



DRAFT TRANSPORTATION PLANNING COMPANION PLAN

Fall 2015



Photo Credit:

Left:

US 101 in the Mendocino County (Mile 102)

Date: April 2013

Photographer: Adbar via Wiki Commons

Right:

Male Tule Elk at Tule Elk State Reserve, California

Date: 12 February 2008

Photographer: David Jordan via Wiki Commons

Prepared by Blue Earth Consultants, LLC



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Disclaimer:

While we have made every effort to ensure that the information contained in this report accurately reflects SWAP 2015 companion plan development team discussions shared through web-based platforms, e-mails, and phone calls, Blue Earth Consultants, LLC makes no guarantee of the completeness and accuracy of information provided by all project sources. SWAP 2015 and associated companion plans are non-regulatory documents. The information shared is not legally binding nor does it reflect a change in the laws guiding wildlife and ecosystem conservation in the State. In addition, mention of organizations or entities in this report as potential partners does not indicate a willingness and/or commitment on behalf of these organizations or entities to partner, fund, or provide support for implementation of this plan or SWAP 2015.

The consultant team developed companion plans for multiple audiences, both with and without jurisdictional authority for implementing strategies and conservation activities described in SWAP 2015 and associated companion plans. These audiences include, but are not limited to, California Department of Fish and Wildlife leadership team and staff, California Fish and Game Commission, cooperating State, Federal, and local government agencies and organizations, California Tribes and tribal governments, and partners (such as non-governmental organizations, academic, research institutions, and citizen scientists).



Table of Contents

***Acronyms and Abbreviations* iii**

1. *Introduction*..... 1

1.1 SWAP 2015 Statewide Goals.....2

1.2 SWAP 2015 Companion Plans2

 Need for Partnerships.....2

 Companion Plan Purpose, Sector Selection, and Intended Use2

 Companion Plan Development4

 Companion Plan Content4

2. *Transportation Planning Sector*..... 5

2.1 Transportation Improvements in California.....5

2.2 Transportation Funding Programs and Authorizations.....7

2.3 Transportation Development and Conservation Planning in California: Example Efforts8

2.4 Transportation Development and Associated Facilities.....9

3. *Common Themes across Nine Sectors*..... 10

3.1 Climate Change Related Issues.....11

3.2 Integrated Regional Planning.....11

4. *Commonly Prioritized Pressures and Strategy Categories across Sectors* 12

4.1 Pressures across Sectors.....12

4.2 Strategy Categories across Sectors.....13

5. *Transportation Planning Priority Pressures and Strategy Categories*..... 14

5.1 Priority Pressures15

5.2 Priority Strategy Categories15

6. *Collaboration Opportunities for Joint Priorities* 17

6.1 Alignment Opportunities by Jurisdiction and Locality18

6.2 Collaboration Opportunities and Potential Resources by Strategy Category19

7. *Evaluating Future Collaboration Efforts*..... 25

7.1 Desired Outcomes and Outputs26

7.2 Evaluating Implementation Efforts.....27

8. *Next Steps* 27



9. Closing 28

Appendices..... 29

Appendix A: List of Potential Partners and Coordination Bodies on Alignment Strategies29

Appendix B: Plans, Strategies, and Documents Identified by the Development Team31

Appendix C: CDFW Companion Plan Management Team35

**Appendix D: Transportation Planning Companion Plan Development Team Members and Affiliations
 36**

Appendix E: Glossary37

References..... 40

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Acronyms and Abbreviations

AB	Assembly Bill
AFWA	Association of Fish and Wildlife Agencies
ARTBA	American Road & Transportation Builders Association
BACL	Bay Area Critical Linkages
BLM	Bureau of Land Management
Blue Earth	Blue Earth Consultants, LLC
BMP	Best Management Practices
BNSF	Burlington North and Santa Fe
CAL FIRE	California Department of Forestry and Fire Protection
CALCOG	California Association of Councils of Governments
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CBC	California Biodiversity Council
CBTP	Community-based Transportation Planning
CDFG	California Department of Fish and Game
CDFW/the Department	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
Ch.	Chapter
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CNDDB	California Natural Diversity Database
CTC	California Transportation Commission
CTP	California Transportation Plan
DRECP	Desert Renewable Energy Conservation Plan
DWR	California Department of Water Resources
EEM	Environmental Enhancement and Mitigation
EIR	Environmental Impact Report
FHWA	Federal Highway Administration
FLMA	Federal Land Management Agency
FLTP	Federal Lands Transportation Program
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GHG	Greenhouse Gas
HCP	Habitat Conservation Plan
IBA	Important Bird Area
ILF	In-lieu Fee
IPC	California Invasive Plant Council
ITIP	Interregional Transportation Improvement Program
KEA	Key Ecological Attribute
LCC	Landscape Conservation Cooperative
MAP-21	Moving Ahead for Progress in the 21st Century



MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
NCCP	Natural Community Conservation Plan
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NGO	Non-governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination Program
NPS	National Park Service
O&M	Operation and Maintenance
PPIC	Public Policy Institute of California
RAMP	Regional Advance Mitigation Planning
RCD	Resource Conservation District
RHNA	Regional Housing Needs Assessment
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
RTPA	Regional Transportation Improvement Planning Agency
SAMI	Statewide Advance Mitigation Initiative
SB	Senate Bill
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategies
SGC	Strategic Growth Council
SGCN	Species of Greatest Conservation Need
SHOPP	State Highway Operation and Protection Program
SHRP2	Strategic Highway Research Program 2
State Parks	California Department of Parks and Recreation
STIP	State Transportation Improvement Program
SWAP	State Wildlife Action Plan
SWG	State and Tribal Wildlife Grants
TIP	Transportation Improvement Program
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
UP	Union Pacific
USC	U.S. Code
USDOT	U.S. Department of Transportation
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish & Wildlife Service
UTC	University Transportation Center
WCB	Wildlife Conservation Board



1. Introduction

The California State Wildlife Action Plan 2015 Update (SWAP 2015) provides a vision and a framework for conserving California’s diverse natural heritage. SWAP 2015 also recognizes the need and calls for developing a collaborative framework to manage ecosystems sustainably across the State in balance with human uses of the natural resources. To address the need for a collaborative framework, California Department of Fish and Wildlife (CDFW), Blue Earth Consultants, LLC (Blue Earth), and partner agencies and organizations began preparation of sector-specific companion plans. While this document reports on the progress made thus far on collaboration, the intent is to set a stage for achieving the State’s conservation priorities through continued partnership and by mutually managing and conserving the State’s natural and cultural resources. Text box 2 highlights important definitions to SWAP 2015 and the companion plan process (CDFW, 2015; Chapter [Ch.] 1.5.4).

Text Box 1. What is a State Wildlife Action Plan?

In 2000, Congress enacted the State and Tribal Wildlife Grants (SWG) program to support state programs that broadly benefit wildlife and habitats, but particularly “Species of Greatest Conservation Need” (SGCN) defined by the individual states. Congress mandated each state and territory to develop a SWAP that outlined a comprehensive wildlife conservation strategy to receive federal funds through the SWG program. From 2005 through 2014, CDFW received approximately \$37 million through the SWG program in matched with approximately \$19 million in State government support for the wildlife conservation activities. The SWG program requires SWAP updates at least every 10 years. CDFW prepared and submitted SWAP 2015, the first comprehensive update of the California SWAP 2005, to the U.S. Fish and Wildlife Service (USFWS) on 10/1/2015. The update allows CDFW to expand and improve the recommended conservation activities addressed in the original plan by integrating new knowledge acquired since 2005.¹

¹ For more information see: CDFW, “California State Wildlife Action Plan (SWAP),” 2015, 27 Oct. 2015.

Text Box 2. Definitions Important to SWAP 2015

Conservation Target: An element of biodiversity at a project site, which can be a species, habitat/ecological system, or ecological process on which a project has chosen to focus.

Goal: A formal statement detailing a desired outcome of a conservation project, such as a desired future status of a target. The scope of a goal is to improve or maintain *key ecological attributes* (defined below).

Key Ecological Attribute (KEA): Aspects of a target’s biology or ecology that, if present, define a healthy target and, if missing or altered, would lead to the outright loss or extreme degradation of the target over time.

Objective: A formal statement detailing a desired outcome of a conservation project, such as reducing the negative impacts of a critical *pressure* (defined below). The scope of an objective is broader than that of a goal because it may address positive impacts not related to ecological entities (such as getting better ecological data or developing conservation plans) that would be important for the project. The set of objectives developed for a conservation project are intended, as a whole, to lead to the achievement of a goal or goals, that is, improvements of key ecological attributes.

Pressure: An anthropogenic (human-induced) or natural driver that could result in changing the ecological conditions of the target. Pressures can be positive or negative depending on intensity, timing, and duration. Negative or positive, the influence of a pressure to the target is likely to be significant.

Species of Greatest Conservation Need (SGCN): All state and federally listed and candidate species, species for which there is a conservation concern, or species identified as being vulnerable to climate change.

Strategy: A group of actions with a common focus that work together to reduce pressures, capitalize on opportunities, or restore natural systems. A set of strategies identified under a project are intended, as a whole, to achieve goals, objectives, and other key results addressed under the project.

Stress: A degraded ecological condition of a target that resulted directly or indirectly from negative impacts of pressures (e.g., habitat fragmentation).

(CDFW, 2015; Ch. 1.5.4)



1.1 SWAP 2015 Statewide Goals

SWAP 2015 has three statewide conservation goals with 12 sub-goals, under which individual regional goals are organized (CDFW, 2015; Ch. 4.1). These statewide goals set the context for the companion plans and SWAP 2015 implementation.

Goal 1 - Abundance and Richness: Maintain and increase ecosystem and native species distributions in California while sustaining and enhancing species abundance and richness.

Goal 2 - Enhance Ecosystem Conditions: Maintain and improve ecological conditions vital for sustaining ecosystems in California.

Goal 3 - Enhance Ecosystem Functions and Processes: Maintain and improve ecosystem functions and processes vital for sustaining ecosystems in California.

