements, and nature-based enhancements will protect emergency access, evacuation, and water supply infrastructure relied upon by all of Marin County, including a disadvantaged community, while strengthening the climate resilience of both the transportation corridor and surrounding ecosystems.
4	Town of Windsor	MTC	California	Old Redwood Highway Bridge Replacements at Faught Creek and Pool Creek	Off System	Replace deficient and narrow bridges on Old Redwood Highway to address erosion concerns and widen bridges to allow for installation of a pedestrian and bicycle network for the health and safety of the community and for protection to respond to climate resiliency needs especially regarding evacuations.
4	Caltrans	MTC	Marin	Route 1/101 Manzanita Sea Level Rise Adaptation Project	MRN 101 4.2 to 3.3	Address recurring flooding and Sea Level Rise at Manzanita Park and Ride Lot, US 101 and SR 1.
4	Caltrans	MTC	Marin	State Route 37 Flood Reduction Project (Novato Creek Bridge Replacement)	SR-37 R11.2-13.8	Novato Creek Bridge replacement to address impacts of sea level rise and erosion.

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5	Caltrans	SCCRTC	Santa Cruz	Scott Creek Coastal Resiliency Planning	SCR-1: 31.55	Design phase for integrated ecosystem and infrastructure project that will both restore 40 acres of Scott Creek Lagoon complex (including the nearby lagoon, wetland, beach, and dunes) and replace the Highway 1 bridge at Scott Creek Lagoon, including ZEV charging and active transportation components.
5	AMBAG	AMBAG	Monterey, Santa Cruz	Highway 1 Bridge at the Pajaro River Project	SR 1 at the border of Monterey and Santa Cruz Counties	Planning/development phase for exploring infrastructure solutions that increase the resilience of the Highway 1 Bridge at the Pajaro River from the impacts of flooding, drainage impoundment, sea level rise, and climate change.
5	Transportation Agency for Monterey County (TAMC)	AMBAG	Monterey	Highway 1 Elkhorn Slough Corridor Climate Resiliency Project	MON-1 at Moss Landing	Planning phase for adapting the eight-mile stretch of Highway 1 and five-mile stretch of rail corridor through Moss Landing to the impacts of sea level rise and coastal flooding.
7	Caltrans	SCAG	Los Angeles, Ventura	Pacific Coast Highway Climate Change Adaptation and Feasibility Study	LA-1: 35.435 - VEN-1: 7.5	Conduct a detailed coastal hazards assessment and feasibility study on the Pacific Coast Highway using a corridor approach to develop adaptation strategies by conducting an alternatives analysis. High priority areas for project development will be identified along the corridor.
7	Los Angeles County Public Works	SCAG	Los Angeles	Resilient Castaic-Santa Clarita Valley: An ICM Approach to Strengthening Evacuation Routes Project	Off System: Adjacent Arterial route along I-5 freeway.	The project includes the planning and implementation of an Integrated Corridor Management (ICM) approach to alleviate traffic congestion, strengthen critical evacuation routes to improve resilience on roughly 20 miles of surface roadways in the Castaic-Santa Clarita Valley area, adjacent to Interstate 5. ICM components will include smart sensors, firmware, changeable communication signs, wireless communication, and integration of traffic management systems.

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7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Multipronged Approach to Reduce Flood Risk Across Metro's System	Off System	Install permeable pavement at facilities (such as Divisions 21, 5, and 11) and stations (such as the Westlake/MacArthur Park, Hollywood/vine, and Del Amo stations) with high exposure risk for heavy precipitation and riverine flooding to alleviate inundation impacts and recharge aquifers.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Reducing the Impact of Runoff to Metro's Rail System	Off System	Stop runoff into below grade rail system at MBL/Portal, MRL/ Hatches, MRL/ Ancillary, PGL/ Ancillary, and East/West Portals.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Protecting the Light Rail from Sea Level Rise by Elevating the A Line near Long Beach	Off System	Assess feasibility of elevating the A Line to separate rail line from traffic and flood plain.
7	Los Angeles County Metropolitan Transportation Authority	SCAG	Los Angeles	Reducing Flood Risk for Major Transit Hub, Union Station	Off System	Conduct a feasibility analysis of various flood mitigation strategies suitable for a historic property to address flooding, particularly after heavy rains - occurring in Union station.
9	Caltrans	Inyo LTC	Inyo	Death Valley/ SR 190 Roadway Adaptation Engineering Study	INY-190: 9.85-140.69	Conduct an engineering/ hydrological study and develop a design plan to improve infrastructure resilience of SR 190. The roadway provides a critical access route for the Timbisha Shoshone Tribe, staff, and visitors of Death Valley National Park that can often be cut off due to storm damage during heavy rain events leaving habitants trapped.
9	Caltrans	Kern COG	Kern	State Route 58 Mudslide Mitigation Project	KERN-58: PM 100.00 /108.00	Conduct a design feasibility study along State Route 58 where massive mudslides have closed the state highway for days on end. Caltrans aims to evaluate potential mitigation measures through engineering strategy and determine the feasibility of implementing determined measures.