1.2 SWAP 2015 Companion Plans

Need for Partnerships

The state of California supports tremendous biodiversity. However, the State also has a large and growing human population and faces many challenges, such as climate change, which affects biodiversity and natural resources in general. To balance growing human activities with conservation needs for sustaining the State’s ecosystems, collaboratively managing and conserving fragile natural resources is a necessity. As many desirable conservation actions identified under SWAP 2015 are beyond CDFW’s jurisdiction, the Department determined that more detailed coordination plans are needed in line with and beyond the recommendations presented in SWAP 2015. Called “companion plans,” these sector-specific plans (Text Box 3) were created collaboratively with partners and will be instrumental in implementing SWAP 2015 (See Appendix D for a list of partners that informed development of this companion plan).

<p>Text Box 3. Companion Plan Sectors:</p> <ul style="list-style-type: none"> ☞ Agriculture ☞ Consumptive and Recreational Uses ☞ Energy Development ☞ Forests and Rangelands ☞ Land Use Planning ☞ Marine Resources ☞ Transportation Planning ☞ Tribal Lands ☞ Water Management
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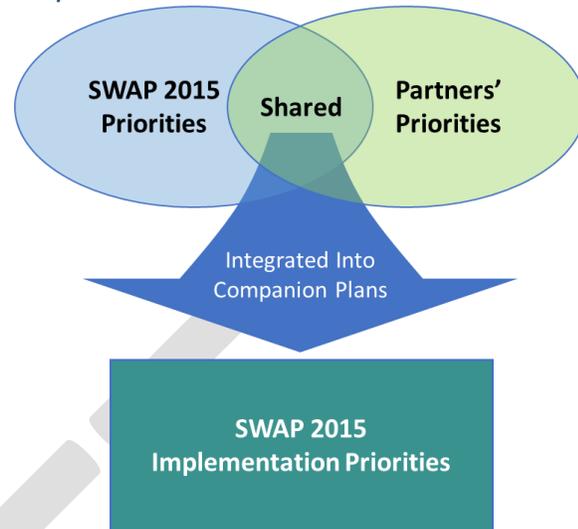
Companion Plan Purpose, Sector Selection, and Intended Use

Companion plans present shared priorities identified among SWAP 2015 and partners involved in the companion plan development. Figure 1 illustrates how, through collaboration with partner organizations, priorities for SWAP 2015 have come together in the companion plan and will be elevated as high implementation priorities for SWAP 2015.

The companion plans respond to feedback from many sources, including CDFW staff and partners who support natural resources management and conservation. This includes the California Biodiversity Council (CBC), under which a resolution to promote interagency alignment within the State was signed

in 2013. The companion plans also fulfill the strong suggestion from the Association of Fish & Wildlife Agencies (AFWA) and the National Fish, Wildlife, and Plants Climate Adaptation Strategy¹ to incorporate increased partner engagement as a best practice in wildlife conservation planning. This effort also directly helps CDFW comply with recently added provisions to the Fish and Game Code under Assembly Bill (AB) 2402, specifically under Section 703.5(b), which states that CDFW shall “seek to create, foster, and actively participate in effective partnerships and collaborations with other agencies and stakeholders to achieve shared goals and to better integrate fish and wildlife resource conservation and management with the natural resource management responsibilities of other agencies” (California Fish and Game Code, 2015).

Figure 1: Alignment of SWAP 2015 and Partner Priorities in Companion Plans



CDFW selected sector categories based on the needs for the Department as well as the themes and subjects identified in other existing plans including the California Climate Adaptation Strategy,² 2014 update to the Safeguarding California: Reducing Climate Risk,³ The President’s Climate Action Plan,⁴ and the National Fish, Wildlife, and Plants Climate Adaptation Strategy.⁵

Because each companion plan focused on teamwork during its development phase, they inherently help set a stage for implementing SWAP 2015 through future collaborations. Together, SWAP 2015 and associated companion plans describe the context and strategic direction of integrated planning and management efforts that will help sustain California’s ecosystems.

The intended use of this transportation planning companion plan is to outline a framework for users to identify pressures related to transportation facilities and how the alignment of SWAP goals and conservation strategies may be incorporated into various transportation development phases and activities (CDFW, 2015; Ch.5). The intended audience includes staff in transportation and environmental planning, project development and environmental analysis, design, construction, maintenance and operation. These standard strategies can be applied across various planning scales, including local,

¹ For more information, see: USFWS and National Oceanic Atmospheric Administration (NOAA), “National Fish, Wildlife, and Plants Adaptation Strategy,” 2012. Web. 27 Oct. 2015. <http://www.wildlifeadaptationstrategy.gov/>.

² For more information, see: California Natural Resources Agency (CNRA), “Climate Adaptation Strategy,” 2009. Web. 27 Oct. 2015. http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf.

³ For more information, see: CNRA, “Safeguarding California: Reducing Climate Risk – Update,” 2014. Web. 27 Oct. 2015. http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf.

⁴ For more information, see: Executive Office of the President, “The President’s Climate Action Plan,” 2013. Web. 27 Oct. 2015. <https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>.

⁵ For more information, see: USFWS and NOAA, “National Fish, Wildlife, and Plants Adaptation Strategy,” 2012.



regional, and State. All levels of staff with all levels of technical background should be able to pick up this companion plan and integrate it into their work and procedures.

Companion Plan Development

The SWAP 2015 companion plan **management team** (see Appendix C for a list of members), comprised of CDFW staff with support from Blue Earth staff, provided general direction to the **development team** (see Appendix D for a list of members). Blue Earth facilitated sector-specific discussions among the CDFW staff and development team members, who represented a cross section of sector interests and mandates. Team members were selected based on their positive response to outreach efforts by CDFW to seek participation and representation from public and private partners heavily involved in the conservation and management of the State's natural resources.⁶

Beginning in early 2015, a series of four planning and collaboration meetings were held for each sector. The meetings consisted of an initial kickoff session with participation from all sectors followed by three sector-specific meetings. During these meetings, development team participants discussed their ongoing and potential future efforts that would benefit wildlife and habitat conservation in the State. The development teams and CDFW then identified collaboration opportunities and joint priorities or overlaps among SWAP 2015 and partners' strategies and actions. Blue Earth and CDFW organized the feedback from the facilitated development team discussions into nine companion plan documents. In addition, the management team led a review process between CDFW and development team partners, along with a subsequent public review phase for the nine companion plan documents.

Companion Plan Content

Each companion plan addresses:

- SWAP 2015 priorities - statewide goals and strategies;
- companion plan overview - approach, purpose, development process, and content;
- description of the sector;
- common themes across the sectors;
- common priority pressures and strategies across the sectors;
- SWAP 2015 components that best align with the priorities of the participants' organizations under each sector;
- collaboration opportunities identified for joint priorities under each sector – alignment opportunity and potential resources by jurisdiction, locality, and strategy;
- considerations for evaluating future collaboration efforts and desired outcomes/outputs; and
- next steps relevant to the sector.

⁶ Disclaimer: Although the management team sought to engage a broad range of partners in the development team process, CDFW recognizes that there are many other partners that will play important roles in implementing SWAP 2015 and companion plan.

2. Transportation Planning Sector

The current Federal surface transportation authorization bill, Moving Ahead for Progress in the 21st Century (MAP-21) creates a streamlined, performance-based, and multimodal program to address the many challenges facing the U.S. transportation system through authorizations at Federal, State, and local jurisdiction levels (U.S. Department of Transportation [USDOT], 2012). MAP-21 seeks to improve safety, maintain infrastructure condition, reduce traffic congestion, improve efficiency of the system and freight movement, protect the environment, and reduce delays in project delivery across all levels of Federal, State, and local jurisdictions. MAP-21 builds on and refines many of the highway, transit, bike, and pedestrian programs and policies and seeks to guide transportation investments in order to:

- Strengthen America’s highways;
- Establish a performance-based program;
- Create jobs and support economic growth;
- Streamline federal highway transportation program; and
- Accelerate project delivery and promote innovation

In MAP-21, the metropolitan and statewide transportation planning processes are continued and enhanced to incorporate performance goals, measures, and targets into the process of identifying needed transportation improvements and selecting projects. Coordination points with applicable Federal and State resource agencies on the effects of transportation projects occur during project development and in accordance with regulatory processes at Federal, State, and local levels. Relevant sections of MAP-21 related to the SWAP effort are:

- Metropolitan Planning Sections 1105, 1201 (23 U.S. Code [USC] 104, 134) - describes funding for long-range transportation planning and performance-based planning
- Statewide Non-Metropolitan Planning Organization (MPO) Transportation Planning Sections 1202, 52005 (23 USC 135, 505)
- Federal Lands Transportation Program (FLTP) Sections 1119 (23 USC 20, 203) – planning on federal lands with separate federal lands access program
- Accelerating Project Delivery Section 1305 (23 USC 139) – efficient environmental review through:
 - Section 1310 Planning and National Environmental Policy Act (NEPA) Linkages; and
 - Section 1311 – Programmatic Mitigation Plans

2.1 Transportation Improvements in California

California is the most populous State in the U.S., with more than 38 million people in 2013 (Public Policy Institute of California [PPIC], 2015). By 2050, California’s population is estimated to reach 50 million people by mid-century (PPIC, 2015). Along with the projected continuation in population growth comes a concomitant increased need for transportation infrastructure. The State’s transportation planning sector therefore will need to be well equipped to manage this growth while prioritizing wildlife conservation planning. The California Department of Transportation (Caltrans) directly manages more than 50,000 lane miles of State and Federal highways and over 12,000 highway bridges, permits more



than 400 public airports, and operates three of the top five Amtrak intercity rail services (Caltrans, 2015a). The California State Transportation Agency (CalSTA) prioritized \$14 billion of the region's \$60 billion in discretionary funds to be focused on enhancing the "livability" of the region, including ecological and farmland conservation areas (CalSTA, 2014). In addition, the California Transportation Commission (CTC) incorporated an environmental stewardship goal in its statewide transportation needs assessment (CTC, 2011) to further wildlife conservation in the transportation planning process.

In California, regional and local transportation planning is primarily conducted by MPOs in urbanized areas and Regional Transportation Planning Agencies (RTPAs) in rural areas. Both types of agencies are responsible for developing transportation planning documents at the multi-county or county-wide level (California Association of Councils of Governments [CALCOG], 2009), and planning documents often include strategies to minimize environmental impacts. MPOs and RTPAs prepare long-range transportation plans usually referred to as Regional Transportation Plans (RTPs) and other planning documents to support RTP development. For example, the Southern California Association of Governments' (SCAG) RTP includes developing mitigation measures to reduce environmental impacts related to the transportation planning activities and identifying sensitive environmental resource through regional scale maps (SCAG, 2012). Caltrans prepared the California Transportation Plan (CTP) 2040, also a long-range transportation plan and the State's transportation policy framework to meet California's future multimodal mobility needs. Caltrans also prepares system planning documents that support both Caltrans and regional agency planning needs.

The state of California and USDOT allocate millions of dollars of planning funds annually to help support California's transportation planning process and preservation of the transportation system. The RTP establishes the basis for programming local, State, and Federal funds for transportation projects within a region. The purpose of RTPs is to encourage and promote the safe and efficient management, operation, and development of a regional intermodal transportation system that, when linked with appropriate land use planning, will serve the mobility needs of goods and people in the State (Caltrans, 2010).

Transportation planning and land use planning became more closely linked in California following the passage of Senate Bill (SB) 375⁷ in September 2008. As a result of this legislation, the reduction of car and light truck greenhouse gases (GHGs) became one of the key priorities in the transportation planning process, in addition to improving transportation mobility, addressing Federal air quality criteria pollutants, and ensuring that the statewide regional transportation system addresses tribal, local, regional, and statewide mobility and economic needs.

SB 375 added a new Sustainable Communities Strategy (SCS) element to RTPs prepared by MPOs. The bill requires that both regional housing allocations and transportation project selection, usually through the Transportation Improvement Program (TIP), be performed consistently with one another. This is important because State statutes require that RTPs serve as the foundation of the Federal Transportation Improvement Program (FTIP). MPOs prepare FTIPs and identify the next four years of

⁷ For more information on SB 375, see: Southern California Association of Governments, "Senate Bill NO. 375," 2008. Web. 29 Oct. 2015. http://rtpscscs.scag.ca.gov/Documents/scs/sb_375_bill_20080930_chaptered.pdf.



transportation projects to be funded for construction. The CTC cannot implement projects that are not identified in the RTP. The bill also requires coordination of the regional housing needs assessment (RHNA) process with the RTP process and requires local governments to update their General Plan Housing Element. In summary, due to the holistic and coordinated planning approaches required by legislation such as SB 375, the transportation planning companion plan has a strong correlation to the land use planning companion plan in terms of local planning and forecasting housing, employment, and travel needs with City and County General Plan updates.

2.2 Transportation Funding Programs and Authorizations

Both State and Federal laws have TIPs, which reflect the selection of projects to be undertaken with currently available revenues (Caltrans, 2014).

Federal Programming

Congress authorizes the Federal government to spend its transportation revenue on programs that support public policy interests for a given amount of time—typically a five to six-year period. An authorization sets the maximum amount of funding that can be appropriated to programs each fiscal year. Each year, Congress reviews appropriation bills to allocate funding for all Federal agencies, departments, and programs primarily to the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). This action provides the legal authority for Federal agencies to spend money during the upcoming fiscal year on administered programs. The Federal government can only allocate up to the maximum amount identified in the authorization for the upcoming year.

State Programming

Similar to Federal programming, the Legislature dictates how State revenues are spent on the transportation network. The Legislature appropriates State funding for specific purposes each year.

The State Transportation Improvement Program (STIP) funds new construction projects that add capacity to the transportation network. The STIP consists of two components, Caltrans' Interregional Transportation Improvement Program (ITIP) and regional transportation planning agencies' Regional Transportation Improvement Program (RTIP).

Under current law, most of the Federal funding for maintenance, operation, and repair of the existing highway system goes to Caltrans via the State Highways Operations and Protection Program (SHOPP). The SHOPP provides funds for pavement rehabilitation, operation, and safety improvements on State highways and bridges.

Caltrans oversees more than \$1 billion in Federal and State funding annually to over 600 cities, counties, and regional agencies through the Local Assistance Program. The program provides recipients with the opportunity to improve their transportation infrastructure or provide additional transportation services.

California's transportation network receives funding from Federal, State, local governments, and private investments (Table 1). Federal, State, and local revenues are collected through: 1) user fees, 2) property access charges, and 3) subsidies. Regional and local governments provide approximately 49% in



transportation funding, whereas the State provides 27%, and the Federal government provides 24%. The transportation network received approximately \$27 billion for Fiscal Year 2013-14 (Caltrans, 2014).

Table 2: Transportation Funding Sources in California

User Fees	Property Related Charges	Subsidies
<ul style="list-style-type: none"> Federal and State gas taxes Federal and State diesel taxes Vehicle weight fees Tolls Public transit fare 	<ul style="list-style-type: none"> Property taxes Benefits assessment districts Developer fees 	<ul style="list-style-type: none"> Sales taxes General Funds provided by Federal, State, and local governments Externalized Costs

2.3 Transportation Development and Conservation Planning in California: Example Efforts

There are opportunities to integrate conservation planning and priorities into transportation planning cycles and processes – such as City and County General Plans, RTPs/SCS, integrated regional watershed management planning, and Forest Land Management Plans – by providing input into the CTP, RTP, and SCS, and by looking for opportunities to streamline permitting processes such as participation in the design and implementation of Natural Community Conservation Plans (NCCPs)/Habitat Conservation Plans (HCPs). The planning efforts above can integrate the high-level conservation priorities outlined in the SWAP 2015, which may also overlap with various land and resource management plan updates more locally, and can also acknowledge transportation related pressures and adopt avoidance, minimization, and mitigation strategies described in SWAP 2015. As regional plans are updated, current resource data and mitigation strategies related to transportation pressures could be incorporated into plan updates. By engaging in early evaluation of regional planning efforts, transportation partners can identify effective mitigation opportunities to avoid natural resource impacts.

Many State transportation partners have already incorporated in their programs and plans measures that would help conserve California’s natural and wildlife resources. Based on SWAP 2005 recommendations, the State developed policies and incentives to better integrate wildlife conservation early in transportation planning (California Department of Fish and Game [CDFG], 2005). Example recommended activities include retrofitting transportation systems and corridors to better accommodate wildlife and considering wildlife needs more effectively in existing transportation development (CDFG, 2005).

Direction provided by Goal Six of the CTP 2040, outlines strategies to practice environmental stewardship through planning for environmental sustainability while also incorporating environmental considerations early in transportation planning and development to preserve natural resources. SWAP 2015 provides ecoregional and watershed level analysis of priority habitats, stresses and pressures, and strategies for conservation of species at risk. Referring to SWAP 2015 as a first step in the planning process could help fulfill the intent of the CTP Goal 6.



CDFW and Caltrans collaborations are examples of the State’s ongoing effort to meet compatible goals through conservation and restoration partnerships. One notable example of successful collaboration between these two partners, as well as key stakeholders, is the development of a planning tool for conservation and transportation planning through the California Essential Habitat Connectivity Project, which identified key movement and migration routes for wildlife and key transportation corridors. It also helps sustain the State’s natural heritage by incorporating natural resource conservation considerations into transportation planning (Caltrans and CDFG, 2010).

The Statewide Advanced Mitigation Initiative (SAMI) is a Caltrans and CDFW joint initiative involving key stakeholders, and includes several State and Federal regulatory resource agencies. This initiative focuses on long-term transportation planning to identify impacts to wildlife and other natural resources and opportunities for advanced mitigation in-lieu of project-by-project mitigation. Specifically, this project includes development of a statewide habitat connectivity map, assessment of biological value on connectivity areas, and strategy analysis plans (Caltrans and CDFG, 2010). By continuing this collaboration, Caltrans, CDFW with other partners can continue to work together to protect and conserve the State’s natural and wildlife resources. This can be accomplished by identifying steps and opportunities to integrate wildlife priorities into transportation development at all stages, including system planning, environmental review, construction, and operations.

2.4 *Transportation Development and Associated Facilities*

Examples from the transportation sector include surface transport on roadways and dedicated railroad tracks, and any associated facilities such as culverts and drainage systems, at-grade crossings, bridges, weigh stations, lighting and signage, and maintenance stations. This includes but is not limited to: highways, secondary roads, bridges and causeways, and fencing associated with roads and railroads.

Transportation Management and Development on Federally-owned Lands

Planning transportation systems and managing road, public transit, and trail systems on federally managed lands are critical issues that require attention by each Federal Land Management Agency (FLMA). Each FLMA has an established policy that directs their transportation planning and procedures for integrated transportation planning. For example, a comprehensive, long range transportation plan should include, as appropriate, a discussion of all transportation needs of the Federal land in question. These long-range transportation plans provide the managers with overall goals for management of the Federal land and may include objectives related to such needs as: protecting resources and accommodating and/or managing visitors (USDOT et al., 2007). Secondary roads on federally managed lands that are not part of the FLMA’s public transportation access system may be developed and managed via a separate land management plan.

Text Box 4. Collaborative Conservation Effort Examples in the Transportation Planning Sector

There are numerous collaborative conservation and management efforts found in California. Below we share two examples related to transportation planning in the State. These examples demonstrate existing conservation efforts that aligned with SWAP 2015. The partners addressed in each description are indicated in **bold**.

- ***Regional Habitat Connectivity Mapping:*** A regional landscape connectivity analysis is presently underway between **Caltrans, the University of California, Davis** and a large, diverse stakeholder group on the California Central Coast. The work titled ‘Regional Wildlife Corridor and Habitat Connectivity Plan’ was conducted for Caltrans’ Central Coast District (D5), which spans from Santa Barbara County to Santa Cruz County. Several key stakeholders participated in this regional habitat connectivity mapping effort, including various City and County planning entities as well as MPOs, RTPAs, non-governmental organizations (NGOs), land trusts, Resource Conservation Districts (RCDs), regulatory permitting agencies, natural resource agencies, and land managers. Multiple planning efforts that operate at various scales in the region serve as a foundation for this project. Examples include: Land Trust of Santa Cruz County’s Conservation Blueprint, the Bay Area Critical Linkages (BACL) (Penrod et al., 2013), The Nature Conservancy’s (TNC) ecoregional priorities, and the Audubon Society’s Important Bird Areas (IBA) (The Audubon Society, 2015). Since the effort began, subsequent networking and partnerships for data collection and sharing have been created and continue to develop. This project captures the essence of incorporating local and regional land use planning with conservation planning to consider cross-jurisdiction conservation and mitigation needs.
- ***Mitigating the Impacts of Transportation Projects:*** In 2010, **CDFW, Caltrans, the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (USEPA), the USFWS, and National Oceanic and Atmospheric Administration (NOAA) Fisheries** signed a Memorandum of Understanding (MOU) to coordinate the review and implementation of mitigation projects developed under the SAMI. SAMI projects aim to mitigate the impacts of transportation projects occurring at the landscape scale. Under SAMI, mitigation actions can include mitigation banks, conservation banks, and other mitigation and conservation measures. By ensuring a coordinated and collaborative approach to aid the review of mitigation projects, SAMI helps offset impacts associated with **Caltrans’** transportation projects and facilitates the rapid implementation of mitigation and conservation actions (Caltrans, 2010).