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10	Caltrans, San Luis & Delta-Mendota Water Authority	MCAG	Merced	SR-152 BF Sisk Dam	10-MER-152 R5.0/ R6.3	The San Luis & Delta-Mendota Water Authority in partnership with Caltrans proposes to raise the profile of State Route (SR) 152 by about 10 feet to accommodate the new water elevation within the San Luis Reservoir- BF Sisk Dam to address water storage demand for improving drought tolerance and preparedness for extreme events.
11	Port of San Diego	SANDAG	San Diego	Embarcadero Resiliency Project	Off System, Harbor Drive in the City of San Diego generally between Grape Street and Broadway	Construct seismic upgrades along San Diego's Embarcadero to protect and ensure critical access along Harbor Drive.
12	City of Anaheim	SCAG	Orange	La Palma Avenue Storm Drain Improvements and Resiliency Project	Off System	Complete design and construction of a stormwater infiltration and/or conveyance project on one-mile stretch of La Palma Avenue (from Brookhurst Street to Euclid Street) to alleviate an overburdened storm drain system. This resiliency project aims to improve safety and equity in a high-density, disadvantaged community by reducing flooding on a major arterial roadway (and surrounding City streets), with the potential added benefit of increased groundwater recharge.
12	City of Orange	SCAG	Orange	Cambridge Storm Drain Improvements	Off System	This project will remove and replace the existing deficient system and extend the system to its ultimate build out per the Master Plan of Drainage.
12	Caltrans	SCAG	Orange	Bolsa Chica SR-1 Inundation Resiliency Project	ORA-1-27.042 /29.896	Conduct Coastal Hazards Assessment for SR-1 to enhance inundation resiliency of this three-mile highway corridor which is increasingly susceptible to closures due to rain events, storm surge, and coastal king tides.

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12	City of Anaheim	SCAG	Orange	Santa Ana Canyon Road Slope Repair & Resiliency Project	Off System	Construct slope repair (drainage improvement, grading, retaining wall, jute matting and hydroseeding) along arterial roadway to eliminate slides, erosion, and debris flow that interrupt traffic flow during major rain events. This portion of the roadway is an access point to SR-91, as well as to the Anaheim Canyon (an industrial/business center for the region) and is a primary route for emergency vehicles and a key evacuation route for the heavily populated Anaheim Hills community (~70,000 residents).
12	City of Anaheim	SCAG	Orange	State College Stormwater Capture and Conveyance Project	Off System	Construct a stormwater capture, treatment, and infiltration system on State College Boulevard in the City of Anaheim by repurposing an existing 10,000 linear-foot, abandoned sewer pipe and installing underground dry water wells. The project will redirect stormwater runoff from the overburdened Sub-District 27 stormwater system, increasing climate resiliency by reducing flood potential for critical roadways and by infiltrating approximately 63.2 Acre Feet of water each year to support groundwater recharge.
12	City of Anaheim	SCAG	Orange	OC River Walk Resiliency Project	Off System	Construct active transportation routes adjacent to the Santa Ana River to provide alternative, climate change resilient, and safer pathways to reach rail and bus transit at the Anaheim Regional Transportation Intermodal Center (ARTIC) and connect to existing non-vehicular trails to extend safe transit routes. These new non-motorized transit routes ensure safe transit along and across the Santa Ana River during major rainfall events and high-flow events, ending the unsafe practice of illegal riverbed crossings and bringing much needed transit infrastructure to the underserved disadvantaged community surrounding the river.

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12	Caltrans	SCAG	Orange	Moro Canyon SR-1 Cliff Retreat Adaptation Project	ORA-1-11.6/12.0	Conduct Coastal Hazards Assessment for SR-1 corridor which is the main link between North County and South County Beach Cities and increasingly subject to disruption and closures due to rain events, storm surge, and cliff retreat issues.
12	Caltrans	SCAG	Orange	Laguna Canyon Road Climate Resiliency Project	ORA-133-0.000/ R7.814	Investigate and develop methods (feasibility study) for improving infrastructure resilience, including hardening, elevation, slope stabilization, and stormwater capacity improvements to protect Laguna Canyon Road as the sole inland evacuation route for coastal communities; address sea level rise, storm surge, watershed flooding, slope failures, landslides, wildfire, and debris flows.
12	City of Laguna Beach	SCAG	Orange	Laguna Canyon Road: Protect and Connect	SR-133: 0.9/3.5	The project is focused on hardening a key evacuation route and addressing safety concerns by undergrounding utilities and considering multi-modal transportation options. This corridor provides residents, businesses, and visitors critical access to and from the city from Interstate 405 (I-405) and State Route 73 (SR 73) and serves as one of only three evacuation routes in case of emergency.

STATE CLIMATE RESILIENCE IMPROVEMENT PLAN FOR TRANSPORTATION
CALIFORNIA DEPARTMENT OF TRANSPORTATION

JULY 2024