3. Common Themes across Nine Sectors

Equally important to discussion topics unique to each sector is the common themes considered across all sectors. This section shares overarching themes identified through the development of the nine companion plans within the scope of SWAP 2015. As described below, the top two most commonly discussed topics were: 1) climate change and 2) integrated regional planning.

3.1 Climate Change Related Issues

All sectors highlighted the potential far-reaching effects on California’s natural resources induced or exacerbated by climate change as a major issue. The negative impacts to the State’s ecosystems described in SWAP 2015 may increase in their magnitude and severity by the compounding effects of climate change (CDFW, 2015; Ch. 2.5.3). The implications of climate change are likely to be profound and influence many facets of the State’s natural resources. Therefore, development teams considered collaboration across sectors related to natural resource management and conservation essential to assist ecosystem adaptation effectively and minimize negative effects from the shifting climate.

The suggested collaborative activities under various sector discussions that relate to climate change include a comprehensive assessment of the State’s climate change vulnerability and implementation of appropriate adaptation actions (CDFW, 2015; Ch. 2.5.3). Detailed activities addressed during the discussions include, but are not limited to: establishing a sustainable habitat reserve system to reduce other habitat threats and increase habitat resilience to climate change; incorporating climate change impacts (e.g., habitat shifts and sea level rise) into the management of watersheds, habitats, and vulnerable species; improving regulation of greenhouse gas emissions; developing comprehensive research guidelines to evaluate climate change effects; and engaging in education and outreach activities to raise awareness of climate change.

3.2 Integrated Regional Planning

California hosts a landscape that is ecologically, socio-economically, and politically intricate. The current status of the State’s ecosystems reflects the synergistic interactions among ecological conditions and processes, as well as diverse human activities and conflicting needs and the regulations imposed on those activities.

The concept of integrated regional planning arises from the recognition that addressing only one aspect of such a multi-faceted, dynamic human and natural system would not be sustainable. Integrated regional planning in the context of SWAP 2015, paraphrased from the definition in the California Water Plan, is an approach to prepare for effective management, including conservation activities, while concurrently achieving social, environmental, and economic objectives to deliver multiple benefits across the region and jurisdictional boundaries (California Department of Water Resources [DWR], 2014). The expected outcomes of adopting an integrated regional planning approach are to 1) maximize limited resources to provide for increased public well-being, and 2) receive broader support for natural resource conservation beyond the conservation community while systematically improving ecosystem conditions that sustain the ecological integrity of the region.

Integrated regional planning begins with the acceptance of diverse natural resource management priorities associated with the region and the accompanying activities necessary to pursue those interests. Based on this understanding and philosophy, attempts by natural resource management agencies to integrate activities often include negotiations during regional planning processes. Expected efforts under integrated regional planning processes include: planning to reduce conflicts among priorities and activities; minimizing overlapping efforts by aligning similar activities; streamlining and integrating needed processes across the priorities; and collaborating to complement efforts and pursue



mutual priorities and interests. As an example, integrated planning could occur by zoning larger planning regions, coordinating multiple needs for the region, and limiting activities within each zone to avoid incompatible activities, or at least reduce unintended negative consequences of isolated but interactive activities. In sum, integrated regional planning requires open-mindedness, transparency, patience, and comprehensive and strategic planning between natural resource management priorities and regional and/or local jurisdictions through coordination.

In developing the companion plans, all sectors considered an integrated regional planning framework as one of the State's top priorities. The needs and tasks related to integrated regional planning and expressed through the discussion among the sector groups were: preparing, approving, and implementing regional- and landscape-level conservation plans; pursuing necessary resources systematically for conservation strategy implementation; coordinating effective partnerships; adapting to emerging issues; and reviewing and revising the plans. Existing efforts recognized for supporting integrated regional planning include NCCPs, HCPs, Habitat Connectivity Planning for Fish and Wildlife,⁸ the Master Plan for Marine Protected Areas, and individual species management plans. SWAP 2015 also addresses those activities and plans.

In addition, SWAP 2015 highlights where partners can potentially integrate SWAP with other agency conservation programs, including the efforts by California Wildlife Conservation Board (WCB), identified and discussed among the companion plan development teams.

4. Commonly Prioritized Pressures and Strategy Categories across Sectors

Below is an overview of pressures and strategy categories considered important across the nine sector teams. SWAP 2015 adopted the Open Standards for the Practice of Conservation⁹ process and applied it to each targeted ecosystem to identify strategies that could influence key ecosystem pressures (CDFW, 2015; Ch. 1.5.4). During development team meetings, CDFW shared lists of those identified pressures and strategy categories that are considered relevant to each sector. Through voting, each development team prioritized the pressures and strategy categories by the importance to the sector. The commonly prioritized pressure and strategy categories described below were identified by synthesizing overarching discussion themes (for pressures) and by counting the frequency of the prioritization (for strategy categories) across the sectors.

4.1 Pressures across Sectors

A pressure, as defined in SWAP 2015, is “an anthropogenic (human-induced) or natural driver that could result in impacts to the target (i.e., ecosystem) by changing the ecological conditions” (CDFW, 2015; Ch. 1.5.4, 26). Pressures can have either positive or negative effects depending on their intensity, timing, and duration, but they are all recognized to have strong influences on the well-being of ecosystems

⁸ For more information, see: CDFW, “Habitat Connectivity Planning for Fish and Wildlife,” 2015. Web. 27 Oct. 2015. www.wildlife.ca.gov/Conservation/Planning/Connectivity.

⁹ For more information on the Open Standards for the Practice of Conservation, see: Conservation Measure Partnership, “The Open Standards,” 2015. Web. 28 Oct. 2015. <http://www.conservationmeasures.org>.



(CDFW, 2015; Ch. 1.5.4). Table 2 lists the 29 standard pressures addressed under SWAP 2015 (CDFW, 2015; Ch. 1.5.4).

Table 2. SWAP 2015 Pressures

<ul style="list-style-type: none"> • Agricultural and forestry effluents • Air-borne pollutants • Annual and perennial non-timber crops • Catastrophic geological events • Climate change • Commercial and industrial areas² • Dams and water management/use • Fire and fire suppression • Fishing and harvesting aquatic resources • Garbage and solid waste • Household sewage and urban waste water^{3,4} • Housing and urban areas² • Industrial and military effluents^{4,5} • Introduced genetic material • Invasive plants/animals 	<ul style="list-style-type: none"> • Livestock, farming, and ranching • Logging and wood harvesting • Marine and freshwater aquaculture • Military activities • Mining and quarrying • Other ecosystem modifications⁶ • Parasites/pathogens/diseases • Recreational activities • Renewable energy • Roads and railroads • Shipping lanes⁷ • Tourism and recreation areas • Utility and service lines • Wood and pulp plantations
<p>Pressures include the following:</p> <ol style="list-style-type: none"> 1 Volcano eruption, earthquake, tsunami, avalanche, landslide, and subsidence 2 Shoreline development 3 Urban runoff (e.g., landscape watering) 4 Point discharges 5 Hazardous spills 6 Modification of mouth/channels; ocean/estuary water diversion/control; and artificial structures 7 Ballast water 	

(CDFW, 2015; Ch. 1.5.4)

As described under Section 3.1, the climate change pressure was one of the common themes discussed across the sectors. There were no other standardized pressures listed under Table 2 that were commonly prioritized across all sectors. For more information on pressures prioritized for the transportation planning sector, please refer to Section 5.1 below.

4.2 Strategy Categories across Sectors

SWAP 2015 outlines 11 categories of statewide conservation strategies under which regional strategies are organized, similar to the manner in which the regional goals are tiered under the statewide conservation goals (CDFW, 2015; Ch. 4.2). The statewide and regional strategies are meant to work synergistically to achieve the statewide goals and priorities. Table 3 lists the 11 standardized statewide strategy categories addressed under SWAP 2015 (CDFW, 2015; Ch. 4.2).

Table 3. SWAP 2015 Conservation Strategy Categories

<ul style="list-style-type: none"> • Data Collection and Analysis • Direct Management • Economic Incentives • Environmental Review • Land Acquisition, Easement, and Lease • Land Use Planning 	<ul style="list-style-type: none"> • Law and Policy • Management Planning • Partner Engagement • Outreach and Education • Training and Technical Assistance
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(CDFW, 2015; Ch. 4.2)

Of these 11 strategies, the three most commonly prioritized strategy categories across the nine sectors were: **Data Collection and Analysis** (78% or 7 sectors prioritized this strategy), **Management Planning** (78% or 7 sectors), and **Partner Engagement** (56% or 5 sectors). The strategy categories identified as most relevant to the transportation sector are described in Section 5.2 below.

5. Transportation Planning Priority Pressures and Strategy Categories

The transportation planning sector faces many challenges in addressing the conservation and management of California’s natural and wildlife resources. These challenges include climate change and GHG emissions reduction, population growth and impacts on roadways (including the need for mobility improvement and regional strategy integrations), and limited funding (Caltrans, 2015a).

Transportation systems such as roads and railways are a pressure to wildlife resources statewide. Through State, regional, county, and local transportation planning efforts, stresses such as habitat fragmentation, changes in ecosystem processes, and changes in runoff and river flow could be reduced through the identification and implementation of conservation actions. Transportation systems include other modes of travel such as freight, rail, regional transit, bike and pedestrian and other forms of active transportation, ports and shipping, and regional planning for airport access. Transportation planning for these systems often considers multimodal integration.

The challenges identified above also represent future opportunities for recommendations to support, improve, and enhance the implementation of SWAP 2015. These activities and strategies may include data collection and analysis, identification of priority corridors and wildlife design structures, environmental stewardship with early coordination practices, and more informed and coordinated integrated regional planning with the applicable local partners.

During companion plan development meetings held in early 2015, the top pressures and strategies (described below in Section 5.1) were prioritized through ranking and voting by the development teams. The list drew upon efforts undertaken between 2013 and 2014 to identify province- and state-scale pressures and strategies for SWAP 2015 (CDFW, 2015; Ch. 1.5). Through facilitated discussions, the development team prioritized pressures and strategies based on member knowledge and involvement in the sector. Below is a list of the prioritized pressures and strategies.

5.1 Priority Pressures

Roads and Railroads - As outlined in SWAP, the following were identified as the primary stressors related to transportation improvement projects including roads and railroads and other associated facilities (e.g. bridges, culverts, at-grade crossings, signage, maintenance yards and stations among others) that may influence various SWAP conservation targets and KEAs (CDFW, 2015, Ch. 5):

- Habitat fragmentation;
- Changes in sediment and erosion deposition regime;
- Changes in soil characteristics from pollutants;
- Ecosystem changes such as spatial distribution of habitat types, community structure or composition, successional processes and ecosystem development, and habitat fragmentation;
- Changes in hydrology and water characteristics due to changes in pollutants, groundwater tables, runoff and flow, water levels, and hydroperiod; and
- Changes in disturbance regime due to changes in fire regimes.

5.2 Priority Strategy Categories

Highlighted below are the top four strategy categories the development team prioritized in alphabetical order – **Data Collection and Analysis**, **Direct Management**, **Partner Engagement**,¹⁰ and **Management Planning**. The information below is combined into a more comprehensive table shared in Section 6. *Collaboration Opportunities and Potential Resources by Strategy Category* (Table 4). The strategy category definitions described below include information from SWAP 2015 with additional insights gathered during the sector development team meetings (CDFW, 2015; Ch. 4.2). The example strategies and conservation activities were prioritized by development team members early in the companion plan process.

Data Collection and Analysis – Data collection and analysis is the utilization of robust data and thorough analysis to facilitate more effective implementation of conservation strategies under other categories.

- Example strategies include: providing assistance with regulatory permit compliance tracking via data collection; making data readily available, accessible, and packaged in compatible formats for use in local analysis and consideration in State and regional transportation planning processes; and gathering baseline data and research through long-term monitoring.
- Examples of associated conservation activities include: streamlining permitting and environmental review; setting up resource-based research; and analyzing natural resources impacts.

Direct Management – Direct management is the participation in and implementation of activities that support stewardship of habitats and natural processes to maintain, enhance, and restore species population and ecological functions/conditions of habitats.

¹⁰ Initially discussed in transportation planning development team meetings as “Land Acquisition, Easement, and Lease,” the development team revised the strategy to “Partner Engagement” during companion plan review process.

- Example strategies include: identifying high priority corridors and wildlife design structures; practicing environmental stewardship with early coordination; and incorporating interregional ecological strategies, such as wildlife movement and delivery of ecosystem services into planning efforts.
- Examples of associated conservation activities include: implementing best management practices (BMPs) with a focus on natural resource impact avoidance, or restoration, enhancement of habitats and species of populations of greatest conservation concern; applying mitigation measures in permitted projects; and managing invasive species.

Partner Engagement – Partner engagement is the process for engaging and developing collaboration among State and Federal agencies, Tribes and tribal communities, non-governmental organizations, private landowners, and other partners to achieve shared conservation objectives and enhance coordination across jurisdictions and areas of interest.

- Example strategies include: coordinating with State and Federal regulatory agencies early in the planning and project design phases; participating in integrated planning efforts including NCCPs and HCPs; advancing mitigation planning efforts like SAMI and RAMP; and providing local land use plans.
- Examples of associated conservation activities include: establishing and developing co-management partnerships; using partnerships with land managers to manage conserved lands; establishing joint partnerships with land managers to manage invasive species on conserved lands; and focusing on environmental stewardship through early coordination with State and Federal regulatory agencies.

Management Planning – Management planning is the development of management plans or processes for species, habitats, and natural processes/conditions that will lead to implementation of more effective conservation strategies.

- Example strategies include developing and implementing transportation-specific BMPs and green infrastructure solutions, and advancing mitigation strategies that help enhance or support ecosystem conditions, functions, and processes.
- An example of an associated conservation activity includes developing and implementing advance mitigation planning or programmatic mitigation plans to integrate environmental resource considerations into long-range plans. Tools and frameworks for doing so are available, including RAMP, FHWA’s Integrated Ecological Framework, FHWA’s Plan Works and decision guides for long-range system and corridor planning.

Text Box 5. Identified Pressures and Strategies for Future Consideration

SWAP 2015 describes the 29 major pressures (Table 2) on the State’s ecosystems (CDFW, 2015; Ch. 2.5.2). The list below provides additional pressures and strategies the development team identified as important for this sector that should be considered during future SWAP updates. These pressures and strategies were not highlighted as top priorities for the transportation planning sector under the main SWAP 2015.¹

Pressures

- Bird strikes at airports
- Light rail/interregional rail
- Secondary roads on publically managed roads (e.g., logging roads)

Strategies

- Practice environmental stewardship through early coordination of transportation projects (e.g., Caltrans CTP 2040).
- Incorporate transportation needs into natural community transportation plans (e.g., NCCPs and SWAP 2015).
- Improve BMPs and incorporate them into transportation projects to reduce the stresses of water run-off and pollutants.
- Identify opportunities for coordinating with or participating in NCCPs, HCPs, and other conservation planning efforts.
- Design structures that reduce stressors (e.g., erosion and sedimentation) impacting water bodies.
- Identify high priority wildlife corridors, design wildlife crossing/passage structures, and incorporate their implementation into transportation projects.

¹Some additional pressures identified by development teams may already be addressed in SWAP 2015.

6. Collaboration Opportunities for Joint Priorities

This section describes the potential alignment opportunities for SWAP 2015 with existing plans and strategies from other sector agencies and organizations that development team members have identified. Section 6.1 introduces the four categories that are used to organize such opportunities; they are based on jurisdiction and locality of plans and strategies. Following Section 6.1, collaboration opportunities and resources identified by each strategy category are shared in Table 4, *Collaboration Opportunities and Potential Resources by Strategy Category*. For a more extensive list of plans, strategies, and documents identified through the companion plan development process, please see Appendix B.¹¹ SWAP 2015 integration with other partners’ programs is an integral part of balancing the needs of wildlife with the needs of society and is explored in SWAP 2015 (CDFW, 2015; Ch. 7.1.2).

¹¹ This is not an exhaustive list of sector plans and strategies in alignment with SWAP 2015 goals.



6.1 Alignment Opportunities by Jurisdiction and Locality

The section below describes four categories of locality and jurisdiction broadly where potential alignment opportunities typically fit: Federal, State, Regional and Multi-partner, and Non-governmental. These categories are based on jurisdiction and locality of the management and conservation efforts. Example opportunities for each category are also provided here.

Federal

Plans identified in this category typically draw upon national guidance reflecting the goals and strategies of Federal agencies and organizations. For example, the U.S. Forest Service (USFS) has created a guidebook that helps guide actions in the State called the *Federal Surface Transportation Programs and Transportation Planning for Federal Land Management Agencies*. Although these plans guide Federal agency interventions, they also play a key role in how these agencies engage in partnership with States and other partners.

State

Plans identified in this category reflect numerous State agency priorities, strategies, and conservation actions of California. These plans and strategies guide decision-making, resources allocation, and implementation priorities of the State agencies. Examples of key statewide plans and strategies include, but are not limited to, CDFW's *SWAP 2015* and a joint strategy developed by the CDFW and Caltrans called the *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California*. In addition, Caltrans has developed several key strategy plans for the transportation planning sector, such as the *California Transportation Plan 2040 Draft*, *Wildlife Crossings Guidance Manual*, and *Fish Passage Conditions for Road Crossing Design*.

Regional and Multi-partner

Numerous regional and multi-partner plans help guide conservation efforts across the State. These plans and strategies, like those at the Federal level, describe strategies and activities that align with this companion plan and SWAP 2015. At a regional level, NCCPs, HCPs, and general county plans can be used to inform a wide array of conservation planning efforts. Many of the large-scale, multispecies HCPs and NCCPs are habitat-based plans that encourage future development to occur in already developed areas, while setting up a system of large contiguous protected lands based on a comprehensive landscape-level conservation strategy designed for the planning area. Planning at this scale provides regional protection for plants, animals, and their habitats, while allowing compatible and appropriate economic activity. For example, plans that describe regional conservation interventions include SCAG's *2016-2040 Regional Transportation Plan/Sustainable Community Strategy (forthcoming)*, as well as county general plans. Most regional transportation plans include and discuss resource conservation on habitat lands and serve as an opportunity to integrate SWAP 2015 goals. Sustainable community plans, such as those funded through the California Strategic Growth Council (SGC), often include regional and local plans and policies that benefit natural resources in ways consistent with conservation goals outlined in SWAP 2015. Examples of such policies include restricting urban boundaries adjacent to key forest/rangeland areas,



zoning such areas as open space, or identifying key habitat areas characterizing the community for management or restoration as natural areas (SGC, 2014).

Non-governmental

Like the plans described above, private landowners and NGOs also play a key role in wildlife conservation and they have plans that describe their desired conservation outcomes and management priorities compatible with those of SWAP 2015. Examples include, but are not limited to, the Glenn County RCD's *Lower Stony Creek Watershed - Landowner's Manual*, and American Road & Transportation Builders Association's (ARTBA) *Moving Ahead for Progress in the 21st Century Act*.

6.2 Collaboration Opportunities and Potential Resources by Strategy Category¹²

For each prioritized strategy category described in Section 5 above, Table 4 below shares example conservation activities that are, will, or might be implemented in the next 5-10 years. These conservation activities are listed adjacent to example potential partners and financial resources that development team members identified. Although the table below shares examples of potential activities where partnerships could occur at different project scales (transportation planning, environmental review, project construction, and project operation and maintenance), other activities addressing priority strategies should be considered, as this is not a comprehensive list.¹³ Similarly, while the identified example conservation activities could apply across many spatial scales and jurisdictions, the current table highlights the most relevant scale of implementation. As described earlier in this document, Table 4 does not indicate a willingness and/or commitment on behalf of these organizations or entities to partner, fund, or provide support for the strategy implementation.

As described previously, transportation development was identified as having the following stressors linked to various conservation targets and KEAs:

- Habitat fragmentation;
- Changes in sediment, erosion deposition regime;
- Changes in soil characteristics from pollutants;
- Ecosystem changes such as spatial distribution of habitat types; community structure or composition; successional processes and ecosystem development; and habitat fragmentation;
- Changes in hydrology and water characteristics due to changes in pollutants, groundwater tables, runoff and flow, water levels and hydroperiod; and
- Changes in disturbance regime due to changes in fire regimes.

¹² Disclaimer: Please note this is not an exhaustive list of potential partners and financial resources. The organizations listed in Table 4 were identified through this companion plan process, but their identification here does not indicate agreement to partner and/or provide financial resources for the conservation activities.

¹³ **Statewide** indicates actions occurring across the State. **Regional** indicates efforts that occur at a smaller than statewide scale and across more than one locality or site. **Local/Site-specific** indicates activities occurring at a specific location (e.g., city or park unit) or site (e.g., Morro Bay Estuary or Mojave Desert).



It is important to note that the stressors above are also linked to other pressures, not only roads and railroads. As previously discussed in Section 5.2, the priority conservation strategies categories identified for the transportation planning sector are:

- Data Collection and Analysis, the utilization of robust data and thorough analysis to facilitate or inform more efficient implementation of conservation strategies under other categories;
- Direct Management, the participation in and implementation of activities that support stewardship and habitats and natural processes to maintain, enhance, and restore species population and ecological functions/conditions;
- Partner Engagement, the process for engaging and developing collaboration among state and federal agencies, tribes and tribal communities, NGOs, private landowners, and other partners to achieve shared conservation objectives and enhance coordination across jurisdictions and areas of interest; and
- Management Planning, the development of management plans or processes for species, habitats, and natural processes and conditions that will lead to the implementation of more effective conservation strategies.

The conservation activities outlined in the table below identify key activities that, if implemented during various transportation development processes (e.g., planning, project delivery/ environmental review/design, construction, operation and maintenance of transportation facilities), could reduce the pressures related to transportation development and ultimately have a positive effect on SWAP conservation targets and KEAs.

Table 4. Collaboration Opportunities and Potential Resources by Strategy Category

Example Conservation Activities	Potential Partners	Example Potential Financial Resources
Priority Strategy: Data Collection and Analysis		
<p>During Transportation Planning:</p> <ul style="list-style-type: none"> • Compile existing data and plans into refined maps that identify areas of conservation and restoration action in order to inform design concepts • Overlay transportation development plans and asset management needs • Collaborate on the identification of essential fish and wildlife corridors and incorporate into long range plans to inform design concepts to guide mitigation strategies and options • Explore innovative green infrastructure concepts and options to address pressures • Share data and collaborate on landscape level priorities • Include climate data to inform planning decisions <p>During Environmental Review of Projects and Plans:</p> <ul style="list-style-type: none"> • Conduct and document through technical studies impacts to natural resources, including identified wildlife movement corridors and fish passage, and determine need for mitigation • Integrate study results and data, and analyze spatial distribution to develop mitigation strategies that address stressors • Share data and coordinate with agency partners <p>During Project Construction:</p> <ul style="list-style-type: none"> • Provide monitoring reports associated with tracking mitigation success criteria • Submit California Natural Diversity Database (CNDDB) records to CDFW when listed species are found during construction <p>During Project Operation and Maintenance (O&M):</p> <ul style="list-style-type: none"> • Collect data to allow for performance measure tracking to improve asset management 	<p>Federal</p> <ul style="list-style-type: none"> • BLM • FHWA • Natural Resource and Regulatory Agencies • NPS • USFS <p>State</p> <ul style="list-style-type: none"> • CA Air Resources Board • CA Department of Parks and Recreation (State Parks) • CA Division of Technology • CA Invasive Plant Council (IPC) • Caltrans • Caltrans Traffic Operations (during O&M) • CDFW • CDFW Biogeographic Data Branch • Railroads • SGC • State Conservancies • Universities and University Transportation Centers (UTCs) <p>Local/County</p> <ul style="list-style-type: none"> • Cities and Counties • Citizen science groups • MPOs, RTPAs • Private landowners • RCDs <p>NGO/Foundation</p> <ul style="list-style-type: none"> • Land Trusts • NGOs 	<p>Federal</p> <ul style="list-style-type: none"> • FHWA, MAP-21 Surface Transportation Program • FTA • National Research programs (e.g. Transportation Research Board, National Cooperative Highway Research Program [NCHRP], Strategic Highway Research Program 2 [SHRP2]) • USDOT <p>State</p> <ul style="list-style-type: none"> • Caltrans planning grants (e.g., State Planning and Research) • GHG Reduction Fund through CA Air Resources Board’s Cap-and-Trade program • State and federal funds for regional projects (e.g., gas tax, discretionary funds) • State Highway Account • Strategic Growth Council • UTCs • General Fund <p>Local/County</p> <ul style="list-style-type: none"> • MPOs and RTPAs – leveraged federal and state funds for local projects (e.g., gas tax, discretionary funds) <p>Non-governmental</p> <ul style="list-style-type: none"> • The Nature Conservancy Green Growth Initiative

Example Conservation Activities	Potential Partners	Example Potential Financial Resources
<ul style="list-style-type: none"> Integrate O&M environmental monitoring data collection and results into planning to inform transportation decisions 		
Priority Strategy: Direct Management		
<p>During Transportation Planning:</p> <ul style="list-style-type: none"> Engage and provide input to land use plans Establish and develop co-management partnerships, and use partnerships with land managers to manage conserved lands Where transportation facilities are adjacent to conserved lands, establish joint partnerships with land managers to manage invasive species on conserved lands Establish partnerships to develop and implement advance mitigation planning Focus on environmental stewardship through early coordination with State and Federal regulatory agencies Provide education to partners and community on impacts from operations and maintenance activities within railroad right-of-ways Include climate data to inform planning decisions <p>During Environmental Review of Projects and Plans:¹⁴</p> <ul style="list-style-type: none"> State/show how HCPs or similar plans identify some mitigation actions that could be incorporated into projects consistent with those prescribed in other HCPs or similar documents Assess project-level impacts and obtain permits Consider species and stormwater BMPs and other requirements from various regulatory permits during project-level California Environmental Quality Act (CEQA)/NEPA reviews and promote consistency (e.g. National Pollutant 	<p>Federal</p> <ul style="list-style-type: none"> BLM NPS USFS <p>State</p> <ul style="list-style-type: none"> CA IPC CA Department of Forestry and Fire Protection (CAL FIRE) Caltrans Railroads State Conservancies State Parks Universities and UTCs CDFW <p>Local/County</p> <ul style="list-style-type: none"> Cities and Counties Construction Contractors/Managers County Transportation Commissions MPOs and RTPAs Private Landowners RCDs <p>NGO/Foundation</p> <ul style="list-style-type: none"> Land Trusts 	<p>Federal</p> <ul style="list-style-type: none"> FHWA, Surface Transportation Program FTA National Research programs (e.g. Transportation Research Board, NCHRP, SHRP2) <p>State</p> <ul style="list-style-type: none"> CAL FIRE urban forestry projects Caltrans Environmental Enhancement and Mitigation (EEM) Fund Caltrans planning grants (e.g., Strategic Partnerships, Sustainable Communities) GHG Reduction Fund through the CA Air Resources Board's Cap-and-Trade program SGC State and federal funds for regional projects (e.g., gas tax, discretionary funds) State Highway Account State Planning and Research grants <p>Local/County</p> <ul style="list-style-type: none"> MPOs and RTPAs - leveraged federal and state funds for local projects (e.g., gas tax, discretionary funds) <p>Non-governmental</p> <ul style="list-style-type: none"> Climate Solutions University

¹⁴ Note: regional transportation agencies often cannot or will not comment on non-transportation related impacts of a project environmental impact report (EIR). Staff may not have expertise in non-transportation-related areas and such comments may be politically sensitive (e.g., it may impact short term economic opportunity for a community).

Example Conservation Activities	Potential Partners	Example Potential Financial Resources
<p>Discharge Elimination System [NPDES permit])</p> <p>During Project Construction</p> <ul style="list-style-type: none"> Identify environmentally sensitive areas to be avoided during construction and grading activities Incorporate specific permit requirements including species and habitat mitigation measures Implement stormwater management contract requirements during construction <p>During Operations and Maintenance:</p> <ul style="list-style-type: none"> Manage invasive species Conduct long-term monitoring and collect data on efficacy of installed fish and wildlife passage structures Comply with long-term NPDES permit conditions, total maximum daily load (TMDL), and water discharge requirements 		
Priority Strategy: Partner Engagement		
<p>During Transportation Planning:</p> <ul style="list-style-type: none"> Engage and provide input to land use plans Establish and develop co-management partnerships, use partnerships with land managers to manage conserved lands Where transportation facilities are adjacent to conserved lands, establish joint partnerships with land managers to manage invasive species on conserved lands. Establish partnerships to develop and implement advance mitigation planning Focus on environmental stewardship through early coordination with State and Federal regulatory agencies Help put prime agriculture land lying fallow into production (land that would otherwise be low-hanging fruit for development) Provide education to partners and community on impacts from operations and maintenance activities within railroad right-of-ways 	<p>Federal</p> <ul style="list-style-type: none"> BLM FHWA Natural Resource and Regulatory Agencies NPS USFS <p>State</p> <ul style="list-style-type: none"> CA Division of Technology CAL FIRE Caltrans Railroads SGC State Parks CDFW <p>Local/County</p> <ul style="list-style-type: none"> Cities and Counties Citizen Science Groups Construction Contractors/Managers County Transportation Commissions 	<p>Federal</p> <ul style="list-style-type: none"> FTA USDOT – Congestion Mitigation and Air Quality Improvement Program (CMAQ) <p>State</p> <ul style="list-style-type: none"> Caltrans Community-Based Transportation Planning (CBTP) and Strategic Partnership grant programs Caltrans Operations and Pavement Protection Annual Allocation Proposition 84 planning grants for regional planning SGC and the High Speed Rail Authority State Highway Account State Planning and Research grants General Fund

Example Conservation Activities	Potential Partners	Example Potential Financial Resources
<ul style="list-style-type: none"> • Provide incentives for transportation agencies that are consistent with statewide transportation goals and policies in regional planning • Support compact infill and redevelopment in existing underutilized urban areas so communities have no need to sprawl into greenfield or agriculture lands • Include climate data to inform planning decisions <p>During Environmental Review of Projects and Plans:</p> <ul style="list-style-type: none"> • Communicate and coordinate mitigation needs including mitigation costs with project development team • Coordinate with natural resource agencies on avoidance, minimization, and mitigation strategies <p>During Project Construction and Operations and Maintenance:</p> <ul style="list-style-type: none"> • Conduct environmental awareness training for operations and maintenance staff and management • Conduct environmental awareness training for design teams, construction management firms, and construction contractors for projects 	<ul style="list-style-type: none"> • Mitigation and Conservation bankers • MPOs and RTPAs • Natural Resource and Regulatory Agencies • Private landowners • RCDs • State Conservancies • Universities and UTCs <p>NGO/Foundation</p> <ul style="list-style-type: none"> • Land Trusts • NGOs 	<p>Local/County</p> <ul style="list-style-type: none"> • MPOs and RTPAs - leveraged federal and state funds for local projects (e.g., gas tax, discretionary funds) <p>Non-governmental</p> <ul style="list-style-type: none"> • Climate Solutions University
<p>Priority Strategy: Management Planning</p>		
<p>During Transportation Planning:</p> <ul style="list-style-type: none"> • Develop a voluntary, but consistent scorecard or application of performance measures to see how well draft and final plans compare to other regions and to identify best practices for possible incorporation into future plans • Consider climate change best-available science and analysis into management plans for species and habitats • Participate and coordinate with integrated regional planning efforts (NCCPs/HCPs) • Support development of statewide maps, data sets, and online resources depicting important natural resource areas with planned and programmed 	<p>Federal</p> <ul style="list-style-type: none"> • BLM • FHWA • Natural Resource and Regulatory Agencies • NPS • USFS <p>State</p> <ul style="list-style-type: none"> • CA Division of Technology • CAL FIRE • Caltrans • Railroads • SGC • State Parks • CDFW • State Conservancies 	<p>Federal</p> <ul style="list-style-type: none"> • National Research programs (e.g., Transportation Research Board, NCHRP, SHRP2) <p>State</p> <ul style="list-style-type: none"> • Caltrans planning grants (e.g., State Planning and Research grants) • General Fund <p>Local/County</p> <ul style="list-style-type: none"> • MPO SCS, RTPAs • Local sales tax measures • Regional Park Districts <p>Non-governmental</p> <ul style="list-style-type: none"> • Climate Solutions University

Example Conservation Activities	Potential Partners	Example Potential Financial Resources
<p>transportation facilities to allow for early integration as a planning tool</p> <ul style="list-style-type: none"> • Promote consistency of project features with regional conservation needs • Compile existing data and plans into refined maps that identify areas of conservation and restoration action in order to inform design concepts; • Identify areas fragmented by roads or railroads that are essential fish and wildlife corridors and inform design concepts to guide mitigation strategies and options • Consider innovative green infrastructure concepts and options to address pressures • Share data and collaborate on landscape level priorities <p><i>During Environmental Review of Projects and Plans:</i></p> <ul style="list-style-type: none"> • Assess project-level impacts and obtain permits • Consider species and stormwater BMPs and other requirements from various regulatory permits during project-level CEQA/NEPA reviews and promote consistency (e.g., NPDES permit) <p><i>During Project Construction and Operations and Maintenance:</i></p> <ul style="list-style-type: none"> • Fulfill permit requirements and submit mitigation monitoring plan reporting • Integrate O&M environmental monitoring data collection and results into planning to inform transportation decisions 	<p><i>Local/County</i></p> <ul style="list-style-type: none"> • Cities and Counties • Citizen Science Groups • Construction Contractors/Managers • County Transportation Commissions • Mitigation and Conservation bankers • MPOs and RTPAs • Natural Resource and Regulatory Agencies • Private landowners • RCDs • Universities and UTCs <p><i>NGO/Foundation</i></p> <ul style="list-style-type: none"> • Land Trusts • NGOs 	

7. Evaluating Future Collaboration Efforts

Implementation of SWAP and its nine companion plans is a complex undertaking. The first section below describes the desired outcomes and outputs of the transportation planning companion plan implementation identified through the development team discussions. A desired outcome is an improved (and intended) future state of a conservation factor due to implementation of actions or strategies (CDFW, 2015; Ch. 11). Through the companion plan process, the management team defined a desired output as a deliverable that can be measured by the activities and processes that will contribute to accomplishing the desired outcomes and goals. The list of desired outcomes and outputs in the subsection below is followed by a high-level description emphasizing the importance of adaptive



management to SWAP 2015 and the companion plans, and how their implementation effectiveness would be evaluated by applying the adaptive process addressed under the main document.

7.1 Desired Outcomes and Outputs

Participants were asked what the sector's top desired outcomes and outputs are in the next 5-10 years, based on the development team discussions, their knowledge of the sector, and within the context of SWAP 2015. The identified outcomes and outputs for each strategy category, not listed in order of priority, are provided below.

Data Collection and Analysis

- Effectiveness indicators and protocol identified and designed to collect data on and monitor effectiveness of integration of SWAP 2015 and companion plan goals into relevant documents (e.g., transportation plans, General Plans, management plans) and to evaluate the number of transportation partners participating in integrated regional planning efforts (e.g., NCCPs/HCPs, RAMP).
- Specific tools and programs – beyond interagency coordination and consideration of respective plans – identified to help local and regional agencies contribute meaningfully to the health of natural and wildlife systems.
- A standardized list of natural resource data developed that resource agencies could suggest reviewing and incorporating into long-range transportation, system planning documents, and Regional Transportation Plan updates.

Direct Management

- Compliance required with NPDES permits requirements to reduce pollutants in stormwater discharges to the maximum extent practicable during project planning, construction, maintenance, and operation activities, including TMDLs to reduce pollutant input to impaired water bodies.
- SWAP 2015 and companion plans applied as tools to guide transportation development activities and processes that could support conservation planning efforts and strategies.

Partner Engagement

- Integrated regional planning efforts (e.g., efforts focused on RAMP and SWAP 2015 goals) and tools developed and implemented to inform transportation planning decisions and relevant information provided to planners/partners over the next 5-10 years.
- RAMP resource assessment methodologies tested and shared to inform programmatic mitigation plans or advance mitigation investments and help meet regional conservation goals and strategies.

Management Planning

- New management planning partnership mechanisms identified and implemented.
- Issues and questions related to funding of conservation projects identified and addressed.
- State and Federal processes for managed lands and roads aligned and assessment framework for management tools focused on roads and railroads refined and available to all partners.



- See 1st bullet under Partner Engagement.

7.2 Evaluating Implementation Efforts

SWAP 2015 sets a stage for adaptive management, including implementation evaluation, by developing the plan based on the Open Standards for the Practices of Conservation (CDFW, 2015; Ch. 1.5.4). SWAP 2015 implementation will be monitored over time in concert with other conservation activities conducted by CDFW and its partners. SWAP 2015 recognizes three types of monitoring (CDFW, 2015; Ch. 8.3):

1. Status monitoring, which tracks conditions of species, ecosystems, and other conservation factors (including negative impacts to ecosystems) through time
2. Effectiveness monitoring, which determines if conservation strategies are having their intended results and identifies ways to improve actions that are less effective (i.e., adaptive management)
3. Effect monitoring, which addresses if and how the target conditions are being influenced by strategy implementation

Monitoring the SWAP and companion plan implementation and evaluating the monitoring results are critical steps for CDFW and partners to demonstrate and account for the overall progress and success achieved by SWAP 2015. By incorporating lessons learned through monitoring and evaluation into future actions, CDFW and its partners have opportunities to improve performance on coordination and collaboration and to adapt emerging needs that were not considered during the time of the plan development into future actions. Similarly, monitoring and the evaluation results could help inform stakeholders, including decision-makers, partners, and funders, about the status of the plan implementation, as well as where to best deploy resources to achieve desired outcomes and outputs effectively.

SWAP 2015 developed performance measures for each strategy category (CDFW, 2015; Ch. 8.3). These measures are critical in helping guide the Department and partners in assessing the effects and effectiveness of SWAP 2015 and the companion plans, as well as the level of the companion plan's contribution to the conservation of California's ecosystem.

8. Next Steps

During the third and final companion plan development team meeting, participants were asked to identify key next steps to ensure successful implementation of the companion plan, ideally within the next one to five years. The feedback fell into three categories, which were used to organize the information: Partnership and Collaboration, Communication and Outreach, and Monitoring and Evaluation. Suggestions outside of these categories are listed under "Additional Next Steps."

Partnership and Collaboration

- In coordination with CDFW, identify minimum data set criteria for integrated planning mapping tools, and refine impact assessment methodologies for transportation partners to utilize integrated regional planning efforts (e.g., RAMP).

- Continue partner collaboration and communication regarding SWAP 2015 and companion plans, update plans every few years, and promote ongoing collaboration and goal/strategy alignment (e.g., between Caltrans and CDFW) to develop tools to help implement SWAP 2015 and companion plans.
- Use existing tools, plans, and reports (e.g., the California Essential Habitat Connectivity Project report, RTPs, and updates to RTPs and Caltrans projects) to align and implement the responsibilities of partners outlined in Chapters 6 and 7 of SWAP 2015, and strengthen implementation of and support for projects that help avoid environmental impacts.
- Support and increase coordination with existing organizations that can help implement integrated regional planning efforts (e.g., the SGC) to increase coordination on integrated regional planning at the executive level.

Communication and Outreach

- Identify opportunities to increase awareness of and educate managers/planners about SWAP 2015 and companion plans and highlight relevant sector-specific information.
- Ensure that recommendations of SWAP 2015 and companion plans can be scaled up and generalized, as well as scaled down and translated to the local level for guiding local conservation actions.

Monitoring and Evaluation

- Link monitoring and evaluation protocol for companion plans to SWAP 2015 Chapter 8. In addition, link monitoring conservation strategies highlighted within Chapter 8 with performance indicators and protocol to collect data to assess implementation.
- Develop a standard set of environmental resource data and information to include in a long-range transportation plan updates.

Additional Next Steps

- Promote alignment of the companion plan with the Future Vision for California Infrastructure Plan and its principles on agency partnership and shared needs and goals.

9. Closing

This companion plan was developed in collaboration with many partners who deserve special recognition for their time and commitment (please see Appendix D for a list of development team members). As an initial step towards building a collaborative approach for implementation of SWAP 2015 and the nine sector-focused companion plans, CDFW will develop a work plan that describes actions to implement the plans and address the next steps identified.



Appendices

Appendix A: List of Potential Partners and Coordination Bodies on Alignment Strategies

Disclaimer: Please note this is not an exhaustive list of potential partners. The organizations listed in here were identified through this companion plan process, but their identification here does not indicate agreement to partner and/or provide financial resources for the conservation activities. Furthermore, the strategy categories checked off for each organization were completed to the best knowledge of the development team members; some organizations' efforts were unknown (blank cells).

Potential Partners/Coordination Bodies	Alignment Strategy			
	Data Collection and Analysis	Direct Management	Partner Engagement	Management Planning
CA Air Resources Control Board	✓		✓	
CA Department of Fish and Wildlife (CDFW) <ul style="list-style-type: none"> CA Essential Habitat Connectivity Project 	✓	✓	✓	✓
CA Department of Transportation (Caltrans) <ul style="list-style-type: none"> Planning staff Maintenance Crew 	✓	✓	✓	✓
CA Invasive Plan Council (IPC)	✓		✓	
County Transportation Commissions (CTC)	✓	✓	✓	✓
Federal Highway Administration (FHWA)	✓			
GreenInfo Network	✓	✓	✓	✓
In-Lieu Fee (ILF) Program Implementers	✓		✓	
Land Management Agencies (Federal) <ul style="list-style-type: none"> U.S. Forest Service (USFS) U.S. Bureau of Land Management (BLM) National Park Service (NPS) 	✓	✓	✓	✓
Land Managers (State) <ul style="list-style-type: none"> CA Department of Parks and Recreation (State Parks) 	✓	✓	✓	✓
Land Trusts		✓	✓	✓
Metropolitan Planning Organizations (MPOs)	✓	✓	✓	✓
Mitigation and Conservation bankers	✓	✓	✓	✓
NGOs and Citizen Science Groups	✓	✓	✓	✓
Private Land Owners	✓	✓	✓	✓
Private Transportation Entities	✓	✓	✓	✓
Regional Transportation Planning Authorities	✓	✓	✓	✓
Resource Conservation Districts (RCD)	✓	✓	✓	✓
State and Federal Regulatory Agencies	✓	✓	✓	✓
State Conservancies <ul style="list-style-type: none"> San Gabriel Mountains Regional Conservancy 	✓	✓	✓	✓

<ul style="list-style-type: none"> • Sierra Nevada Conservancy • Coastal Conservancy • Tahoe Conservancy • San Francisco Bay Area Conservancy • Delta Conservancy • Farmland Conservancy • Baldwin Hills Conservancy • San Joaquin River Conservancy • Sacramento-San Joaquin Delta Conservancy • Santa Monica Mountains Conservancy • San Diego River Conservancy • Santa Ana River Conservancy 				
Railroads <ul style="list-style-type: none"> • Burlington North and Santa Fe (BNSF) • Union Pacific (UP) 	✓	✓	✓	✓
Strategic Growth Council (SGC)	✓		✓	
Universities and University Transportation Centers (UTC) <ul style="list-style-type: none"> • Mineta National Transit Research Consortium • UC Transportation Center • UC Center of Economic Competiveness in Transportation • Metrans Transportation Center • National Center for Sustainable Transportation 	✓		✓	✓



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Appendix C: CDFW Companion Plan Management Team

Name	Title
Armand Gonzales	SWAP 2015 Project Lead
Junko Hoshi	SWAP 2015 Assistant Project Lead
Kurt Malchow	SWAP 2015 Companion Plan Development Lead

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Appendix D: Transportation Planning Companion Plan Development Team Members and Affiliations

Affiliation	Participant
BNSF Railway	Don Maddy
California Department of Fish and Wildlife - Habitat Conservation Planning Branch	Brenda Johnson Jennifer Garrison Monica Parisi
California Department of Transportation	Amy Bailey Amy Golden Marilee Mortenson
Glenn County Planning and Public Works Agency	Mardy Thomas
ICLEI - Local Governments for Sustainability	Saharnaz Mirzazad
San Diego Association of Governments	Keith Greer
Science and Collaboration for Connected Wildlands	Kristeen Penrod
Shasta Regional Transportation Agency	Dan Wayne
Southern California Association of Governments	Huasha Liu Kristen Pawling
Union Pacific - Northern California, Western Region	Lisa Lawson Stark Scott Moore

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Appendix E: Glossary

Most terms in this section originate from the glossary in the Conservation Measures Partnership's (CMP) Open Standards for the Practice of Conservation (Version 2.0). These definitions are based on current usage by many CMP members, other conservation organizations, and planners in other disciplines. Some terms have been added or refined to clarify how CDFW uses them.

activity: a task needed to implement a strategy, and to achieve the objectives and the desirable outcomes of the strategy.

biodiversity: the full array of living things.

conservation: the use of natural resources in ways such that they may remain viable for future generations. Compare with preservation.

distribution: the pattern of occurrences for a species or habitat throughout the state; generally more precise than range.

driver: a synonym for factor.

ecosystem: a natural unit defined by both its living and non-living components; a balanced system for the exchange of nutrients and energy. Compare with habitat.

ecosystem function: the operational role of ecosystem components, structure, and processes.

ecosystem health: the degree to which a biological community and its nonliving environmental surroundings function within a normal range of variability; the capacity to maintain ecosystems structures, functions, and capabilities to provide for human need.

ecosystem processes: the flow or cycling of energy, materials, and nutrients through space and time.

evaluation: an assessment of a project or program in relation to its own previously stated goals and objectives.

fragmentation: the process by which a contiguous land cover, vegetative community, or habitat is broken into smaller patches within a mosaic of other forms of land use/land cover; e.g., islands of an older forest age class immersed within areas of younger-aged forest, or patches of oak woodlands surrounded by housing development.

geographic information system (GIS): an organized assembly of people, data, techniques, computers, and programs for acquiring, analyzing, storing, retrieving, and displaying spatial information about the real world.

goal: a formal statement detailing a desired outcome of a conservation project, such as a desired future status of a target. The scope of a goal is to improve or maintain key ecological attributes. A good goal meets the criteria of being linked to targets, impact oriented, measurable, time limited, and specific.

habitat: where a given plant or animal species meets its requirements for food, cover, and water in both space and time. May or may not coincide with a single macrogroup, i.e., vegetated condition or aquatic condition. Compare with ecosystem.



impact: the desired future state of a conservation target. A goal is a formal statement of the desired impact.

invasive: an introduced species which spreads rapidly once established and has the potential to cause environmental or economic harm. Not all introduced species are invasive.

listed: general term used for a taxon protected under the federal Endangered Species Act, the California Endangered Species Act, or the California Native Plant Protection Act.

monitoring: the periodic collection and evaluation of data relative to stated project goals and objectives. Many people often also refer to this process as monitoring and evaluation (abbreviated M&E).

native: naturally occurring in a specified geographic region.

objective: A formal statement detailing a desired outcome of a conservation project, such as reducing a critical pressure. The scope of an objective is broader than that of a goal because it may address positive impacts not related to ecological entities (such as getting better ecological data or developing conservation plans) that would be important for the project. The set of objectives developed for a conservation project are intended, as a whole, to lead to the achievement of a goal or goals, that is, improvements of key ecological attributes. A good objective meets the criteria of being: results oriented, measurable, time limited, specific, and practical. If the project is well conceptualized and designed, realization of a project's objectives should lead to the fulfillment of the project's goals and ultimately its vision. Compare to vision and goal.

outcome: an improved (and intended) future state of a conservation factor due to implementation of actions or strategies. An objective is a formal statement of the desired outcome.

output: a deliverable that can be measured by the activities and processes that will contribute to accomplishing the desired outcomes and goals.

population: the number of individuals of a particular taxon in a defined area.

preservation: generally, the nonuse of natural resources. Compare with conservation.

pressure: an anthropogenic (human-induced) or natural driver that could result in impacts to the target by changing the ecological conditions. Pressures can be positive or negative depending on intensity, timing, and duration. See also direct pressure and indirect pressure.

private land: lands not publicly owned, including private conservancy lands.

program: a group of projects which together aim to achieve a common broad vision. In the interest of simplicity, this document uses the term "project" to represent both projects and programs since these standards of practice are designed to apply equally well to both.

project: a set of actions undertaken by a defined group of practitioners – including managers, researchers, community members, or other stakeholders – to achieve defined goals and objectives. The basic unit of conservation work. Compare with program.

public: lands owned by local, state, or federal government or special districts.



result: the desired future state of a target or factor. Results include impacts which are linked to targets and outcomes which are linked to threats and opportunities.

Species of Greatest Conservation Need (SGCN): all state and federally listed and candidate species, species for which there is a conservation concern, or species identified as being highly vulnerable to climate change.

stakeholder: any individual, group, or institution that has a vested interest in the natural resources of the project area and/or that potentially will be affected by project activities and have something to gain or lose if conditions change or stay the same. Stakeholders are all those who need to be considered in achieving project goals and whose participation and support are crucial to its success.

strategy: a group of actions with a common focus that work together to reduce pressures, capitalize on opportunities, or restore natural systems. A set of strategies identified under a project is intended, as a whole, to achieve goals, objectives, and other key results addressed under the project.

stress: a degraded ecological condition of a target that resulted directly or indirectly from pressures defined above (e.g., habitat fragmentation).

wildlife: all species of free-ranging animals, including but not limited to mammals, birds, fishes, reptiles, amphibians, and invertebrates.



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